

nsidered: _____

WATER PERMIT NO. 2219-2

Phone: 605 544-3200

Name of Applicant: Henry Hanson

Post Office Address: HC 2, Box 29, Philip SD 57567

Amount of Water Claimed: 95 ac-ft Total Acres: NA

Source of Water Supply: runoff

Water to be used for: livestock watering County: Haakon

About 23 miles N, 7W of Philip

PROOF OF PUBLICATION: Received _____ Not Received _____

APPLICATION: Approved _____ Subject to _____

F.F.& C/.L. Adopted _____ Not Approved _____ Deferred _____

PRIORITY Date Received: 1-9-92 Fee: \$150.00 Remarks _____

Corrected Application Received 2-12-92 Period of Annual Use Jan 1 - Dec 31

WATER QUALITY APPROVAL RECEIVED NA APPROVED/CONDITIONAL (Circle one)

WI-1 Description same as Application YES _____ NO _____ REMARKS _____

Diversion Point: NE 1/4 NW 1/4 Sec 21-T5N-R19E

Land to be Irrigated: _____

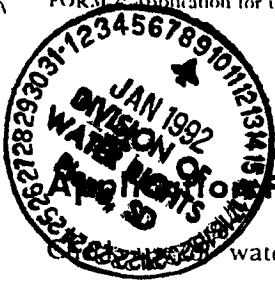


Well Log: Driller: _____ Licensed YES _____ NO _____

Depth of Well: _____ REMARKS _____

Type of Map: topo PREPARED BY: Gerald Magelly, SCS Reviewed and the Number

Assigned on 2-12-92 By Karen Schlaak

523 E. Capitol
Pierre, SD 57501
(605) 773-3352

No. 2219-2 Hydrologic Unit 10140102
 Map No. _____ Basin Bad River
 Newspaper The Pioneer Review, Box 788,

Philip

For Permit To Appropriate Water Within The State Of South Dakota

water: Industrial ☐ Commercial ☐ Municipal ☐ Other Common Distribution System ☐
 Rural Water System ☐ Suburban Housing ☐ Geothermal Heat ☐ Institutional ☐ Recreational ☐
 Domestic ☐ (above 18gpm) Other ☒ Livestock

Type of Application: Check one or more of the following

New ☒ Vested Right ☐ Future Use ☐ Change Use ☐☐ Amend Permit No. _____ with old priority date retainedChange diversion point(s) ☐ Add diversion point(s) ☐ Other ☐ _____☐ Application to: Change diversion point(s) ☐ Add diversion point(s) ☐ on Permit No. _____☐ Construction to use water reserved by Future Use Permit No. _____1. Name of Applicant Henry Hanson Phone No. 605 544 3200Post Office Address HC 2 Box #29 Philip State So. Dak Zip Code 57567
(Street, RR or Box) (City)2. Amount of water claimed (c.f.s.) 9.5 acre-feet3. Source of water supply runoff4. Location of point of diversion NE 1/4 NW 1/4 Sec 21-T5N-R19ECounty Haakon5. Counties where water will be used Haakon6. Annual period during which water is to be used Jan 1 - Dec 31

7. Give a brief description of proposed 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)

Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map (see instruction)

STATE OF SOUTH DAKOTA)
County of HAAKON) ssI, HENRY HANSON 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: Henry HansonSubscribed and sworn to before me this 6 day of January 1992Ken [Signature] Haakon County Auditor
Notary Public

Supplemental Information

(type or print in ink)

1. Well Information - Proposed construction

- a) Drill Hole Diameter _____ Depth _____
- b) Casing Type _____ Diameter _____ Thickness _____
- c) Screen Type _____ Diameter _____ Thickness _____
- d) Gravel Pack Thickness _____ 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. Dugout Information Estimates

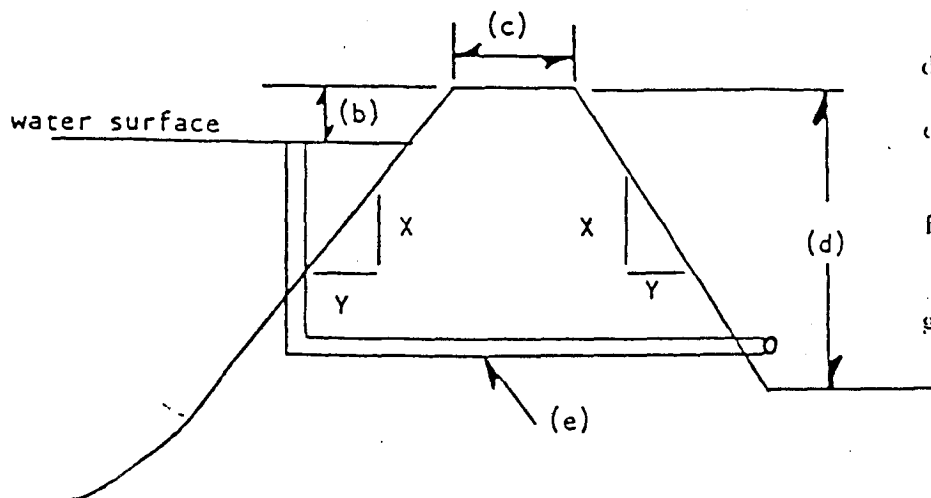
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

3. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below. The locations of each dam should 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

Glenn O'Connell & Henry Hanson
Philip SD



- b) Freeboard 3.0
- c) Crest Width 14'
 Crest Length 435
- d) Height 18.5
- e) Primary Outlet Capacity _____
 If Pipe, diameter N/A
- f) Secondary Spillway Capacity _____
 Spillway width 140
- g) X & Y Slope
 Upstream 3:1
 Downstream 2:1
- Surface Area of Impoundment _____
- Storage 95 acre feet
- Drainage area above dam 974

Signature of Applicant _____

(450-405, (GM), Amendment SD11, July 1989)

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 Thickness _____ 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. Dugout Information Estimates

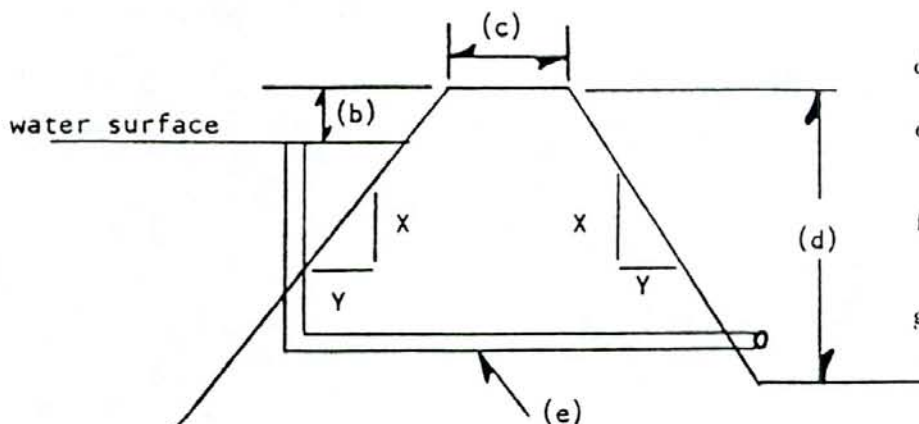
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

3. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below. The locations of each dam should 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

Glenn O'Connell & Henry Hanson
Philip SD



- b) Freeboard 3.0
- c) Crest Width 14'
 Crest Length 435
- d) Height ~~18~~ 18.5'
- e) Primary Outlet Capacity _____
 If Pipe, diameter N/A
- f) Secondary Spillway Capacity _____
 Spillway width ~~140~~ 140
- g) X & Y Slope
 Upstream 3:1
 Downstream 2:1
- Surface Area of Impoundment _____
- Storage ~~95~~ 95 acre feet
- Drainage area above dam 974

 Signature of Applicant

**SOUTH DAKOTA
WATER PERMIT NO. 2219-2**

Date of first receipt of application January 9, 1992.

Date of return to applicant for corrections, amendments or changes January 10, 1992.

Date of receipt of corrected application December 11, 1992.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2219-2 to Henry Hanson, HC 2, Box 29, Philip SD 57567 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 2219-2 impounds 95 acre-feet of water by constructing a dam. The dam site is to be located in the NE 1/4 NW 1/4 Section 21 and will impound water in the E 1/2 NW 1/4 Section 21; all in T5N-R19E. Water is to be stored annually to an approximate elevation of 2485 feet mean sea level.
2. The water appropriated shall be used for the purpose of supplying water for livestock and may not exceed the amount of water needed for beneficial use for domestic 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. 2219-2 is March 3, 1993.
5. The date from which applicant may claim right is December 11, 1992.
6. One-fifth of the construction is to be completed on or before September 3, 1995.
7. All construction is to be completed on or before March 3, 1998.
8. Water is to be put to beneficial use on or before March 3, 2002.
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. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
2. Approval of Water Permit No. 2219-2 authorizes storage of up to 95 acre-feet of water annually.

WATER MANAGEMENT BOARD

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

MAR 26 1993
date

LOCATION NOTICE FOR DAM/DUGOUT

Mail to: Water Rights Div.
DWNR, Foss Bldg.
Pierre, SD 57501
(605) 773-3352

Haakon
County



Location Notice No. _____

I, Henry Hanson, of _____, of

HC & Box #29 Philip, SD 57567 Haakon
Address & Zip Code County

Henry Hanson, of the following described land, do hereby
(owner or operator)

notify the Water Management Board of the State of South Dakota and all others concerned that I am exercising my right under SDCL 46-4, for construction of a Dam for the purpose of impounding runoff waters for Livestock purposes.
(type of use)

The following data is presented in compliance with SDCL 46-4-3 and 46-4-4.

(1) Date of:

(a) This notice _____

(b) Proposed construction _____

(2) Legal description of the land upon which the dam/dugout is located:

NE NW 1/4 Sec 21 T 5N R 19E
(describe to the nearest 40 acre sub-division)

(3) Location of the dam/dugout from a section corner:

140 Rods East, 30 Rods South of NW Corner said Section
(describe distance N.S.E.W. from the corner)

(4) County Haakon

(5) The owner of the land Henry Hanson

(6) Acre feet of water claimed annually 4.5

Notes: If the storage of the proposed structure at the spillway crest or overflow elevation exceeds twenty five (25) acre feet, a water permit from the Water Management Board is required.

A location notice is only required on a dugout, if the dugout captures surface runoff waters.

** Continue on other side **

- (7) Complete the following information for the proposed dam/dugout:
* Items to be completed for a dugout

*a) Dam/Dugout designed by Glenn O'Connell & Henry Hanson
Philip, S.D. Co.
(name and address)

b) Freeboard 3.0

c) Crest Width 14'

Crest Length 433-

d) Height 20

* Depth, if Dugout _____

e) Outlet Dimensions:

Pipe diameter N/A

Spillway width 75

f) X & Y Slope:

Upstream 3:1

Downstream 2:1

*g) Water surface area 10.1

*h) Storage at spillway crest or overflow elevation

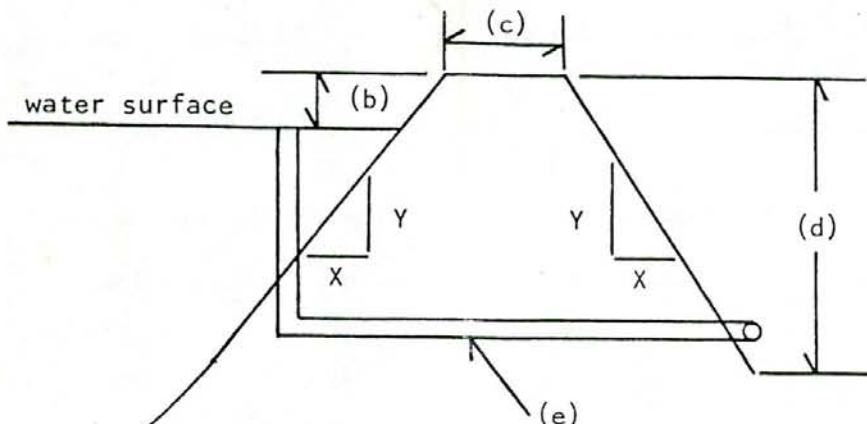
(acre feet) 91

i) Maximum storage to top of dam

(acre feet) 106

*j) Drainage area above dam/dugout

974



East Draw 390 Acres
South of East Draw 974 Acres
South of East Draw 1364 Acres

Enclosed herewith is ten dollars (\$10.00). The Water Management Board 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 Haskell County in accordance with SDCL 46-1-3.

Henry Hanson
owner

STATE OF SOUTH DAKOTA)
COUNTY OF Haskell) ss

locator

I, Henry Hanson the applicant, certify that I have read this Location Notice and that the matters stated in this notice are true and that I intend, and am able to start construction within sixty days after the filing of this notice.

Signed Henry Hanson

Subscribed and sworn to before me this 6 day of January, 1992

(seal)

Karl Peterson
notary public



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

January 10, 1992

Henry Hanson
HC 2, Box 29
Philip SD 57567

Dear Mr. Hanson:

We have reviewed the water permit application and location notice form received January 9, 1992. Since the dam is over 25 acre-feet, it will be necessary to file a water permit application. The information from the location notice form has been transferred to the water permit application form. The following information needs to be submitted in order to process your application.

A map showing the location of the diversion point (place where the dam is located) in relation to a government section corner or quarter corner by direction and distance.

A preliminary risk assessment is necessary in order to proceed with processing of this permit application pursuant to ARSD 74:02:08:05.01. The preliminary risk assessment shall consist of an on-site inspection of the downstream area with a description of any structures and a elevation in reference to the stream channel bottom. This assessment and the map must be prepared and signed by a SD Registered Professional Engineer or a person who is employed by a federal or state agency and who designs or inspects dams as part of the person's employment acting under the supervision of a professional engineer. You may want to contact your local ASCS or SCS office to see if they can be of assistance in preparing a risk assessment.

Enclosed is your check for \$10.00. The filing fee for the water permit application is based on the amount of water claimed which is 91 acre-feet. The filing fee for this amount will be \$150.00.

Upon receipt of the above, further processing of your application will continue. If you have any questions, please contact this office.

Sincerely,

Karen Schlaak
Natural Resources Analyst
605 773-3352

enclosure



Jan. 23, 1992
HC 2 Box #29
Philip S. Del. 57567

Karen Schloak
523 East Capitol
Pierre, S. Dak. 57501-3181

Dear Karen,

In answer to your request for
\$150.00 in your letter of Jan. 14, 1992.

Will send you the amount if we
are sure of getting the dam.

If the dam is not built, would
the money be returned? What
is the chance of getting it back?

Your money tied up with the
other water deal not so sure
the deal will be built. Do not
have money that can be
thrown away on Government

projects that do not come to pass.

Any information on this would be greatly appreciated. The dam is very much needed as it's very dry here.

Sincerely,

Henry Hanson



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

January 28, 1992

Henry Hanson
HC 2, Box 29
Philip SD 57567

Dear Mr. Hanson:

We have received your letter dated January 23, 1992, concerning the refund of the filing fee if your project is not completed. An Application for a Permit to Appropriate Water can be withdrawn any time before it is considered by the Water Management Board, with the entire filing fee refunded. If the Water Management Board denies the application, 75% of the \$150 filing fee shall be returned. Once a permit is issued by the Water Management Board, the filing fee can not be refunded if the project is constructed.

SDCL 46-5-9 states that no person may begin or carry on any construction of works for storing or carrying water until a permit to appropriate the water has been issued.

If you wish to proceed with the Application for a Permit to Appropriate Water, please submit the information requested in the January 10, 1992 letter. If you have any questions, please contact this office.

Sincerely,

Karen Schlaak
Natural Resources Analyst
605 773-3352



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

February 18, 1992

Henry Hanson
HC 2, Box 29
Philip SD 57567

Dear Mr. Hanson:

We have received the additional information submitted for processing your application for a water permit. After further review of the application, it has been determined that plans and specifications for the dam will be needed pursuant to the Safety of Dams Rules. Enclosed is a copy of those rules. Section 74:02:08:09 lists what is required of the plans and specifications. Since you have been working with the Soil Conservation Service, they may already have these prepared or can assist you preparing them.

If you have any questions regarding the plans and specifications, please contact Tim Schaal of this office.

Sincerely,

Karen Schlaak
Natural Resources Analyst
605 773-3352

enclosure



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

April 30, 1992

Henry Hanson
HC 2, Box 29
Philip SD 57567

Dear Mr. Hanson:

On January 9, 1992, you submitted an application (copy enclosed) for a permit to appropriate water for livestock watering purposes. You were notified on February 18, 1992 (copy enclosed) that the application was incomplete and were instructed what additional information was necessary in order to complete the application. To date, we have not received a response from you.

Obtaining a water permit ultimately benefits you by protecting your right to use water. Except for domestic use, any water user without a water right is not entitled to receive protection in the event of interference by a new or future user who has a water right.

Pursuant to South Dakota Codified Laws 46-1-15, 46-5-9, 46-5-10 and 46-2-18, you must have a water permit prior to using water.

If you have any questions regarding the plans and specifications, please contact Tim Schaal of this office.

Sincerely,

Karen Schlaak

Karen Schlaak
Natural Resources Analyst
(605) 773-3352

enclosure

Curve Number Computation

Client : HENRY HANSON
 County : HAAKON
 Practice: LARGE DAM

State: SD

By: GLM
 Checked: _____

Date: 07-17-92
 Date: _____

COVER DESCRIPTION	Hydrologic Soil Group			
	A	B	C	D
Acres (CN)				

CULTIVATED AGRICULTURAL LANDS				
Fallow Crop residue (CR) good	-	-	-	100(90)
Small grain SR + Crop residue good	-	-	-	100(84)
OTHER AGRICULTURAL LANDS				
Pasture, grassland or range good	-	-	-	774(80)
Total Area (by Hydrologic Soil Group)				974
				=====

TOTAL DRAINAGE AREA: 974 Acres

WEIGHTED CURVE NUMBER: 81

— T_c —

1000' overland @ 5% @ 1.5 ft/sec = 0.19 hrs

6500' narrow channel @ 1.3% @ 3.5' / sec = .52 hrs

5000' wide channel @ 0.5% @ 2' / sec = 0.7 hrs

Total = 1.4 hrs.

Client : HENRY HANSON
County : HAAKON
Practice: LARGE DAM

State: SD

Bv: GLM
Checked: _____

Date: 07-17-92
Date: _____

Drainage Area : 974 * Acres
Curve Number : 81 *
Watershed Length : 13800 Feet
Watershed Slope : 1.1 Percent
Time of Concentration: 3.99 Hours
Rainfall Type : II

Storm Number	1	2	3	4	5	6	7
Frequency (yrs)	1	2	5	10	25	50	100
24-Hr Rainfall (in)	1.7	2	2.8	3.4	4.2	4.4	4.9
Ia/P Ratio	0.28	0.23	0.17	0.14	0.11	0.11	0.10
Used	0.28	0.23	0.17	0.14	0.11	0.11	0.10
Runoff (in)	0.42	0.60	1.16	1.63	2.29	2.46	2.90
Unit Peak Discharge (cfs/acre/in)	0.179	0.185	0.196	0.201	0.206	0.207	0.208
<i>Runoff</i>		<i>48.7 A.F.</i>			<i>185.9 A.F.</i>		
Peak Discharge (cfs)	74	109	222	319	459	495	586

* - Value(s) provided by CN subroutine (F9)



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

September 25, 1992

Henry Hanson
HC 2, Box 29
Philip, SD 57567

Dear Mr. Hanson:

I am writing regarding the water permit application you submitted for a 91 acre feet storage dam in Section 21, T5N, R19E. The application, as submitted, is incomplete and can not be processed until plans and specification for the proposed dam and a preliminary risk assessment are completed.

The Soil Conservation Service provided a preliminary risk survey downstream of the proposed dam; however, it does not provide all this information necessary for the assessment. The SCS survey does not provide information on the category classification of the dam. In order to assist you in this effort, I can have a staff engineer stop by and investigate the proposed dam location and the structure downstream to complete the preliminary risk assessment.

The plans and specifications for the proposed dam will need to be submitted pursuant to the Safety of Dams Rules (copy enclosed). It is my understanding that the size of this dam precludes SCS from participating in this effort. However, completed plans and specifications for this proposed dam is not something that can be overlooked.

If you are still planning to pursue construction of the dam, obtaining a water permit will be necessary. I will have a staff engineer contact you regarding completing the preliminary risk assessment.

The water permitting process is not intended to be burdensome. However, in permitting the construction of a dam we must follow regulation necessary to ensure properly constructed structure. Please contact Time Schaal or myself if you have any questions.

Sincerely,

Eric Gronlund
Eric Gronlund
Water Rights Division
(605) 773-3352

enclosure

Conversation or File Documentation

NAME OF PERSON OR FILE: Henry HansonADDRESS: _____ COUNTY HaskellDATE: October 23, 1992 TELEPHONE: _____RE: Downstream Risk Assessment

COMMENTS:

On October 15, 1992, I met with Mr. Henry Hanson to discuss his Water Permit ^{Application} No. 2219-2 for a dam in the NW 1/4 of Section 21-T5N-R19E. We looked at the dam site and the downstream channel where Harby Draw crosses the gravel road in the SW 1/4 of Section 1-T5N-R18E. I agree with the SCS on their "class A" rating or a Category 3, Low Hazard rating for this dam. It sounded like Mr. Hanson was in a hurry to construct the dam, but told him he needed to wait until the Plans & Specs. were finalized and approved and Water Permit Application No. 2219-2 was approved. Also, talked to Gerald Magelky from the Kadoka SCS office. It sounded like Mr. Hanson was going thru them for a Great Plains contract on this dam, and the SCS would do the design.

File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

NAME: Tim Schoal



United States
Department of
Agriculture

Soil
Conservation
Service

Federal Building
515 9th Street, Room 239
Rapid City, SD 57701

Subject: ENG-Hanson Dam, Haakon Co.
Review of Construction Plans

Date: November 24, 1992

To: Ron E. Hendricks
State Conservationist
Soil Conservation Service
Huron, SD 57350

File Code: 210-0

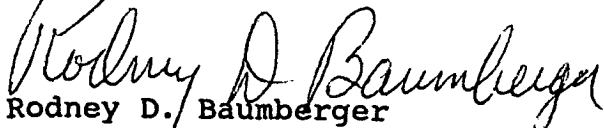
Attached for review by your engineering staff is a set of construction plans for a farm pond for Henry Hanson, Haakon County, SD.

The proposed structure is a new dam, to be used primarily for stockwater. The structure is classified as hazard class A, 378 farm ponds (SCS); and as a small dam, category 3 (state statutes). The proposed structure was classified as category 3 after a site inspection by Tim Schaal of DENR.

The pond is designed without a principal spillway, due to the runoff volume/storage volume ratio. It qualifies for the 74:02:08:07.01 exemption (25 year emergency spillway design storm). Pond data is as follows:

Drainage area - 974 ac
Dam height - 18.5'
Effective height - 15.5'
Storage at emergency spillway - 94.8 ac-ft
Storage at top of dam - 145 ac-ft
Storage x effective height - 1470'
Peak flow, 25 year storm - 847 cfs
Emergency spillway capacity - 724 cfs
50% chance annual yield - 48.7 ac-ft

Hanson has applied for a water permit and the Water Rights Division will process the application pending DENR's approval of the construction plans. Please forward these plans to DENR after review by your engineering staff.


Rodney D. Baumberger
Area Conservationist

cc: Nina Pekron, DC, SCS, Philip
Gerard Magelky, SCT, SCS, Kadoka
Dwight Hale, SCE, SCS, Huron (with attachments)



The Soil Conservation Service
is an agency of the
Department of Agriculture

AN EQUAL OPPORTUNITY EMPLOYER



United States
Department of
Agriculture

Soil
Conservation
Service

Federal Building
200 Fourth Street SW
Huron, South Dakota 57350-2475

December 8, 1992



Mr. John Hatch
Department of Environment and Natural Resources
523 East Capitol
Pierre, South Dakota 57501

RE: Henry Hanson Dam, Haakon County

Dear Mr. Hatch:

This is in regard to the construction plan review and approval of the proposed above mentioned dam in Haakon County. The structure has a height of 18.5 feet and maximum storage of 145 ac. ft. Therefore, in compliance with South Dakota State Law, review and approval is needed by your office.

The plans and specifications are enclosed. Upon completion please send plans to:

Steven Quissell,
Area Engineer
Soil Conservation Service
Federal Building, Room 239
515 9th Street
Rapid City, South Dakota 57701-2663

If there are any questions, please call Steve Quissell at 343-1643. Thank you.

Sincerely,

Walter A. Schmidt
Acting For

RON E. HENDRICKS
State Conservationist

Enclosures

cc: Nina Pekron, DC, SCS, Phillip
Gerard Magelky, CET, SCS, Kadoka
Rodney Baumberger, AC, SCS, Rapid City
Steven Quissell, AE, SCS, Rapid City
Dwight Hale, SCE, SCS, Huron



Water Right Application #2219-2 Henry Hanson

Top of Dam 98.5
Spillway 95.5
3 ft

Cat. 3 Dam
 $94.8 \times 15.5 = 1469 < 3000$

Dam Height = 18.5 ft

Normal Storage = 91 Ac.-Ft } No P. Spwy $\therefore$ 25 year Event Min.
Int. " = 94.8 } 94.8 AF
Max. " = 145 } Normal Cap.

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

$$DH = 974 A_c = 1.52 \text{ mi}^2$$

$$\text{Slope} = 53 \text{ ft/mile}$$

$$S_i = 1.76$$

$$Q_{25} = 83.4 A^{0.6} S_i^{0.44} S_i^{-0.72}$$

$$= (83.4)(1.52)^{0.6} (53)^{0.44} (1.76)^{-0.72}$$

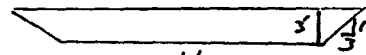
$$= (83.4)(1.28)(5.7)(0.67)$$

$$= \underline{410 \text{ cfs}}$$

$$Q_{50} = \underline{550 \text{ cfs}}$$

$$Q_{100} = \underline{741 \text{ cfs}}$$

Spillway Capacity



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

$$= 2.6(140)(3)^{1.5}$$

$$= \underline{1890 \text{ cfs}}$$

SCS Routing

$$Q_{25} = 847 \text{ cfs} \quad 140 \text{ ft wide spillway @ } 95.5$$

$$Q_{\text{peak}} = 725 \text{ cfs @ } 97.37$$

$$V = 5.4 \text{ fps} \quad 1.87 \text{ ft}$$

$$\text{check } Q = CLH^{3/2}$$

$$Q = 2.6(140)(1.87)^{1.5}$$

$$= \underline{930 \text{ cfs}}$$

$$Q_{50} = 1028 \quad 140 \text{ ft wide spillway @ } 95.5$$

$$Q_{\text{peak}} = 915 \text{ cfs @ } 97.60$$

$$V = 5.9 \text{ fps} \quad 2.10$$

Section 74:02:08:09

1. Topo Map - OK
2. Profile Dam Axis - OK
3. Dam X-Section - OK
4. Area - Capacity Curve - OK
5. Outlet Drawing - N/A
6. Spillway Routing - Dam 2 Routing - OK
7. Spillway Plans - OK
8. Specs - OK
9. EPP - N/A

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:43:21
Watershed file: --> c:\pondpack\HANSON .WSD
Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
1	974.00	81.0	1.50	0.00	4.20	2.29	I.11 .11

* Travel time from subarea outfall to composite watershed outfall point.

I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 974.00 acres or 1.5219 sq.mi
Peak discharge = 950 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	Interpolated (Yes/No)	
1	1.40	0.00	1.50	0.00	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:43:21
Watershed file: --> c:\pondpack\HANSON .WSD
Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	950	13.2
Composite Watershed	950	13.2

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:43:21
Watershed file: --> c:\pondpack\HANSON .WSD
Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	30	36	50	70	83	103	137	195	277
Total (cfs)	30	36	50	70	83	103	137	195	277

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	380	501	629	740	878	950	818	688	554
Total (cfs)	380	501	629	740	878	950	818	688	554

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	450	343	267	201	152	124	107	89	82
Total (cfs)	450	343	267	201	152	124	107	89	82

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	75	64	57	43	4
Total (cfs)	75	64	57	43	4

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:43:21
Watershed file: --> c:\pondpack\HANSON .WSD
Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	30	14.8	234
11.1	32	14.9	217
11.2	34	15.0	201
11.3	36	15.1	191
11.4	41	15.2	181
11.5	45	15.3	172
11.6	50	15.4	162
11.7	57	15.5	152
11.8	63	15.6	146
11.9	70	15.7	141
12.0	83	15.8	135
12.1	103	15.9	130
12.2	137	16.0	124
12.3	195	16.1	121
12.4	277	16.2	117
12.5	380	16.3	114
12.6	501	16.4	110
12.7	629	16.5	107
12.8	740	16.6	103
12.9	809	16.7	100
13.0	878	16.8	96
13.1	914	16.9	93
13.2	950	17.0	89
13.3	884	17.1	88
13.4	818	17.2	86
13.5	753	17.3	85
13.6	688	17.4	83
13.7	621	17.5	82
13.8	554	17.6	81
13.9	502	17.7	79
14.0	450	17.8	78
14.1	414	17.9	76
14.2	379	18.0	75
14.3	343	18.1	74
14.4	318	18.2	73
14.5	292	18.3	72
14.6	267	18.4	71
14.7	250	18.5	70

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:43:21
Watershed file: --> c:\pondpack\HANSON .WSD
Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	68	22.4	39
18.7	67	22.5	38
18.8	66	22.6	37
18.9	65	22.7	36
19.0	64	22.8	35
19.1	63	22.9	34
19.2	63	23.0	33
19.3	62	23.1	32
19.4	61	23.2	31
19.5	61	23.3	30
19.6	60	23.4	29
19.7	59	23.5	28
19.8	58	23.6	27
19.9	58	23.7	26
20.0	57	23.8	25
20.1	56	23.9	24
20.2	56	24.0	24
20.3	55	24.1	23
20.4	54	24.2	22
20.5	54	24.3	21
20.6	53	24.4	20
20.7	52	24.5	19
20.8	51	24.6	18
20.9	51	24.7	17
21.0	50	24.8	16
21.1	49	24.9	15
21.2	49	25.0	14
21.3	48	25.1	13
21.4	47	25.2	12
21.5	47	25.3	11
21.6	46	25.4	10
21.7	45	25.5	9
21.8	44	25.6	8
21.9	44	25.7	7
22.0	43	25.8	6
22.1	42	25.9	5
22.2	41		
22.3	40		

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:41:32
Watershed file: --> c:\pondpack\HANSON .WSD
Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

>>>> Input Parameters Used to Compute Hydrograph <<<<

Subarea Description	AREA (acres)	CN	Tc (hrs)	* Tt (hrs)	Precip. (in)	Runoff (in)	Ia/p input/used
1	974.00	81.0	2.00	0.00	4.20	2.29	I.11 .11

* Travel time from subarea outfall to composite watershed outfall point.
I -- Subarea where user specified interpolation between Ia/p tables.

Total area = 974.00 acres or 1.5219 sq.mi
Peak discharge = 778 cfs

>>>> Computer Modifications of Input Parameters <<<<

Subarea Description	Input Values		Rounded Values		Ia/p Interpolated	Ia/p Messages
	Tc (hr)	* Tt (hr)	Tc (hr)	* Tt (hr)	(Yes/No)	
1	2.00	0.00	**	**	Yes	--

* Travel time from subarea outfall to composite watershed outfall point.
** Tc & Tt are available in the hydrograph tables.

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:41:32
Watershed file: --> c:\pondpack\HANSON .WSD
Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

>>>> Summary of Subarea Times to Peak <<<<

Subarea	Peak Discharge at Composite Outfall (cfs)	Time to Peak at Composite Outfall (hrs)
1	778	13.4
Composite Watershed	778	13.4

TR-55 TABULAR HYDROGRAPH METHOD

Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:41:32

Watershed file: --> c:\pondpack\HANSON .WSD

Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

Composite Hydrograph Summary (cfs)

Subarea Description	11.0 hr	11.3 hr	11.6 hr	11.9 hr	12.0 hr	12.1 hr	12.2 hr	12.3 hr	12.4 hr
1	23	30	40	53	60	70	90	121	165
Total (cfs)	23	30	40	53	60	70	90	121	165

Subarea Description	12.5 hr	12.6 hr	12.7 hr	12.8 hr	13.0 hr	13.2 hr	13.4 hr	13.6 hr	13.8 hr
1	216	278	354	433	586	691	778	721	669
Total (cfs)	216	278	354	433	586	691	778	721	669

Subarea Description	14.0 hr	14.3 hr	14.6 hr	15.0 hr	15.5 hr	16.0 hr	16.5 hr	17.0 hr	17.5 hr
1	594	460	367	277	204	159	128	107	93
Total (cfs)	594	460	367	277	204	159	128	107	93

Subarea Description	18.0 hr	19.0 hr	20.0 hr	22.0 hr	26.0 hr
1	82	71	61	47	11
Total (cfs)	82	71	61	47	11

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:41:32
Watershed file: --> c:\pondpack\HANSON .WSD
Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
11.0	23	14.8	322
11.1	25	14.9	299
11.2	28	15.0	277
11.3	30	15.1	262
11.4	33	15.2	248
11.5	37	15.3	233
11.6	40	15.4	219
11.7	44	15.5	204
11.8	49	15.6	195
11.9	53	15.7	186
12.0	60	15.8	177
12.1	70	15.9	168
12.2	90	16.0	159
12.3	121	16.1	153
12.4	165	16.2	147
12.5	216	16.3	140
12.6	278	16.4	134
12.7	354	16.5	128
12.8	433	16.6	124
12.9	510	16.7	120
13.0	586	16.8	115
13.1	639	16.9	111
13.2	691	17.0	107
13.3	735	17.1	104
13.4	778	17.2	101
13.5	750	17.3	99
13.6	721	17.4	96
13.7	695	17.5	93
13.8	669	17.6	91
13.9	631	17.7	89
14.0	594	17.8	86
14.1	549	17.9	84
14.2	505	18.0	82
14.3	460	18.1	81
14.4	429	18.2	80
14.5	398	18.3	79
14.6	367	18.4	78
14.7	344	18.5	77

TR-55 TABULAR HYDROGRAPH METHOD
Type II Distribution
(24 hr. Duration Storm)

Executed: 12-26-1992 13:41:32
Watershed file: --> c:\pondpack\HANSON .WSD
Hydrograph file: --> c:\pondpack\HANSON1 .HYD

Hanson Dam

Time (hrs)	Flow (cfs)	Time (hrs)	Flow (cfs)
18.6	75	22.4	43
18.7	74	22.5	43
18.8	73	22.6	42
18.9	72	22.7	41
19.0	71	22.8	40
19.1	70	22.9	39
19.2	69	23.0	38
19.3	68	23.1	37
19.4	67	23.2	36
19.5	66	23.3	35
19.6	65	23.4	34
19.7	64	23.5	34
19.8	63	23.6	33
19.9	62	23.7	32
20.0	61	23.8	31
20.1	60	23.9	30
20.2	60	24.0	29
20.3	59	24.1	28
20.4	58	24.2	27
20.5	58	24.3	26
20.6	57	24.4	25
20.7	56	24.5	25
20.8	55	24.6	24
20.9	55	24.7	23
21.0	54	24.8	22
21.1	53	24.9	21
21.2	53	25.0	20
21.3	52	25.1	19
21.4	51	25.2	18
21.5	51	25.3	17
21.6	50	25.4	16
21.7	49	25.5	16
21.8	48	25.6	15
21.9	48	25.7	14
22.0	47	25.8	13
22.1	46	25.9	12
22.2	45		
22.3	44		

RECEIPT

Division of Water Rights

South Dakota Department of Water and Natural Resources

Pierre, _____ February 10, 19 32

RECEIVED OF Henry Hanson, HC 2, Box 20, Philip, SD 57457

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

Fee for Application for Permit No. <u>2219-2</u> to Appropriate Water, to construct works 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 Certified Copy of _____		
Fee for Print Copy of Map _____		
Fee for Certifying _____		
Fee for _____		
(Any Other Work Provided by Law)	Total	150 00

By [Signature]
Chief Engineer

HYDROLOGIC DATA SHEET

Operator: Hanson, Henry Farm No.: _____

Structure or Practice: FARM POND - 378

Location: Haakon Co. County: _____

Computations by: S. Quisse II Date: _____

PEAK RATE AND VOLUME OF RUNOFF
(See Chapt. 2, Eng. Field Manual)

Soil Group	Land Use and Condition	Curve Number	Acres	(CN)(Acres)

see computer printouts

TOTAL _____

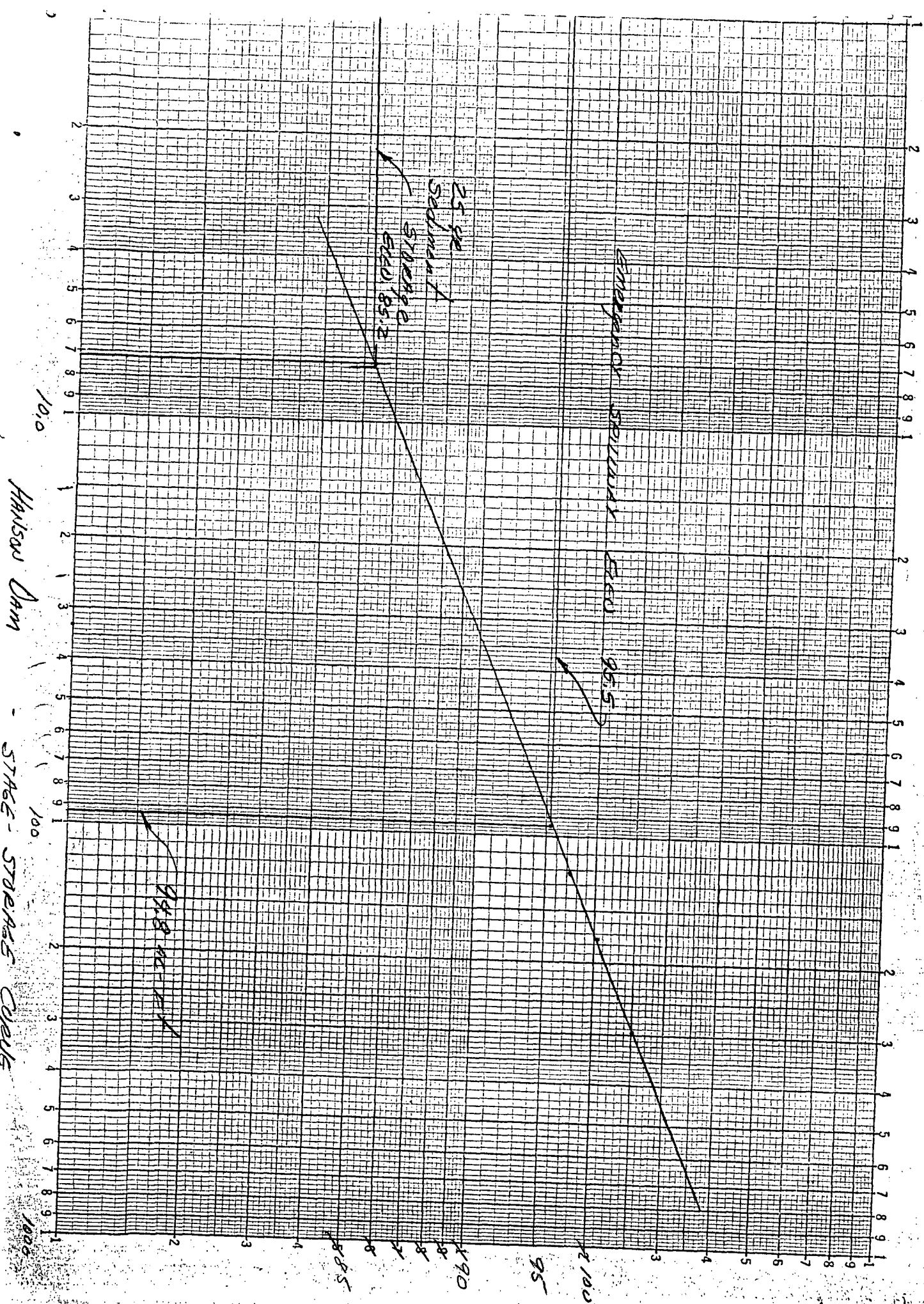
Weighted CN = _____

Average Watershed Slope _____ Slope Factor _____

Weighted CN	Design Storm	P Inches Rainfall	Q Inches Runoff	q (ft ³ /s) Peak Flow	Storm Volume Ac.-In.

ANNUAL YIELD

% Chance	Freq.	Isogram No.	Area Acres	Inches	Ac.-In.	Ac.-Ft.
50	2	2	974	.75	730.5	60.9 AC-Ft.



HANSON Dam

STAGE - STAGE CAPS

STATE <u>Hazleton S.D.</u>		PROJECT		
BY <u>CLM</u>	DATE	CHECKED BY	DATE	JOB NO.
SUBJECT <u>Principle Spillway</u>				SHEET _____ OF _____

Dam Storage from Dams 2 Program =

$$V_T = 94.8 \text{ Ac-Ft} - 7.2 \text{ Ac-Ft Sediment} = 87.6 \text{ Ac-Ft}$$

$$V_r = 48.7 \text{ Ac-Ft}$$

$$50\% \text{ of } 48.7 = 24.35 \text{ Ac-Ft}$$

V_T of 87.6 AF is greater than 50% of 2yr storm Runoff.

Therefore no principle spillway is needed.

A 4" principle spillway was used on the Dams 2 program in order for the program to work.

LOG SHEET FOR EARTH BORINGS

Cooperator HENRY HANSON Practice DAM
CD HAARON County HAARON

Farm, I.D. No. _____ Technician C. L. Maye Date 08/19/92

NE NW Sec. 21 T 5N R 19E Hole No. 1 Hole Elevation 890

Drilling Location E of Dam " " 2 " " 803

Unified Soil #1 #2 #3
Class Symbol

	1+20	2+00	3+45
0	↑	↑	↑
1'	SC	CL	CL
2'		X	
3'	X	High End of CL	X
4'	CL	High End of CL	CL
5'	↓	↓	↓

Assisted by ED ENSZ

CONSTRUCTION SPECIFICATIONS

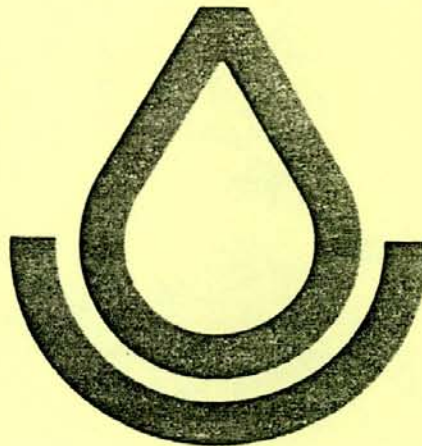
for

Henry Hanson

Farm Pond

Haakon Co.

1992



Prepared by:

USDA, SOIL CONSERVATION SERVICE

Assisting:

Haakon

Conservation District

CONSTRUCTION SPECIFICATION

SD-4 STRIPPING

4.1 SCOPE

The work shall consist of removing topsoil and other undesirable materials from borrow areas and foundations of structures and earth fills.

4.2 GENERAL

The stripping excavation shall extend to a depth sufficient to expose subsoil reasonably free of roots and other perishable material. Excavated earth material deemed satisfactory by the technician shall be used for earth fill. All waste material shall be disposed of in areas shown on the drawings or as directed by the technician. Stripped material suitable for topsoil shall be stockpiled and respread over disturbed areas as directed by the technician.

4.3 STRIPPING FOUNDATIONS

Stripping excavation shall extend to consolidated subsoil and shall be to reasonably smooth surfaces free of unconsolidated or loose soil. Unless otherwise shown on the drawings, foundation slopes shall be excavated to one to one, or flatter slopes.

4.4 STRIPPING BORROW AREAS

The areas from which borrow is to be taken shall be stripped to sufficient depth to expose material suitable for the earth fill.

CONSTRUCTION SPECIFICATION

SD-5 EXCAVATION

5.1 SCOPE

The work shall consist of all excavations to the lines and grades as shown on the drawings and the use and disposal of the excavated materials.

5.2 CLASSIFICATION

Common excavation shall be defined as the excavation of all materials that can be removed and transported by heavy duty construction equipment having a power rating of at least 200 net peak flywheel horsepower 1/, and includes boulders and loose rock less than 1 cu. yd. in volume.

Rock excavation shall be defined as the excavation of all hard compacted or cemented materials requiring blasting or larger equipment than defined under common excavation, including boulders and loose rock 1 cu. yd. or greater in volume.

5.3 USE OF EXCAVATED MATERIALS

Excavated materials deemed satisfactory by the technician shall be used for earth or rock fill to the extent needed.

5.4 DISPOSAL OF WASTE MATERIAL

All surplus or waste material shall be disposed of in areas shown on the drawings or as directed by the technician, and left in a neat, sightly condition and sloped to provide drainage.

5.5 BRACING AND SHORING

Excavated surfaces too steep to be stable shall be supported to prevent soil movement. The contractor shall furnish, place, and subsequently remove the supports.

5.6 STRUCTURE AND TRENCH EXCAVATION

Structure or trench excavation shall be approved by the technician before any structure, pipe, or earth fill is placed in the excavation.

5.7 BORROW EXCAVATION

When quantities of suitable materials obtained from specified excavations are insufficient to construct specified fills.

1/ D8 Caterpillar or equivalent

additional materials shall be obtained from the designated borrow area as directed by the technician.

Borrow pits shall be excavated and finely dressed in a manner to eliminate steep or unstable side slopes or other hazardous or unsightly conditions.

5.8 BLASTING

The transportation, handling, storage, and use of dynamite and other explosives shall be directed by a person of proven experience and ability in blasting operations.

Blasting shall be done in such a way as to prevent damage to the work or unnecessary fracturing of the foundation.

CONSTRUCTION SPECIFICATION

SD-7S EARTH FILL-CLASS S

7S.1 SCOPE

The work shall consist of the construction of compacted earth fills where the amount of compaction is to be controlled by a method type of specification.

7S.2 MATERIALS

All fill materials shall be obtained from required excavations and designated borrow areas. The selection, blending, routing and disposition of materials shall be subject to approval by the technician.

Fill materials shall not contain frozen material, sod, brush, roots, or other perishable materials, or rocks larger than 8 inches in diameter. Fill shall not be placed on a frozen surface.

7S.3 FOUNDATION PREPARATION

After stripping (see stripping specification), the foundation shall be scarified or plowed to a minimum depth of 4 inches. The entire foundation area shall then be compacted by the process used on the fill.

7S.4 PLACEMENT

All foundation excavations and/or preparation shall be completed before placing fill. The fill shall be placed such that the distribution of materials is essentially uniform throughout the entire fill and is free from lenses, pockets, streaks, or layers of materials differing substantially from surrounding material.

Fill, adjacent to structures, shall be placed in a manner that will prevent damage to the structures and allow the structures to assume the backfill loads gradually and uniformly. Equipment weighing more than 400 pounds shall not be operated within 2 feet of any structure.

Fill shall be placed in approximately equal horizontal layers. Fill layer thicknesses shall not exceed 9 inches for machine compaction or 4 inches for hand compaction (including hand directed power tampers adjacent to structures).

7S.5 MOISTURE CONTENT

The fill material shall have a moisture content that when kneaded in the hand will form a ball which does not easily crumble when struck sharply with a pencil or which does not crumble when pressed between the hands.

If the soil is too wet, it will yield free water when kneaded in the hand. The fill may have to be wetted or dried to achieve proper moisture control.

7S.6 COMPACTION (CLASS S)

The fill shall be compacted by one of the following methods.

- a. By routing the hauling and spreading equipment such that all points of the fill is traversed by at least one tread track of the loaded equipment, parallel to the centerline of the fill.
- b. By at least two passes of a tamping (sheepfoot) roller weighing at least 100 pounds per square inch of bearing area.

Fill adjacent to structures shall be compacted to a density equivalent to that of the surrounding fill by means of hand tamping or manually directed power tampers or plate vibrators. Heavy equipment shall not be operated within 2 feet of any structure.

Compaction of fill adjacent to concrete structures shall not be started until the following time limits have elapsed after placement of the concrete.

<u>Structure</u>	<u>Time Interval</u>
Walls and counterforts	14 days
Conduits and Spillway Risers (cast in place)	14 days
Conduits, precast, cradled	2 days
Conduits, precast, bedded	1 day
Anti-seep Collars and Cantilever pipe props	3 days

CONSTRUCTION SPECIFICATION

SD-10 SALVAGING AND SPREADING TOPSOIL

10.1 SCOPE

The work shall consist of salvaging topsoil from borrow pits or other excavations and spreading it in the designated areas to the specified depths.

10.2 QUALITY OF TOPSOIL

Topsoil shall consist of friable soil reasonably free of grass, roots, weeds, sticks, stones, or other foreign materials.

10.3 EXCAVATION

Topsoil shall be removed after clearing and grubbing and removing vegetation and shall be stockpiled at locations approved by the technician. Objectionable materials shall be removed and buried, or disposed of, at locations approved by the technician.

10.4 SPREADING

Spreading shall not be done when the ground or topsoil is frozen, excessively wet or otherwise in a condition detrimental to the work. Surfaces to be covered shall be lightly scarified just prior to the spreading operation.

All earth fills not to be submerged shall be covered with topsoil to a depth of 6 to 18 inches measured normal to the surface of the fill and placed to the neat lines shown on the drawings.

After placement is completed, the topsoil surface shall be left in a condition that will permit seeding equipment to be operated without excessive smoothing.

CONSTRUCTION SPECIFICATION

SD-12B CONCRETE FOR MINOR STRUCTURES (FOR STRUCTURES UP TO 10 C.Y.)

12B.1 SCOPE

The work shall consist of proportioning, forming, placing, finishing, and curing portland cement concrete.

Acceptance:

The acceptance or rejection of concrete made under this specification will depend upon adherence to the procedures set forth herein, and the appearance of the finished structure.

12B.2 MATERIALS

Portland Cement shall be Type II or Type IIA Portland Cement. Cement that is partially hydrated or otherwise damaged shall not be used.

Fine Aggregate is defined as all material which will pass a $\frac{1}{4}$ -inch screen. Fine aggregate shall compose between 35 and 45 percent of the total aggregate and shall not contain more than 1 percent clay lumps or more than 4 percent finer than a No. 200 sieve. Coal in fine aggregate shall not exceed $\frac{1}{2}$ of 1 percent.

Coarse Aggregate is defined as all material larger than $\frac{1}{4}$ inch. Maximum size aggregate shall not exceed:

- 1 inch - Concrete thickness of 4 inches or less
- $1\frac{1}{2}$ inch - Concrete thickness of 4 inches or more

Coarse aggregate shall compose between 55 and 65 percent of total aggregate and shall not contain more than $\frac{1}{4}$ of 1 percent of clay lumps or more than 1 percent of material finer than No. 200 sieve. Coal shall not exceed one percent.

Mixed fine and coarse aggregate or pit-run aggregate may be used provided the requirements stated above are met.

Water shall be clean and free of harmful chemicals (suitable for drinking).

12B.3 DESIGN OF CONCRETE MIX

The contractor or person in charge of construction shall be responsible for designing a high quality concrete mix conforming to this specification.

The mix shall contain less than 6 gallons of water per bag of cement, and at least 6 bags of cement per cubic yard of concrete. The air-entrainment shall be between 4 and 7 percent by volume, and the slump after mixture shall be between 2 and 4 inches.

The following table is recommended as a guide for developing a satisfactory mix to give 3000 psi compressive strength for air-entrained concrete.

Max. Size Aggregate	Gal. Water per sack of cement	% of Fine Aggregate	Sacks Cement per cu. yd.	Pounds Fine Aggregate per sack cement	Pounds Coarse Aggregate per sack cement
1"	6.0	40	6.0	190-200	300-310
1½"	6.0	35	6.0	180-190	330-340

Ready Mixed concrete may be used provided it meets the requirements of these specifications. Upon request the vendor shall provide the owner with a signed delivery ticket giving the quantities of concrete, cement, fine aggregate, coarse aggregate and water contained in the batch.

Measurements of materials shall be by weight where suitable scales are available. Where suitable scales are not available, volume measurement may be used provided volume-weight relationships are carefully determined. Calcium chloride or other accelerators or anti-freeze compounds shall not be used.

Measurements (by weight) of materials in the mix shall be made available to the technician.

12B.4 FORMS FOR CONCRETE

Forms shall be made of wood, plywood, steel or other approved material. The type, size, shape, quality and strength of forms will be subject to approval by the technician.

All forms shall be true to line and grade, mortar tight, and rigid enough to prevent bulging or displacement. Tolerances will be close enough to assure that the structure appears and performs well.

All forms shall be removed from the concrete. Forming shall not be embedded in the concrete.

12B.5 PLACING CONCRETE

Concrete shall be placed in final position within one and one-half hours after mixing with cement.

Concrete shall be consolidated by hand spading and tamping or by mechanical vibration.

All concrete placed on earth shall be placed on clean damp surface, free of frost, ice, or running water. Concrete shall not be dropped more than 5 feet vertically unless suitable equipment is used to prevent segregation.

Uniformed surfaces (excluding slip form concrete) exposed in the completed work shall have a wood float finish. Exposed concrete edges shall be chamfered or finished with molding tools.

Concrete shall be placed at air temperatures between 40°F. and 80°F. unless special measures are taken to protect the concrete. Concrete shall be protected from freezing for 7 days after placement.

12B.6 CURING CONCRETE

All concrete shall be cured by keeping all exposed surfaces wet for 7 days or by applying a spray type curing compound to exposed concrete surfaces immediately after the free water has disappeared after pouring.

12B.7 DEFECTIVE CONCRETE

Honey combed areas and other voids in concrete will be promptly repaired with mortar patching immediately upon discovery.

Concrete subjected to damage and/or other violations of this specification will be rejected.

CONSTRUCTION SPECIFICATION

SD-13 STEEL REINFORCEMENT

13.1 SCOPE

The work shall consist of furnishing and placing steel reinforcement for reinforced concrete.

13.2 MATERIALS

All reinforcement shall be free from all flaky rust, oil, grease, paint, mill scale, or other foreign substance.

Steel bar reinforcement shall be deformed billet steel conforming to either ASTM specification A 15 Intermediate Grade or A 615 Grade 40.

Welded Steel wire fabric reinforcement shall conform to the requirements of ASTM Specification A 185.

13.3 CUTTING AND BENDING

Reinforcing bars may be mill or field cut or bent. All bends shall be made without heating and in accordance with standard practices. (See American Concrete Institute Standard 315). Bars with kinks, cracks, or improper bends will be rejected.

13.4 SPLICING BAR REINFORCEMENT

Unless otherwise specified on the drawings, splices of reinforcing bars shall provide an overlap equal to at least 30 times the diameter of the smaller bar in the splice but not less than 12 inches.

Welded wire fabric shall be overlapped one full mesh (not counting cut portions) and tied as necessary to keep the fabric in place during pouring.

13.5 PLACING

All reinforcement shall be placed as shown on the drawings, and shall be supported and tied in a manner assuring that it will not be moved during concrete placement. Tack welding of bars will not be allowed. Dimensions shown on the plans, indicating concrete cover, are the clear distance from the concrete surface to the reinforcing steel.

Reinforcement hangers and supports shall be of a type and used in such a manner that they will not be exposed or contribute to discoloration and deterioration of the concrete. On structures exceeding one cu. yd. in volume, concrete shall not be placed until the reinforcement has been inspected and approved by the technician.

MATERIAL SPECIFICATION

SD-55-PLASTIC PIPE

55.1 SCOPE

This specification covers the quality of PVC, PE, and ABS plastic pipe as specified on the drawings.

55.2 MATERIAL QUALITY

The compound used in manufacturing the pipe shall meet the requirements of one of the following materials:

- a. Polyvinyl Chloride (PVC) shall meet requirements of ASTM D-1784.

<u>Material</u>	<u>Code Classification</u>	<u>Designation</u>
Type I, Grade 1	12454-B	PVC 1120
Type I, Grade 2	12454-C	PVC 1220
Type II, Grade 1	14333-D	PVC 2110, PVC 2112, PVC 2116

- b. Acrylonitrile-Butadiene-Styrene (ABS) shall meet requirements of ASTM D-1788.

<u>Material</u>	<u>Code Classification</u>	<u>Designation</u>
Type I, Grade 2	5-2-2	ABS 1208, ABS 1210
Type I, Grade 3	3-5-5	ABS 1316
Type II, Grade 1	4-4-5	ABS 2112

- c. Polyethylene (PE) shall meet requirements of ASTM D-1248.

<u>Material</u>	<u>Code Classification</u>	<u>Designation</u>
Grade P14, Class C	IC-P14	PE 1404
Grade P23, Class C	IIC-P23	PE 2305, PE 2306
Grade P33, Class C	IIIC-P33	PE 3306
Grade P34, Class C	IVC-P34	PE 3406

The pipe shall be homogeneous throughout and free from visible cracks, holes, foreign inclusion, or other defects. The pipe shall be as uniform as commercially practicable in color, density, and other physical properties.

55.3 PIPE REQUIREMENTS

Pipe shall meet the requirements of the applicable ASTM specifications for the material as follows:

a. Polyvinyl Chloride (PVC)

1. PVC High Pressure Irrigation Pipe

(IPS) Iron Size Pipe; (SDR) Standard Dimension Ratio

D-1785 - Poly (vinyl chloride)(PVC) Plastic Pipe,
Schedules 40, 80, and 120

D-2241 - Poly (vinyl chloride)(PVC) Plastic Pipe,
(SDR-PR)

D-2672 - Bell-End Poly (vinyl chloride)(PVC) Pipe

D-2740 - Poly (vinyl chloride)(PVC) Plastic Tubing

2. PIP (Plastic Irrigation Pipe) - sized pipe shall meet the requirements of ASTM D-2241.

(a) The outside diameter, wall thicknesses, and tolerances given in Table 2 of SCS National Engineering Standard 430-DD for High Pressure Pipe (80 psi +) or 430-EE for Low Pressure Pipe

(b) The sustained pressure test shall not be required.

(c) The burst pressure tests shall be performed in accordance with the procedures listed in ASTM D-2241 or D-2282 and meet the applicable requirements given in these ASTMs or those listed in SCS National Engineering Handbooks for the SDR's currently not included in ASTM D-2241 or D-2282.

b. Acrylonitrile-Butadiene-Styrene (ABS)

(IPS) Iron Size Pipe in (SDR) Standard Dimension Ratio

D-1527 - Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe,
Schedules 40 and 80.

D-2282 - Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe,
(SDR-PR)

PIP (Plastic Irrigation Pipe) - sized pipe shall meet the requirements of ASTM D-2282 with the exceptions noted above for PIP (PVC).

c. Polyethylene (PE)

- D-2104 - Polyethylene (PE) Plastic Pipe, Schedule 40
- D-2239 - Polyethylene (PE) Plastic Pipe (SDR-PR)
- D-2447 - Polyethylene (PE) Plastic Pipe, Schedules 40 and 80
Based on Outside Diameter
- D-2737 - Polyethylene (PE) Plastic Tubing
- D-3035 - Polyethylene (PE) Plastic Pipe (SDR-PR) Based on
Controlled Outside Diameter

55.4 FITTING AND COUPLER REQUIREMENTS

a. High Pressure Pipe (80 psi or greater)

All fittings and couplers shall meet or exceed the same strength requirements as that of the pipe and be made of material that is recommended for use with the pipe.

Listed below are the ASTM standard specifications for fittings presently suitable for use with IPS-sized pipe and inside diameter controlled PE pipe covered by this specification.

- D-2466 - Socket-type Poly (vinyl chloride)(PVC) Plastic Pipe Fittings, Schedule 40.
- D-2467 - Socket-type Poly (vinyl chloride)(PVC) Plastic Pipe Fittings, Schedule 80.
- D-3036 - Poly (vinyl chloride)(PVC) Plastic Line Couplings, Socket-type.
- D-2468 - Socket-type Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe Fittings, Schedule 40.
- D-2469 - Socket-type Acrylonitrile-Butadiene-Styrene (ABS) Plastic Fittings, Schedule 80.
- D-2609 - Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe.
- D-2610 - Butt Fusion Polyethylene (PE) Plastic Pipe Fittings, Schedule 40 (for IPS pipe).
- D-2611 - Butt Fusion Polyethylene (PE) Plastic Pipe Fittings, Schedule 80 (for IPS pipe).
- D-2683 - Socket-type Polyethylene Fittings for SDR 11.0 Polyethylene Pipe.
- D-3139 - Standard Specification for Plastic Pressure Pipe using Flexible Elastomeric Seals.

Plastic Irrigation Pipe (PIP) shall be furnished with belled ends or separate couplers and fittings which are suitable for joining

the pipe and appurtenances by solvent cement, rubber gaskets, or other methods recommended by the pipe manufacturer. Such fittings and joints shall be capable of withstanding working pressure equal to or greater than that for the pipe.

1. Solvent Cement Joints

Solvent for solvent cement joints shall conform to ASTM Specification D-2564 for PVC pipe and fittings, and D-2235 for ABS pipe and fittings.

Solvent cement joints shall be used and constructed in accordance with the recommendations of the pipe manufacturer.

Field manufacture or fabrication of belled end joints will not be allowed. The stab or spigot end of the pipe shall be marked with suitable depth markers.

2. Rubber Gasket Joints

Rubber gasket joints shall conform to ASTM Specification D-3139 or SDR requirements on pressure rating of the pipe. The stab or spigot end of the pipe shall be marked with suitable depth markers.

b. Low Pressure Irrigation Pipe

All fittings and couplers shall equal or exceed the same pressure rating of the pipe with which they are used. They shall be made of material that is recommended for use with the pipe.

The pipe shall be furnished with belled ends or separate couplers and fittings which are suitable for joining the pipe and appurtenances by means of a solvent cement joint, rubber gaskets type joint, or other methods recommended by the pipe manufacturer. Bell-ends, sleeves, or plastic fittings shall be made from the same type of plastic material as the pipe.

Fittings or belled ends for solvent cement joints shall have tapered sockets with socket lengths of at least 40 percent of the inside diameter of the pipe or 3 inches, whichever is greater. Sleeves for clamp-type joints shall provide a minimum of 4 inches of overlap between the sleeve and the pipe or fitting.

1. Solvent Cement Joints

Solvent for solvent cement joints shall conform to ASTM

2. Rubber Gasket Joints

Rubber gasket joints shall conform to the following and to SCS National Engineering Standard 430-EE:

- (a) Push-On Type - A joint in which an elastomeric (rubber) ring gasket is compressed in the annular space between a bell end or socket and spigot end of pipe.
- (b) Mechanical Joint - A joint in which a seal or gasket is compressed by application of pressure through a mechanical device. The pipe spigot shall have a wall thickness sufficient to withstand without deformation or collapse the compressive force exerted when the fitting is tightened.
- (c) Lubricant - If required, shall be suitable for lubricating the parts of the joints in the assembly. The lubricant shall have no deteriorating effects on the gasket and pipe materials.

c. Potable Use Pipeline

Pipelines specified on the drawings for use as potable water lines shall be constructed with "National Sanitation Foundation" (NSF) approved materials.

All fittings and couplers shall meet or exceed the same strength requirements as that of the pipe and be made of material that is recommended for use with the pipe. ASTM Standard Specifications for fittings and joint sealing requirements acceptable for use with portable water pipelines shall be as provided in part 55.4a of this specification.

55.5 PIPE MARKING REQUIREMENTS

Pipe specified for use on any pipeline project shall be labeled in the manner as provided by the applicable ASTM Specification and shall carry the following markings:

- a. Nominal pipe size (example 2 in.)
- b. Type of plastic pipe material prescribed by the designation code for the pipe being used (example PVC 1120, ABS 2110, PE 2305).

- c. Pipe pressure designation by one of the following:
1. Standard Dimension Rate (SDR) - SDR17, SDR21, etc.
 2. Schedule -40, 80, 120, etc.
 3. Pressure rating in pounds per square inch for water at 23°C (73°F.) - 120 psi, 120T psi, etc.
- d. ASTM Designation of pipe being used (example ASTM D-2241).
- e. Manufacturer's name (or trademark) and code number.
- f. National Sanitation Foundation Marking (NSF) if pipe is to transport portable water.
- g. For ABS pipe - pipe produced by simultaneous multiple coextrusion shall be marked "Coe X".

Henry Harrison

Haskins Co.

Sec 12 T5N R18E

Charles Price Farmstead

Preliminary R. sk

Survey

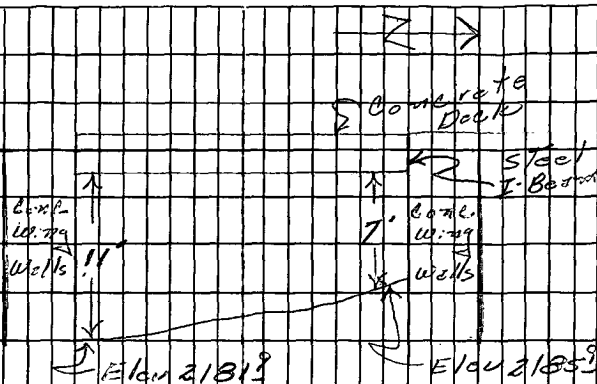


Soil Conservation
Service

Handwritten signature
S.C.T.

Phone 837-2242

Station	B.S.	H.I.	F.S. or grade rod	Elev. or planned elev.
Dam Elev		2475	Approx	
Concrete Bridge		38' long	Aug Depth 9'	
		on Haskins Co Highway		
Burn			50	21950
Trailer House			05	21995
House			00	21000
Channel at Bridge			181	21819
Bent #1	50	26000		25950



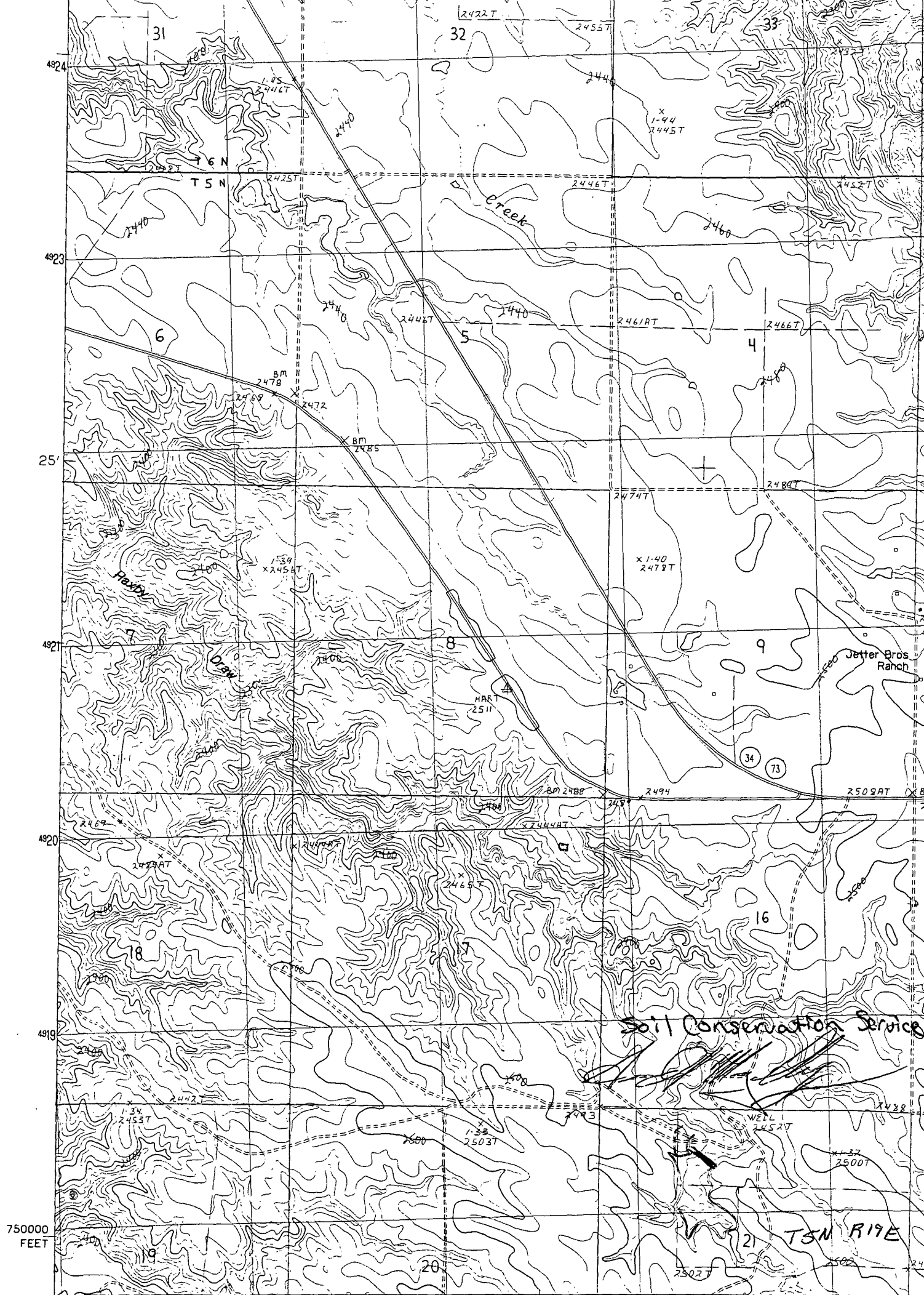
Barren Approx 900' South of Bridge

Trailer House Approx 1300' South of Bridge

House Approx 1200' South of Bridge

Bottom of Channel at Bridge

Approx Elevation 2295 Top Deck



REPORT ON
WATER PERMIT APPLICATION NO. 2219-2
HENRY HANSON
December 30, 1992

Water Permit Application No. 2219-2 has been filed by Henry Hanson to impound 95 acre-feet of water in a dam. The dam is to be located in the NE 1/4 NW 1/4 of Section 21-T5N-R19E, in Haakon County. The water will be used for livestock watering.

Discussion:

The Hanson Dam will be classified as a Category 3, Low Hazard dam. It has been designed by the Soil Conservation Service (SCS). The plans and specifications for the Hanson Dam have been reviewed and accepted and will be officially approved when the Water Permit Application No. 2219-2 is approved.

The dam will be 18.5 feet high with a normal storage capacity of 95 acre-feet with a reservoir level at the spillway elevation, and a maximum storage capacity of 145 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 Hanson Dam is designed to have a 140 foot wide earthcut spillway with 3 feet of available head. The Hanson Dam will have a drainage area of 1.52 square miles. The SCS Dams2 flood routing model routes the 25 year frequency event of 847 cfs through the spillway at a depth of 1.87 feet. The capacity of the 140 foot wide spillway with 3 feet of head is approximately 1900 cfs.

The annual yield for this drainage with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be approximately 50 acre-feet.

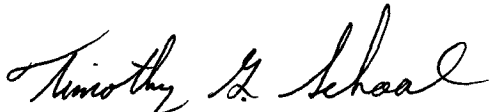
The Hanson Dam will be located on a tributary to Upper Deep Creek and will be located approximately 12 miles upstream of the confluence of Upper Deep Creek with the Cheyenne River. There are no existing Water Permits/Rights on Upper Deep Creek.

Conclusions:

1. Water Permit Application No. 2219-2 should be approved since unappropriated water is available and approval will not have any adverse effects on existing Water Permits/Rights.

page 2
Application No. 2219-2

2. If approved, the low flow bypass requirement for downstream domestic use should be a qualification on Water Permit Application No. 2219-2.



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. 2219-2, Henry Hanson

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Environment and Natural Resources concerning Water Permit Application No. 2219-2, Henry Hanson, HC 2 Box 29, Philip, SD 57567.

The Chief Engineer is recommending APPROVAL of Application No. 2219-2 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. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
2. Approval of Water Permit No. 2219-2 authorizes storage of up to 95 acre-feet of water annually.

See report on application for additional information.


for JOHN HATCH, Chief Engineer
January 12, 1993



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

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

January 14, 1993

Henry Hanson
HC 2 Box 29
Philip, SD 57567

Dear Mr. Hanson:

Water Permit Application No. 2219-2 for livestock watering 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 Pioneer Review printed at Philip, SD (Ph # 859-2516). 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

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

January 14, 1993

The Pioneer Review
Box 788
Philip, SD 57567

ATTENTION: Legal Department

Enclosed is a Notice of Hearing on Application No. 2219-2 to be published twice. Please publish the first notice on January 21, 1993, 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 Henry Hanson, HC 2 Box 29, Philip, SD 57567 (Ph # 544-3200).

A copy of BOTH publications must be SENT to the WATER RIGHTS DIVISION. IMMEDIATELY return the FIRST publication with the FIRST Transmittal form on the bottom of this page. The first copy is needed to check the publication for errors so any corrections can be made in the second publication. Publication errors can invalidate the public notice and cause the applicant costly delays.

Please be sure the SECOND publication is returned IMMEDIATELY with the enclosed Proof of Publication form. DO NOT WAIT until the end of the month or the billing cycle. No action may be taken on the permit application until proof of publication has been received.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

FIRST TRANSMITTAL NOTICE

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

No. _____

Date _____

We are in receipt of your letter of _____ enclosing Notice of Hearing to Appropriate Water by Application No. _____ 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 January 21, 1993, with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF HEARING on Application No. 2219-2 to Appropriate Water

Notice is given that Henry Hanson, HC 2 Box 29, Philip, SD 57567 has filed an application for a water permit to impound 95 acre-feet of water by constructing a dam. The dam site is to be located in the NE 1/4 NW 1/4 Section 21 and will impound water in the E 1/2 NW 1/4 Section 21; all in T5N-R19E. Water is to be stored annually to an approximate elevation of 2485 feet mean sea level and is to be used for livestock watering.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2219-2 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. Unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation, the Water Management Board will NOT CONDUCT a HEARING to consider this application and the chief engineer will issue the permit as recommended. Petitions filed in support of the application will NOT require the Board to hear the application.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Division, 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 February 19, 1993. 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.

If a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation, the Board will consider this application at 10:00 a.m., March 3, 1993, Floyd Matthew Training Center, Joe Foss Building, 523 East Capitol, Pierre, SD. If a hearing is held, the Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. The March 3, 1993, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing the application. The request for an automatic delay must be filed by February 19, 1993.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by February 19, 1993, at the above Water Rights Division address to request copies of information pertaining to this application, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15. Robert E. Roberts, Secretary, Department of Environment and Natural Resources.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County Haakon) ss.

I, Kelly Penticoff

certify that the attached printed Notice was taken
from the Pioneer Review

A newspaper which during the whole time of publication of
said notice herein after stated, has been and is printed and
published in the legal section

_____ of Pioneer Review

County of Haakon and State of South Dakota;
that the said notice was published in said newspaper on the
following two dates:

January 21, 1993

January 28, 1993

Kelly Penticoff
(Signature)

Legal Advertising Manager

(Title)

3/3/93

(Date Signed)

Cost of Printing: \$55.60



Notice of Hearing on Application No. 2219-2 to Appropriate Water

Notice is given that Henry Hanson, HC 2 Box 29, Philip, SD 57567 has filed an application for a water permit to impound 95 acre-feet of water by constructing a dam. The dam site is to be located in the NE1/4NW1/4 Section 21 and will impound water in the E1/2 NW1/4 Section 21; all in T5N-R19E. Water is to be stored annually to an approximate elevation of 2485 feet mean sea level and is to be used for livestock watering.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2219-2 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. Unless a petition is filed opposing the application or the applicant files a petition contesting the chief engineer's recommendation, the Water Management Board will NOT CONDUCT a HEARING to consider this application and the chief engineer will issue the permit as recommended. Petitions filed in support of the application will NOT require the Board to hear the application.

Any person interested in opposing or supporting this application must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Division, 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 February 19, 1993. 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.

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This application is made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.

Robert E. Roberts, Secretary
Department of Environment
and Natural Resources
[Publish January 21 & 28, 1993]



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

MAR 26 1993

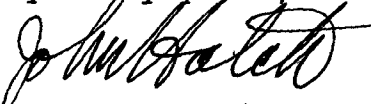
Henry Hanson
HC 2 Box 29
Philip, SD 57567

Dear Mr. Hanson:

Enclosed is Water Permit No. 2219-2 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,

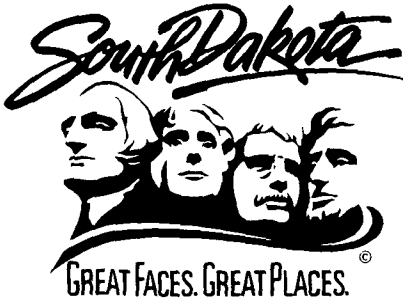


JOHN HATCH, Chief Engineer
Water Rights Division
605 773-3352

enclosures

PLEASE NOTE: Certain changes can be made in your permit within the five year construction period, usually without affecting the priority date provided an application to amend your permit is made within the five year period - i.e. changes in location or number of diversion points (wells) or location of land to be irrigated. Well locations for wells into the same aquifer can be moved up to 660 feet without application.

Applications to amend a permit after the five year construction period will be assigned a new priority date. Applications to change water sources, to add lands or increase original diversion rates, if approved will usually receive the date of the new application as a priority date regardless of the five year construction period.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

JUL 2 1996

2318-2

Henry Hanson
HCR 2, Box 29
Philip, SD 57567

Dear Mr. Hanson:

Enclosed is Water License No. 2318-2 and Receipt No. 414677 for \$50.00 which was assessed for an investigation and issuance of the license. Water License No. 2318-2 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.

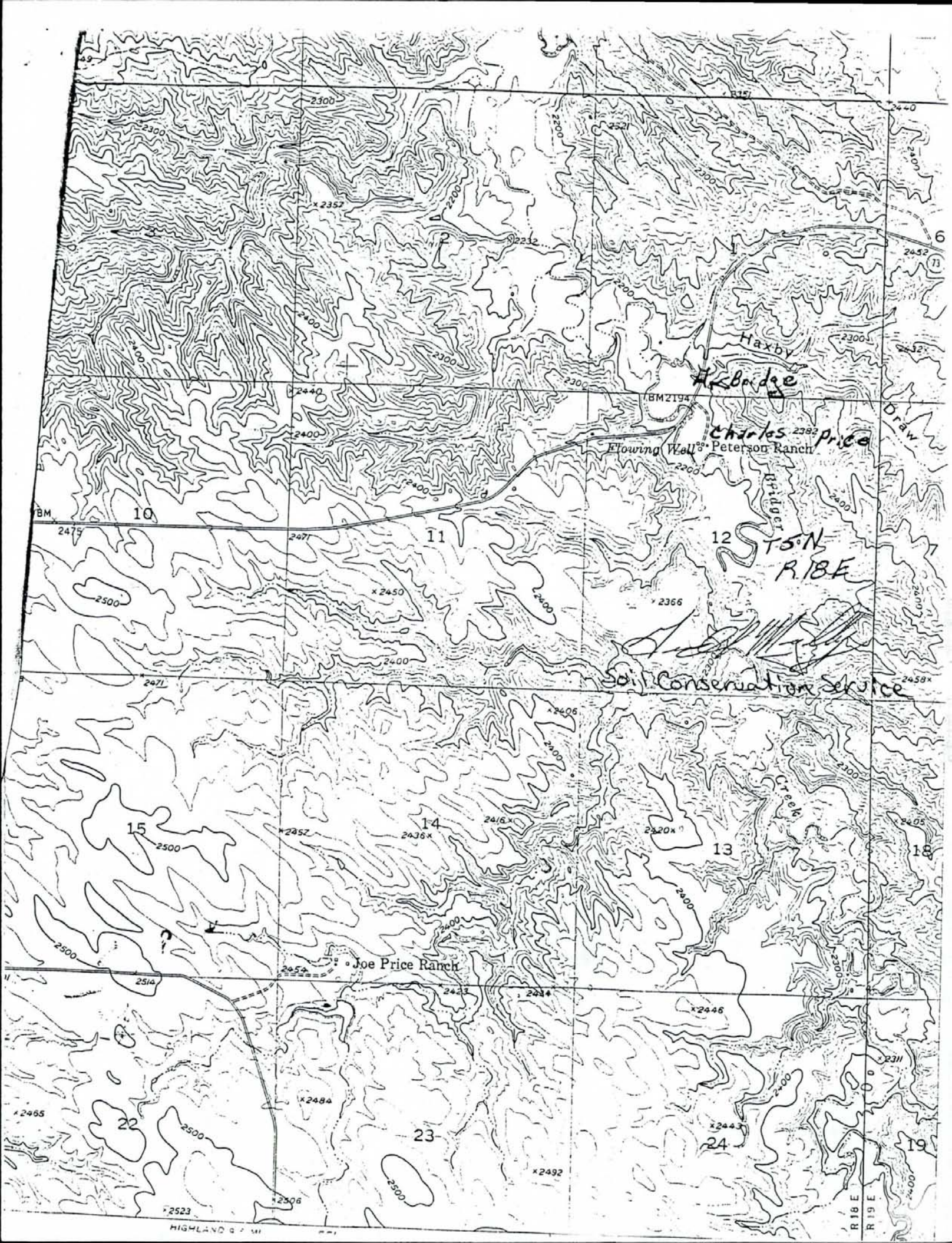
Very truly yours,

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

gm
enclosures

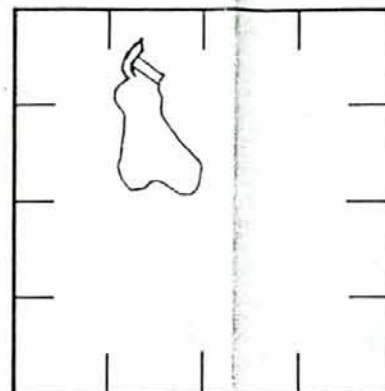
NOTE: The applicable portions of Water Permit No. 2219-2 have been incorporated into this Water License No. 2318-2.

Topographic map showing a section of the TSN R19E. The map includes a grid with section numbers 31, 32, 4, 5, 6, 8, 9, 16, 18, 19, and 20. Handwritten annotations include "Creek", "Hobby", "Jetter Bros. Ranch", "Soil Conservation Service", and "TSN R19E". Survey points are marked with "X" and labeled with numbers like 2445T, 2472, 2478, 2485, 2494, 2509AT, 2511, 2503T, 2501, and 2502T. A scale bar at the bottom left indicates 75000 FEET.



STRUCTURE DATA

DRAINAGE AREA	ANNUAL YIELD	PEAK RUNOFF	EMERG. SPLWY. CAPACITY	WATER DEPTH	SURFACE AREA	SEDIMENT STORAGE	TOTAL STORAGE
ACRES	AC. FT.	25-YR.	C.F.S.	FEET	ACRES	AC. FT.	AC. FT.
974	48.7	847	724	15.4	12.73	7.23	94.8

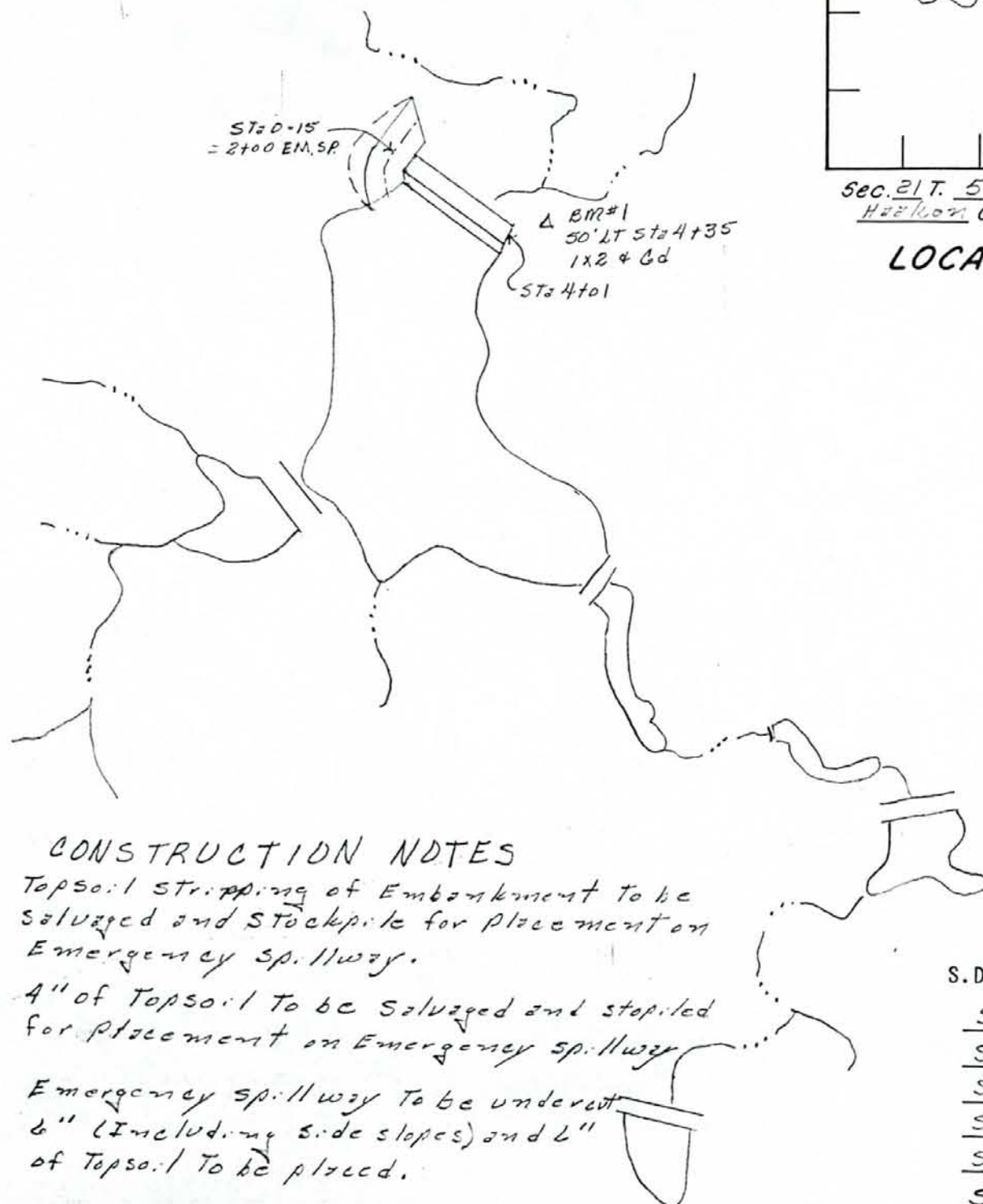


Sec. 21 T. 511 R. 19 E
Hakon County

LOCATION

TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
EARTH FILL		
Embankment (Including 5% Settlement)	Cu Yd	8542
Stripping (0.5') Salvage	Cu Yd	541
Core Trench	Cu Yd	509
Top Soil Placement Em SP	Cu Yd	918
EXCAVATION		
Emergency Spillway	Cu Yd	8426
Core Trench	Cu Yd	509
Stripping	Cu Yd	541
Undercut Em. SP. for Topsoil (0.5')	Cu Yd	918
Stripping Em. SP. (0.5') Salvage	Cu Yd	606
STOCKPIPE INSTALLATION (see Detail)	Each	1

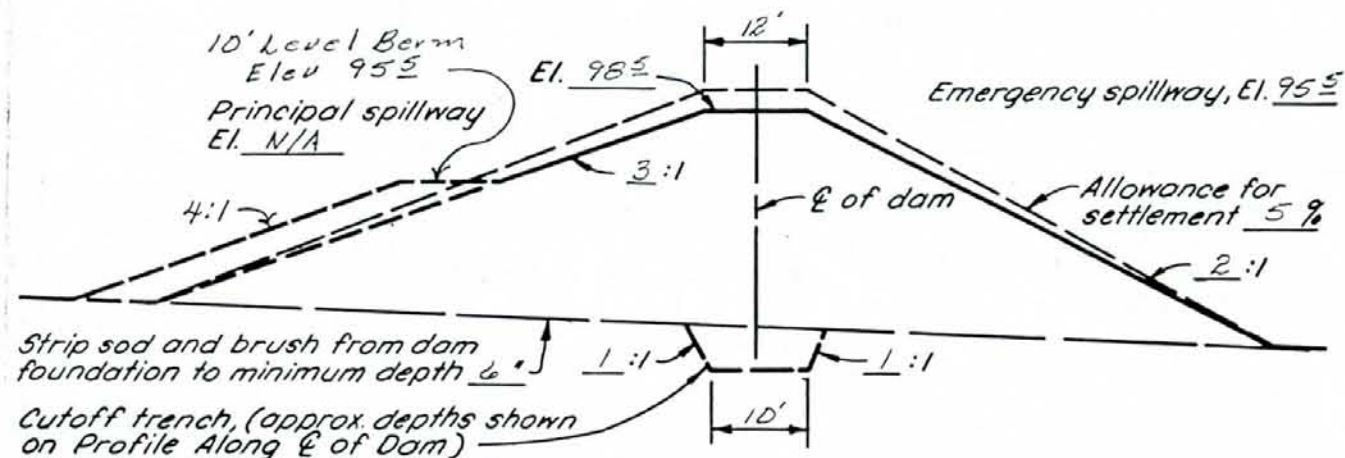


CONSTRUCTION NOTES

1. Topsoil Stripping of Embankment to be salvaged and stockpiled for placement on Emergency Spillway.
2. 4" of Topsoil to be salvaged and stockpiled for placement on Emergency Spillway.
3. Emergency Spillway to be undercut 6" (Including side slopes) and 6" of Topsoil to be placed.

SKETCH PLAN OF DAM AND RESERVOIR AREA

Approximate scale 1" = 500'



TYPICAL CROSS SECTION OF DAM

S.D. CONSTRUCTION AND MATERIAL SPECIFICATIONS:

- SD-4 Stripping
- SD-5 Excavation
- SD-7S Earth Fill Class S
- SD-12B Concrete for Minor Structures
- SD-13 Steel Reinforcement
- SD-16 Salvaging & Spreading Topsoil
- SD-55 Plastic Pipe

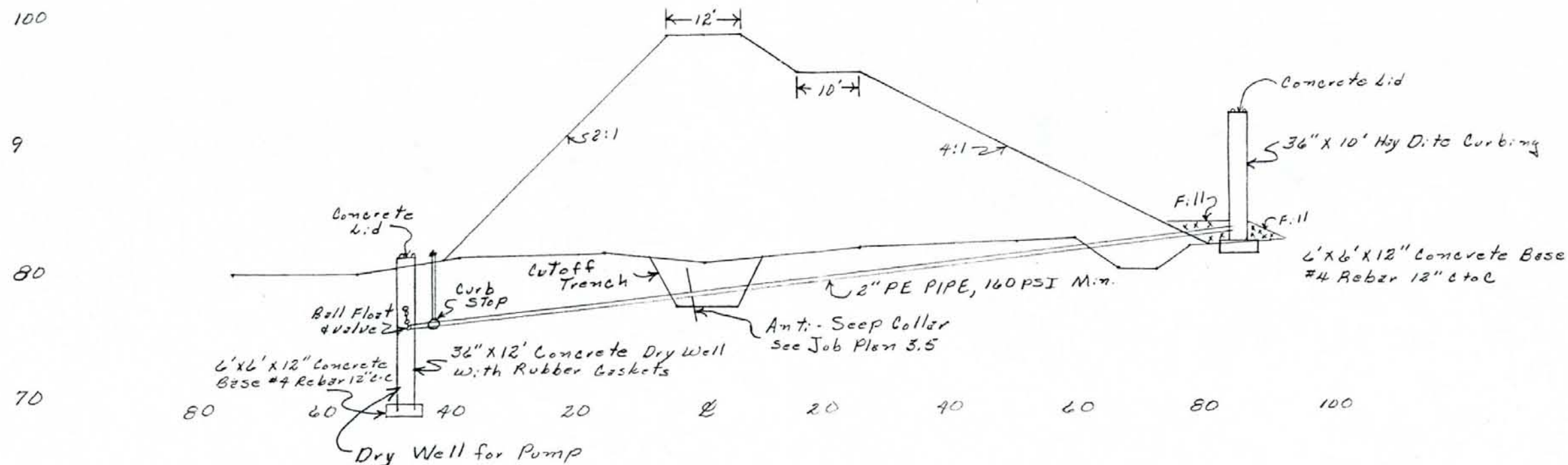
EARTH DAM

OPERATOR: HENRY HANSON

CONSERVATION DISTRICT: HAKON

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed: G.L. Meryly 11/92	Date: 11/92	Approved: [Signature]
Drawn: G.L. Meryly 11/92	Title: [Signature]	
Traced: _____	Sheet: No 1	Drawing No. _____
Checked: _____	of 4	



PIPELINE INSTALLATION
Station 2+00

CONSTRUCTION NOTES

1. Pipeline Trench to be Tamped
2. Fill ground Collector to be SUBSIDIARY TO OTHER Contract Items.

ESTIMATE OF QUANTITIES

Item No	Description	Unit	Quantity	As Built
1	2" PE Pipe 160 PSI	L.F.	130	
2	6' x 6' x 12" Concrete Base	C.Y.	2.7	
3	#4 Rebar	Lbs	92	
4	36" Hay Dote Curbing	L.F.	10	
5	36" Concrete Lid	Each	2	
6	36" Concrete, ASTM C-76	L.F.	12	
7	Curb Stop	Each	1	
8	Butyl Rubber Diaphragm	Each	1	

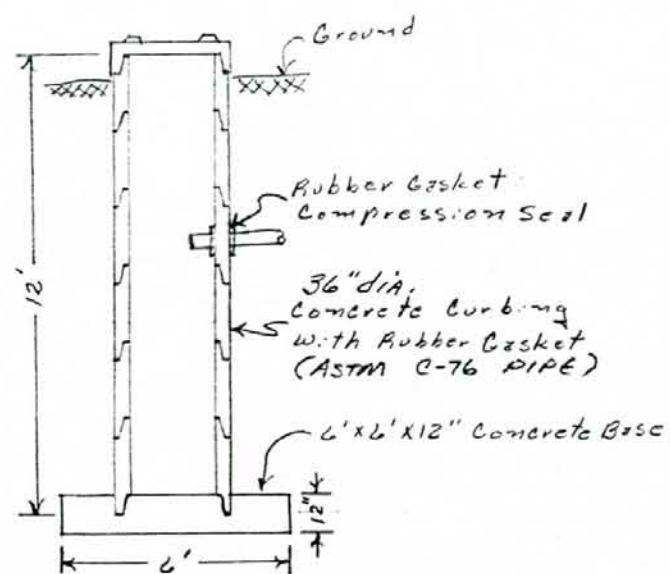
Stockpile thru Embankment

HENRY HANSON
FARM POND

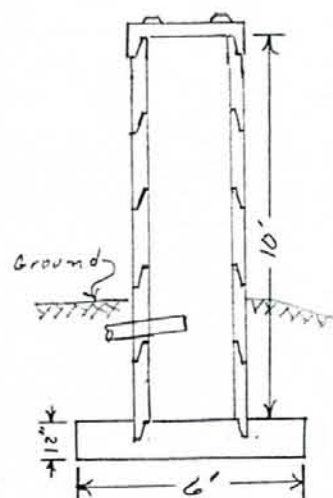
Sec 21 T5N R19E Hanson Co.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

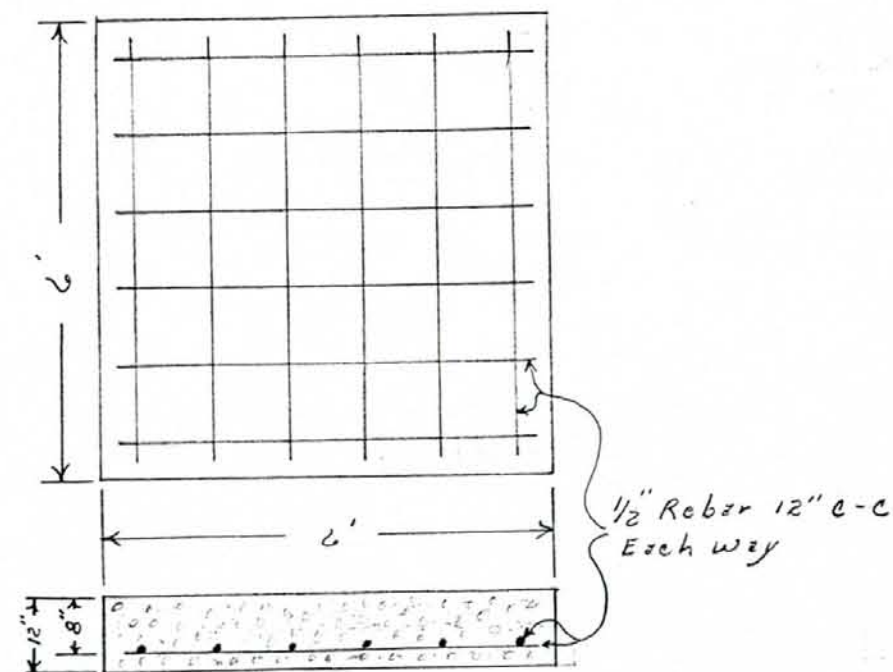
Designed <u>G.L. Mangelky</u>	Date <u>11/92</u>	Approved by _____
Drawn <u>G.L. Mangelky</u>	Date <u>11/92</u>	Title _____
Traced _____	Sheet _____	Drawing No. _____
Checked _____	No <u>2</u>	of <u>4</u>



TYPICAL DRY WELL
scale: 1" = 5'



TYPICAL COLLECTOR
scale: 1" = 5'



TYPICAL CONCRETE BASE
scale: 1" = 2 1/2'

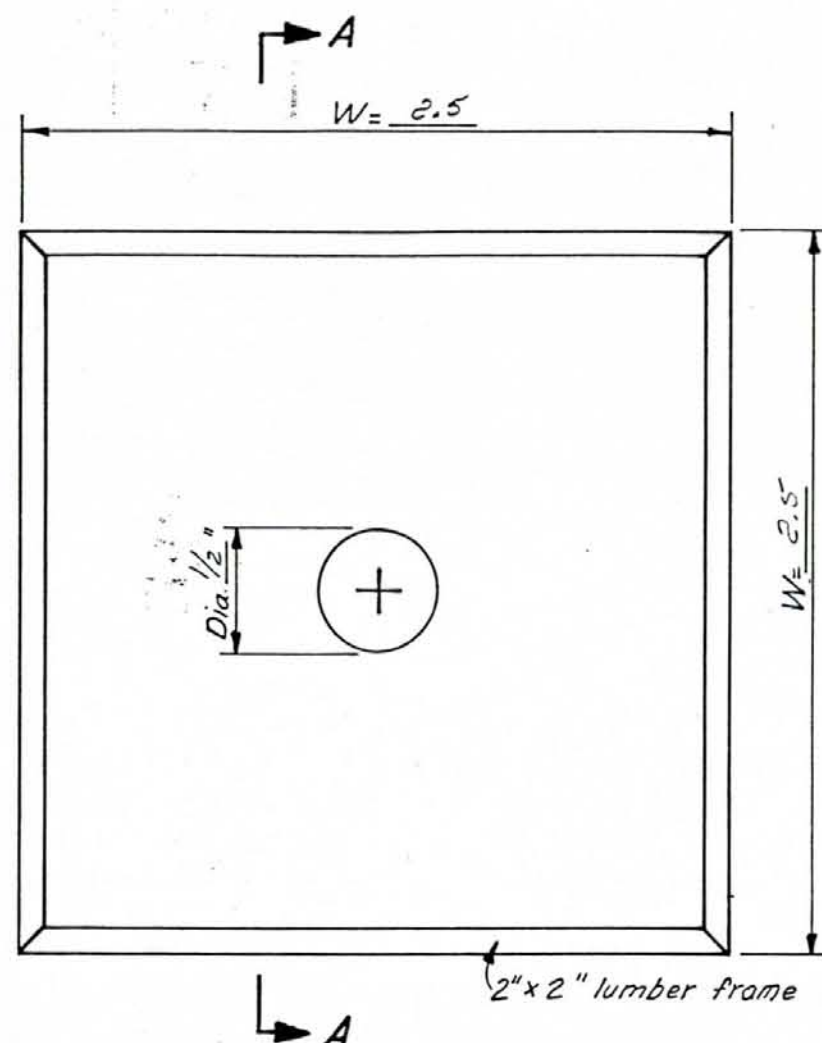
HENRY HANSON
Collector & Dry Well

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

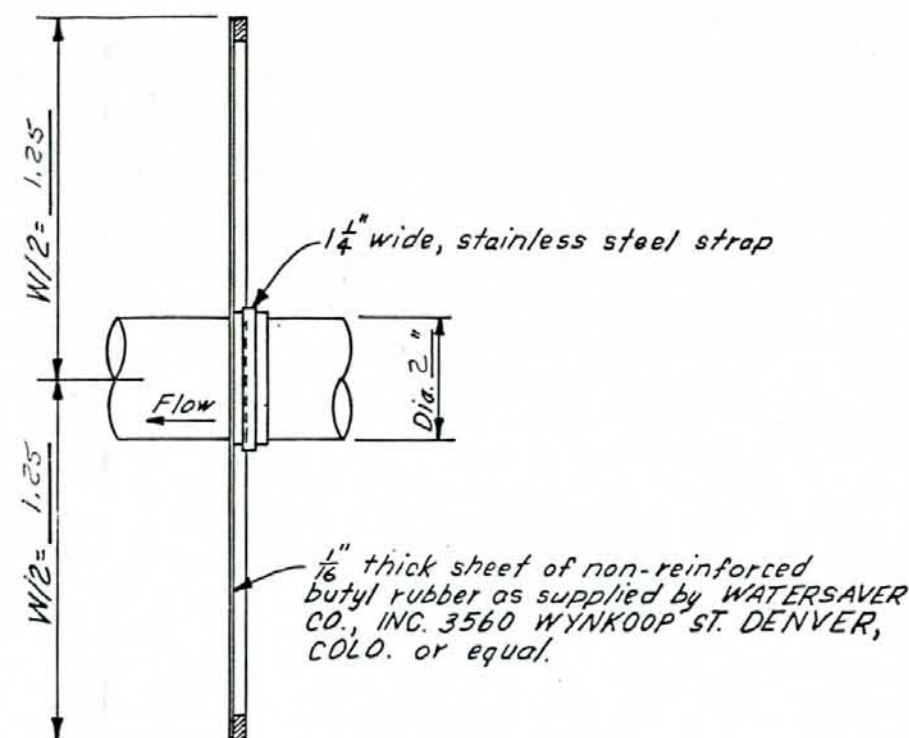
Designed <i>C. L. Mayeally</i> 10/92	Date 10/92	Approved by _____
Drawn <i>C. L. Mayeally</i> 10/92	Title _____	_____
Traced _____	Sheet No. 3	Drawing No. _____
Checked _____	of 4	

TABLE OF QUANTITIES

PIPE DIA. INCHES	"W" FEET	BUTYL SHEET SQ. FT.	STAINLESS STEEL STRAP	LUMBER BD. FT.
1 TO 6	2.5	4	1	4
6 TO 15	5	25	1	7



ELEVATION



SECTION A-A

NOTES:

1. COAT PIPE AT COLLAR LOCATION WITH BUTYL RUBBER ROOF PATCH CEMENT SEALER OR OTHER BUTYL RUBBER SEALER. (DO NOT USE ASPHALT ROOF PATCH).
2. COMPLETED INSTALLATION MUST BE WATERTIGHT.
3. FORCE BUTYL RUBBER SHEET OVER UPSTREAM END OF PIPE AND OVER BUTYL ROOF SEALER.
4. INSTALL 1 1/4" WIDE STAINLESS STEEL STRAP CLAMP AROUND PIPE OVER BUTYL RUBBER SHEET AND TIGHTEN UNTIL SEALER IS FORCED OUT.
5. STAPLE BUTYL RUBBER SHEET TO LUMBER FRAME.
6. FOR PIPE DIAMETERS OF 1" TO 6" CUT A HOLE (CENTERED) IN BUTYL RUBBER SHEET, APPROX. 1/2" DIAMETER, AND FOR PIPE DIAMETERS 6" TO 15" CUT HOLE 3" SMALLER THAN DIAMETER OF PIPE AND FORCE BUTYL RUBBER SHEET OVER UPSTREAM END OF PIPE AND OVER BUTYL ROOF SEALER.

BUTYL RUBBER DIAPHRAGM FOR 1" DIA. TO 15" DIA. PIPE

OPERATOR: HENRY HANSON

CONSERVATION DISTRICT: Haskon

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed <u>G. L. M. Kelly</u>	Date <u>10/92</u>	Approved by _____
Drawn _____		Title _____
Traced _____		Title _____
Checked _____	Sheet <u>4</u>	Drawing No. _____
	of <u>4</u>	

JOB PLAN 3.5 (REVISED 11-76)