

WATER PERMIT NO. 2582-2

Name of Applicant: Travis H Hendricks

Address: PO Box 115, Vivian SD 57556

Phone: 605 683-6202

Amount of Water Claimed: 150 AF

Total Acres: na

Source of Water Supply: runoff

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

County: Jones

Type of Waste Disposal System:

Location: 10 miles southeast of Draper

PRIORITY

Date Received: 3-16-06

Application/License Fee: \$275

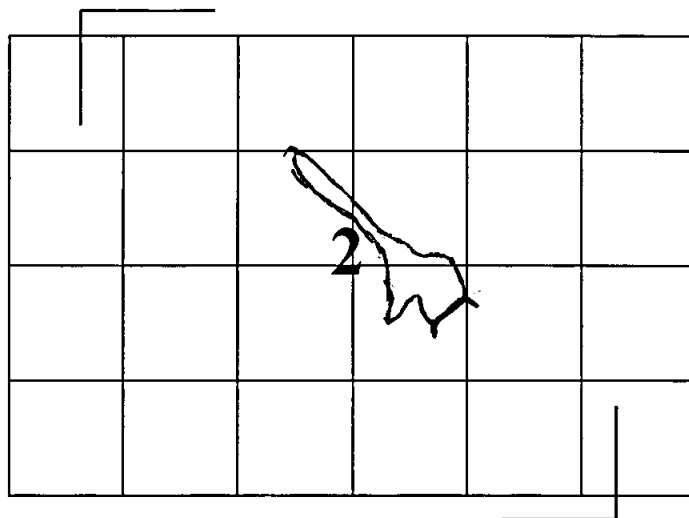
Corrected Application Received:

Period of Annual Use: January 1 – December 31

Remarks: rebuild existing structure named Liggett Dam

Diversion Point: NE ¼ SE ¼ Sec 2-T3S-R31E

Water Impounded: NE ¼ SE ¼, SW ¼ NE ¼, SE ¼ NW ¼ Sec 2-T3S-R31E



Depth of Well: NA

Well Driller:

Remarks:

Type of Map: plat

Prepared by: David F Konechne, PE

Reviewed and the Number Assigned on: 3-21-06

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

Permit No. 2582-2
White 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, **November 4, 2009**, made a thorough examination of the water use system constructed by **Travis H. Hendricks** of **PO Box 115, Vivian, SD 57556** holder of Permit No. **2582-2**, bearing the priority of **March 16, 2006** authorizing the storage of **150** acre-feet of the waters of **runoff** for **fish & wildlife production and livestock water** purposes, in **Jones** County.

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

A. Works used to divert the water:

A 22.5 ft. high earthen dam with a normal storage capacity of 150 ac-ft. of water

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

N/A

C. Works used to apply water to beneficial use:

A 22.5 ft. high earthen dam with a normal storage capacity of 150 ac-ft. of water

The system is in the following condition **good**. The point of diversion is located **2200 ft. north & 1200 ft. west of the SE corner of Sec. 2-T3S-R31E (NE ¼ SE ¼) (Lat. 43.812868, Long. -100.371494)**. The works are capable of storing **150** acre-feet of water which is to be used for **fish & wildlife propagation and livestock water**. Water has been put to beneficial use to the maximum extent as follows:

A 22.5 ft. high earthen dam with a normal storage capacity of 150 ac-ft. of water

and the license should be issued for **150** acre-feet of storage.

Applicable permit qualifications have been complied with: Yes **X**

Exceptions to compliance are: **none** Date Report Completed: **March 4, 2010**



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

REPORT ON INSPECTION OF PERMIT NO. 2582-2

DATE OF INSPECTION: **November 4, 2009**

NAME & ADDRESS OF INSPECTION CONTACT/ **Travis H. Hendricks, PO Box 115, Vivian, SD 57556**

RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE: **owner**

NAME & ADDRESS OF PERMIT HOLDER: **same**

DIVERSION POINT LEGAL LOCATION: 2200 ft. north & 1200 ft. west of the SE corner of Sec. 2-T3S-R31E (NE ¼ SE ¼) (Lat. 43.812868, Long. -100.371494)

DAM INFORMATION:

- 1) Height to crest **22.5** feet
- 2) Height to primary spillway **16.5** feet
- 3) Height to secondary spillway **19.5** feet
- 4) Crest width **12** feet
- 5) Crest length **500** feet
- 6) Spillway length **XXX** feet
- 7) Spillway width **100** feet
- 8) Approx. storage (Normal) **150** acre-feet
- 9) Approx. storage (Maximum) **390** acre-feet
- 10) Date constructed: **2006**

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**

Water Permit Application No. 2582-2



0 0.25 0.5 1 Miles



Timothy G. Schaal 3/4/10

Timothy G. Schaal, P.E.
Natural Resources Engineering Specialist
SD DENR, Water Rights Program



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

APR 23 2010

2582-2

Travis H Hendricks
PO Box 115
Vivian SD 57556 0115

Dear Mr. Hendricks:

Enclosed is your Water License No. 2582-2. The License is the final document which completes the process of obtaining a water right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

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

Sincerely,

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

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 2582-2

(1) Travis H Hendricks, PO Box 115, Vivian SD 57556 made Application No. 2582-2, March 16, 2006 for a water permit to impound 150 acre feet of runoff water in Liggett Dam, Jones County, South Dakota for fish & wildlife propagation and livestock watering purposes. Permit No. 2582-2, with a priority date of March 16, 2006 was approved May 1, 2006 and issued to the applicant for diversion of water with construction of the storage dam to be completed on or before May 1, 2011 and the application to beneficial use of said water on or before May 1, 2015.

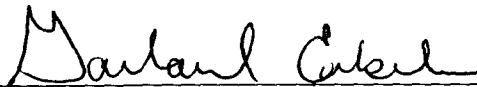
(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the storage dam and is entitled to impound 150 acre feet of water with sufficient water annually to maintain the water level to the outlet elevation. The location of Liggett Dam (spillway) is 2,200 feet north and 1,200 feet west of the SE corner of Section 2, T3S, R31E (NE ¼ SE 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 Travis H Hendricks, PO Box 115, Vivian SD 57556 the holder and/or owner of Water Right No. 2582-2 is issued a license to appropriate water, the right to impound 150 acre feet of water in Liggett Dam with a priority date of March 16, 2006 from the location specified in (2) of this license for the purpose of fish & wildlife propagation and domestic livestock watering purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 2582-2 and subject to the following qualifications:

- Water Right No. 2582-2 authorizes a dam with a storage capacity of 150 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
- Low flows as needed for downstream domestic use, including livestock watering and prior water rights must be bypassed.



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

APR 23 2010

date



SD-Form - 1585 V1
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>2582-2</u> (office use only) Hydrologic Unit <u>10140204</u>
	Basin <u>White River</u>
	Newspaper <u>Murdo Coyote</u>

RECEIVED
MAR 16 2006
WATER RIGHTS
PROGRAM

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

Check use(s) of water:

- | | | | |
|--|---|--|--|
| ☐ Municipal | ☐ Suburban Housing | ☐ Recreational | ☐ Institutional |
| ☐ Rural Water System | ☐ Commercial | ☒ Fish & Wildlife | ☐ Geothermal Heat |
| ☒ Domestic (over 18 gpm) | ☐ Industrial | ☒ Other <u>Livestock use</u> | |

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

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.) _____

- Name of Applicant Travis H. Hendricks Phone (605) 683-6202
(check one) ☐ Owner ☐ Tenant lessee
Mailing Address RR-1 Box 21 PO Box 115 Vivian State SD 57556
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed _____ *CFS or _____ **GPM 150.00 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Dry draw runoff
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Jones
The dam grade lies in the NE1/4 SE1/4 Section 2, Township 3S, Range 31E. Water Impounded:
NE1/4 SE1/4, SW1/4 NE1/4, SE1/4 NW1/4 Sec 2-T3S-R31E.
- County or counties where water will be used Jones
- Annual period during which water is to be used year round Jan 1-Dec 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)

This project is the repair of an existing structure named Liggett Dam that was built in 1937 under WPA Project #1490. The existing concrete spillway failed in the 1970's and the dam has lost its ability to retain water. The dam grade will be rebuilt with a new primary spillway installed along with a 100' emergency spillway constructed. Engineering plans are included with this application.

STATE OF SOUTH DAKOTA)

County of Jones

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, Travis H. Hendricks, 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 Travis Hendricks

Subscribed and sworn to before me this 13 day of March 20 06

JOSEPH E. NICHOLS



Joseph E. Nichols
Notary Public signature

SOUTH DAKOTA
WATER PERMIT NO. 2582-2

Date of first receipt of application March 16, 2006.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2582-2 to Travis H Hendricks, PO Box 115, Vivian SD 57556 authorizing the construction of the dam and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 2582-2 authorizes impoundment of 150 acre-feet of water from runoff by reconstructing Liggett Dam located in the NE ¼ SE ¼ Section 2 with water impounded in the N ½ SE ¼, SW ¼ NE ¼, SE ¼ NW ¼ Section 2; all in T3S-R31E.
2. The water appropriated shall be used for the purpose of fish and wildlife propagation and livestock water purposes and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 2582-2 is May 1, 2006.
5. The date from which applicant may claim right is March 16, 2006.
6. One-fifth of the construction is to be completed on or before November 1, 2008.
7. All construction is to be completed on or before May 1, 2011.
8. Water is to be put to beneficial use on or before May 1, 2015.
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. 2582-2 authorizes a dam with a storage capacity of 150 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

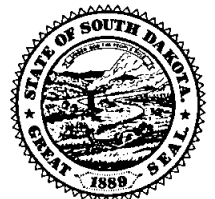
WATER MANAGEMENT BOARD

By: Garland Erbele

Garland Erbele, Chief Engineer
Water Rights Program

Department of Environment and Natural Resources

MAY 12 2006
date



(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

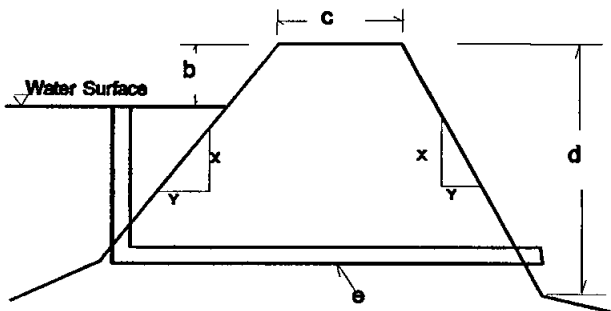
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

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:

Konechne Engineering
104 Capitol Hill Dr.
Pierre, SD 57501
(605) 224-7092 Dave Konechne



- b) Freeboard _____ 6.0'
- c) Crest Width _____ 12.0'
- Crest Length _____ 500'
- d) Height _____ 22.5'
- e) Primary Outlet Capacity _____ 112.3 cfs
If pipe, diameter _____ 60" Inlet & 30" Out
- f) Secondary Spillway Capacity _____ 1,292.3cfs
Spillway Width _____ 100'
- g) X & Y Slope _____
Upstream _____ 3:1
Downstream _____ 3:1
- h) Surface Area of Impoundment _____ 28
- i) Storage _____ 150.0 _____ Acre Feet
- j) Drainage Area Above Dam _____ 4,314.0 Acres

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date March 16, 20 06

RECEIVED OF Travis Hendricks, pO Box 115, Vivian SD 57576

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

Fee for Application for Permit No. <u>2582-2</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. <u>2582-2</u>	50	00
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	275.00

No.

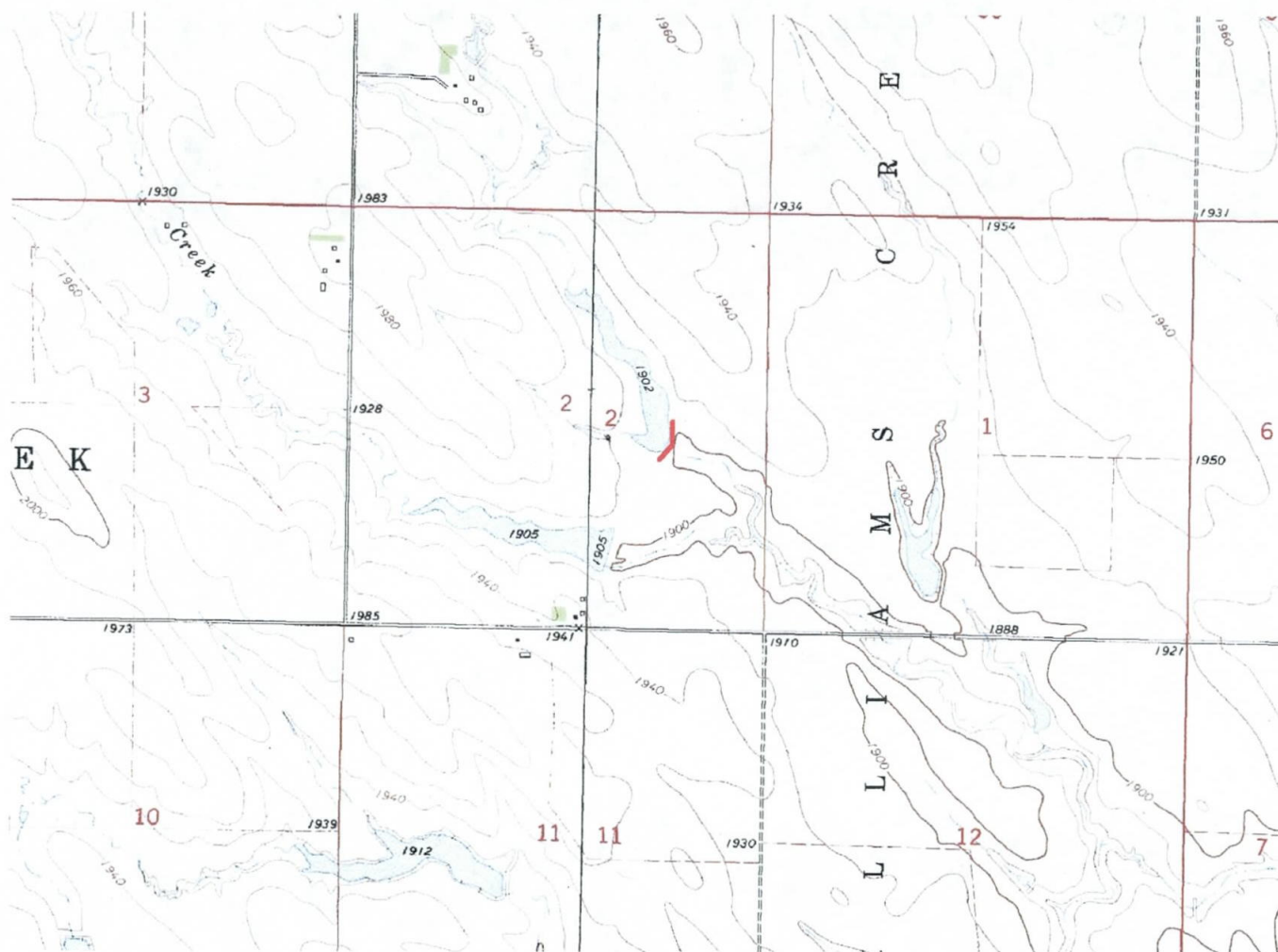
02261

By

Darland Ebele
Chief Engineer gm



Liggett Dam
Jones County
NE1/4 SE1/4 Section 2, T3S, R31E.
Landowner: Travis H. Hendricks



Embankment



Wetland Repaired





1*****
 SITES XEQ 02/14/2006 WATER RESOURCE SITE ANALYSIS COMPUTER PROGRAM
 VER 2000 (USER MANUAL - DATED MAY 2001)
 TIME 11:33:31

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

SITES 05/01/2000 Hendricks pond 6.740625 H5
 SAVMOV 0 101
 SAVMOV 101 1 1
 STRUCTURE hendricks pond
 82.0 0
 86.0 1.7
 90.0 8.6
 94.0 19.3
 100.0 35.8
 103 60.8
 ENDTABLE
 WSDATA 5A1 AC 78 4314 33211 .89
 PDIRECT 2.0 .00 4.00
 POOLDATA ELEV 97.0 97 81.0 79.0 SC
 PSINLET 1 15.7
 PSDATA 1 106 30 .009 82.0
 ASDATA 41 200 100 2 .05 2
 ASINSURF 41 .03
 ASINLET 41 0.0 0.0 100 0.0 3
 200 5
 ENDTABLE
 ASEXSURF 41 .035
 .65 0
 3
 2 0
 .02
 ENDTABLE
 ASEXIT 41 N 150
 BTMWIDTH FEET 100
 GRAPHICS I
 GO,DESIGN HL TYPE2 24 TYPE2378 24
 SAVMOV 2 101 1
 ENDJOB

***** MESSAGE - ALTERNATE STRUCTURE ID (S 1) BEING USED
 SINCE USER DID NOT INPUT AN ID.

***** MESSAGE - ALTERNATE SUBWATERSHED ID (A) BEING USED SINCE
 USER DID NOT INPUT AN ID.

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

1SITES -----
 XEQ 02/14/2006 Hendricks pond WSID=

VER 2000 hendricks pond SUBW= A
TIME 11:33:31 SITE = S 1 PASS= 1 PART= 1

***** BASIC DATA *****
CLIMATE AREA - NOT DEFINED DESIGN CLASS A1 = LT 3000.

STORM DISTRIBUTION-PSH 24 HOUR TYPE II RAINFALL DISTRIBUTION

STORM DISTRIBUTION AUX. -24 HOUR TYPE II RAINFALL DISTRIBUTION

PRECIP. - P-PS,1-DAY P-PS,10-DAY P-SD P-FB
 2.00 0.00 0.00 4.00

WSDATA - CN DA-SM TC/L -/H QRF
 78.00 6.74 33211.00 0.89 0.00

SITEDATA- PERM POOL CREST PS FP SED VALLEY FL 378?
 97.00 97.00 0.00 79.00 YES

 BASEFLOW INITIAL EL EXTRA VOL SITE TYPE
 0.00 0.00 0.00 DESIGN

PSDATA - NO. COND COND L DIA/W -/H
 1.00 106.00 30.00 0.00

 PS N KE WEIR L TW EL
 0.009 1.00 15.70 82.00

 2ND STG ORF H ORF L START AUX.
 0.00 0.00 0.00 0.00

ASCRESTS - AUX.1 AUX.2 AUX.3 AUX.4 AUX.5
 0.00 0.00 0.00 0.00 0.00

AUX.DATA - REF.NO. RETARD. Ci TIE STATION INLET LENGTH
 41 0.00 200.00 100

AUX.DATA - INLET N SIDE SLOPE EXIT N EXIT SLOPE ACTUAL AUX?
 0.030 2.00 0.035 0.050 NO

BTM WIDTH - BW1 BW2 BW3 BW4 BW5
ft 100.00 0.00 0.00 0.00 0.00

AUXILIARY SPILLWAY RATING DEVELOPED USING WSPVRT.

1SITES -----
XEQ 02/14/2006 Hendricks pond WSID=
VER 2000 hendricks pond SUBW= A
TIME 11:33:31 SITE = S 1 PASS= 1 PART= 2

PERM POOL 97.00 FT 150.1 ACFT 27.55 AC 0.0 CFS

CREST PS 97.00 FT 150.1 ACFT 27.55 AC 0.0 CFS
 SED ACCUM 97.00 FT 150.1 ACFT 27.55 AC 0.0 CFS
 START ELEV 97.00 FT 150.1 ACFT 27.55 AC 0.0 CFS
 NRCS-PSH D= 24.00 HR P= 2.00 IN Q= 0.48 IN DA= 6.74 SM
 TC= 9.84 HR CN= 78.00 VOL= 174.1 ACFT
 PEAK = 185.9 CFS, AT 19.3 HRS.

ROUTED RESULT - HYD TYPE EMAX VOL-MAX AMAX QMAX
 NRCS-PSH 99.13 FT 215.1 ACFT 33.42 AC 103.7 CFS

PS STORAGE 65.0 ACFT, BETWEEN AUX. CREST AND SED. ACCUM ELEVATIONS.

DRAWDOWN (DDT) TEST 97.00 FT 150.1 ACFT 0.00 CFS
 CONTROL IS 0.000 DETENTION STORAGE

TIME = 3.44 DAYS, TO 0.0 CFS (LIMIT = 10.00 DAYS)

 RATING TABLE DEVELOPED, SITE = S 1:
 BY PROGRAM FOR PS AND AUX. SPILLWAYS
 AUX. RATING USED WSPVRT METHOD.

RATING TABLE NUMBER 1

	ELEV. FEET	Q-TOTAL CFS	Q-PS CFS	Q-AUX. CFS	VOLUME AC-FT	AREA ACRE
1	97.00	0.00	0.00	0.00	150.07	27.55
2	97.41	12.78	12.78	0.00	161.60	28.68
3	97.82	36.14	36.14	0.00	173.59	29.81
4	98.23	66.39	66.39	0.00	186.04	30.93
FULL CONDUIT FLOW, ELEV = 98.64 FT						
5	98.64	102.22	102.22	0.00	198.96	32.06
6	99.19	103.88	103.88	0.00	216.84	33.56
7	99.73	105.52	105.52	0.00	235.53	35.06
8	100.28	107.13	107.13	0.00	255.26	38.09
9	100.82	108.71	108.71	0.00	277.26	42.63
10	101.37	110.27	110.27	0.00	301.73	47.18
11	101.91	111.82	111.82	0.00	328.68	51.72
12	102.46	113.34	113.34	0.00	358.10	56.26
13	103.00	114.84	114.84	0.00	390.00	60.80

1SITES _____
 XEQ 02/14/2006 Hendricks pond WSID=
 VER 2000 hendricks pond SUBW= A
 TIME 11:33:31 SITE = S 1 PASS= 1 PART= 3

AUX. CREST 99.13 FT 215.1 ACFT 33.42 AC 103.7 CFS

PS STORAGE 65.0 ACFT, BETWEEN AUX. CREST AND SED. ACCUM ELEVATIONS.

START ELEV 97.00 FT 150.1 ACFT 27.55 AC 0.0 CFS

EFFECTIVE HEIGHT(H)= 18.1 FEET, PRODUCT= 3901. (H * STORAGE AT CREST AUX.).

INPUT DESIGN CLASS = A1 = LT 3000. PRODUCT.

***** WARNING - NHCP-378 CRITERIA DOES NOT APPLY WHEN THE EFFECTIVE HEIGHT IS OVER 35 FEET OR THE PRODUCT IS 3000 OR GREATER.

NRCS-FBH D= 24.00 HR P= 4.00 IN Q= 1.89 IN DA= 6.74 SM
TC= 9.84 HR CN= 78.00 VOL= 678.4 ACFT

PEAK = 780.8 CFS, AT 18.8 HRS.

RATING TABLE DEVELOPED, SITE = S 1:
BY PROGRAM FOR PS AND AUX. SPILLWAYS
AUX. RATING USED WSPVRT METHOD.

RATING TABLE NUMBER 2

	ELEV. FEET	Q-TOTAL CFS	Q-PS CFS	Q-AUX. CFS	VOLUME AC-FT	AREA ACRE
1	97.00	0.00	0.00	0.00	150.07	27.55
2	97.41	12.78	12.78	0.00	161.60	28.68
3	97.82	36.14	36.14	0.00	173.59	29.81
4	98.23	66.39	66.39	0.00	186.04	30.93
FULL CONDUIT FLOW, ELEV = 98.64 FT						
5	98.64	102.22	102.22	0.00	198.96	32.06
6	98.70	102.41	102.41	0.00	200.94	32.23
7	98.76	102.60	102.60	0.00	202.93	32.40
8	98.83	102.79	102.79	0.00	204.94	32.57
9	98.89	102.98	102.98	0.00	206.95	32.74
10	98.95	103.17	103.17	0.00	208.98	32.91
11	99.01	103.35	103.35	0.00	211.01	33.08
12	99.07	103.54	103.54	0.00	213.06	33.25
13	99.13	103.73	103.73	0.00	215.11	33.42
14	99.33	115.96	104.31	11.65	221.62	33.95
15	99.52	132.37	104.89	27.48	228.24	34.48
16	99.87	206.22	105.93	100.29	240.40	35.44
17	100.29	347.09	107.18	239.91	255.97	38.25
18	101.07	733.69	109.42	624.26	288.03	44.69
19	102.03	1373.12	112.16	1260.96	335.12	52.74
20	103.00	2174.09	114.84	2059.25	390.00	60.80

SUMMARY OF AUXILIARY SPILLWAY SURFACE CONDITIONS USED IN COMPUTATIONS BY REACH

REACH FROM	TO	SLOPE	RETARDANCE	VEGETAL	MAINT.	ROOTING	REACH
STA	STA	CURVE	COVER	CODE	DEPTH	LOCATION	
(ft)	(ft)	(%)	INDEX@	FACTOR	(ft)	*	

1	100.	200.	0.0	0.030	**	**	**	CREST
2	200.	350.	5.0	0.035	0.65	3	2.0	EXIT !

@ The program interprets retardance curve index entries of less than 1 as Manning's n values.

* Upper case indicates a reach of constructed spillway channel.

** The program does not use vegetal cover factor, maintenance code, and rooting depth for inlet and crest reaches in computations.

! Reach 2 used in computing exit channel velocities.

DRAWDOWN USING FREEBOARD STORM FOLLOWS, STARTING AT ELEVATION 99.13 FT.

DRAWDOWN (DDT) TEST 97.00 FT 150.1 ACFT 0.00 CFS
CONTROL IS 0.000 DETENTION STORAGE

TIME = 3.62 DAYS, TO 0.0 CFS (LIMIT = 10.00 DAYS)

ROUTED RESULTS	BTM	WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	AUX.-HP	VOL-AUX.
	FT	FT	ACFT	AC	FT	ACFT	
NRCS-FBH	100.0	101.07	288.2	44.7	1.94	73.1	

PEAK - CFS Q-PS Q-AUX. Q-TOT.
DISCHARGE = 109.4 627.1 736.5

Em Spill

	CRITICAL DEPTH	CRITICAL VELOCITY	CRITICAL SLOPE-Sc	25% OF Q Sc
AUXILIARY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY	1.06	5.79	0.018	0.024

EFFECTIVE STRESS FOR STABILITY ANALYSIS OF AUX. EXIT CHANNEL
(Refer to Ag. Handbook 667, Chapt. 3, for allowable stresses.)
Aux. Discharge = 627. cfs; Bottom Width = 100. ft

REACH NO.	FROM STA	TO STA	SLOPE %	MANNING'S n	VELOCITY ft/s	STRESS lb/ft^2
2	200.	350.	5.00	0.035	7.93	1.478

AUXILIARY SPILLWAY DURATION FLOW = 19.8 HOURS
ATTACK, OE/B = 4.2 ACFT/FT

***** MESSAGE - NHCP378 CRITERIA USED BUT AUXILIARY SPILLWAY RATING NOT BASED ON ASFILE RATINGS.

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 7.9 FT/SEC
EXIT SLOPE = 0.050 FT/FT
FLOW DEPTH = 0.8 FT

>>>> NHCP378 RUN - MINIMUM DEPTH, CREST AUX. TO TOP OF DAM IS 2.00 FT.
NEW TOP OF DAM ELEVATION = 101.13.

ROUTED RESULTS	BTM	WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	AUX.HP	VOL-AUX.
	FT	FT	ACFT	AC	FT	ACFT	
MINIMUM AUX.	100.0	101.13	291.3	45.3	2.01	76.2	

PEAK - CFS Q-PS Q-AUX. Q-TOT.
DISCHARGES = 109.6 668.2 777.9

	CRITICAL	CRITICAL	CRITICAL	25% OF Q
	DEPTH	VELOCITY	SLOPE-Sc	Sc
AUXILIARY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY —	1.11	5.91	0.018	0.024

>>>> NHCP378 RUN - MINIMUM DEPTH, DESIGN FLOW TO TOP OF DAM; 1.00 FT REQUIRED FOR THIS PASS. NEW TOP OF DAM ELEVATION = 102.07.

ROUTED RESULTS	BTM	WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	AUX.HP	VOL-AUX.
	FT	FT	ACFT	AC	FT	ACFT	
MINIMUM AUX.	100.0	102.07	337.3	53.1	2.94	122.2	

PEAK - CFS Q-PS Q-AUX. Q-TOT.
DISCHARGES = 112.3 1292.3 1404.6

	CRITICAL	CRITICAL	CRITICAL	25% OF Q
	DEPTH	VELOCITY	SLOPE-Sc	Sc
AUXILIARY	FT	FT/SEC	FT/FT	FT/FT
SPILLWAY —	1.71	7.30	0.015	0.020

INFLOW HYD 1 PSH-PEAK = 103.72 CFS AT 25.21 HRS, LOCATION POINT

INFLOW HYD 1 FBH-PEAK = 736.50 CFS AT 19.84 HRS, LOCATION POINT
HYDOUT 1

1SITES.....JOB NO. 1 COMPLETE.

Hendricks pond

0 SUBWATERSHED(S) ANALYZED.

1 STRUCTURE(S) ANALYZED.

2 HYDROGRAPHS ROUTED AT LOWEST SITE.

0 TRIALS TO OBTAIN BOTTOM WIDTH FOR SPECIFIED STRESS OR VELOCITY.

SITES.....COMPUTATIONS COMPLETE

>>> SITE SUBWS SUBWS DA CURVE TC TOTAL DA TYPE STRUC <<<
 ID ID (SQ MI) NO. (HRS) (SQ MI) DESIGN CLASS

S 1 A 6.74 78. 9.84 6.74 378CR A1

PASS DIA./ AUX.CREST BTM. MAX. MAX. EMB. INTEGR.* EXIT* TYPE
 NO. WIDTH ELEV WIDTH HP ELEV VOL. DIST. VEL. HYD
 (IN/FT) (FT) (FT) (FT) (FT) (CY) (FT) (FT/SEC)

1 30.0 99.1 100.0 2.9 102.1 0. 0. 7.9 MIN. AUX.

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

SITES.....SUMMARY TABLE 1 COMPLETED.

NRCS SITES VERSION 2000 ,05/01/2000
 FILES

INPUT

C:\data\Engineering\sites\hendricks\30-97.D2C

OUTPUT - DATED 02/14/2006 11:33:31

C:\data\Engineering\sites\hendricks\30-97.OUT

GRAPHICS FILES GENERATED

OPTION "L" DATED 02/14/2006 11:33:31

C:\data\Engineering\sites\hendricks\30-97.DRG

OPTION "P" DATED 02/14/2006 11:33:31

C:\data\Engineering\sites\hendricks\30-97.DHY

OPTION "E" DATED 02/14/2006 11:33:31

C:\data\Engineering\sites\hendricks\30-97.DEM

Liggett Dam

Landowner: Travis H. Hendricks

NE1/4 SE1/4 Section 2, T3S, R31E.

Jones County

Attached are:

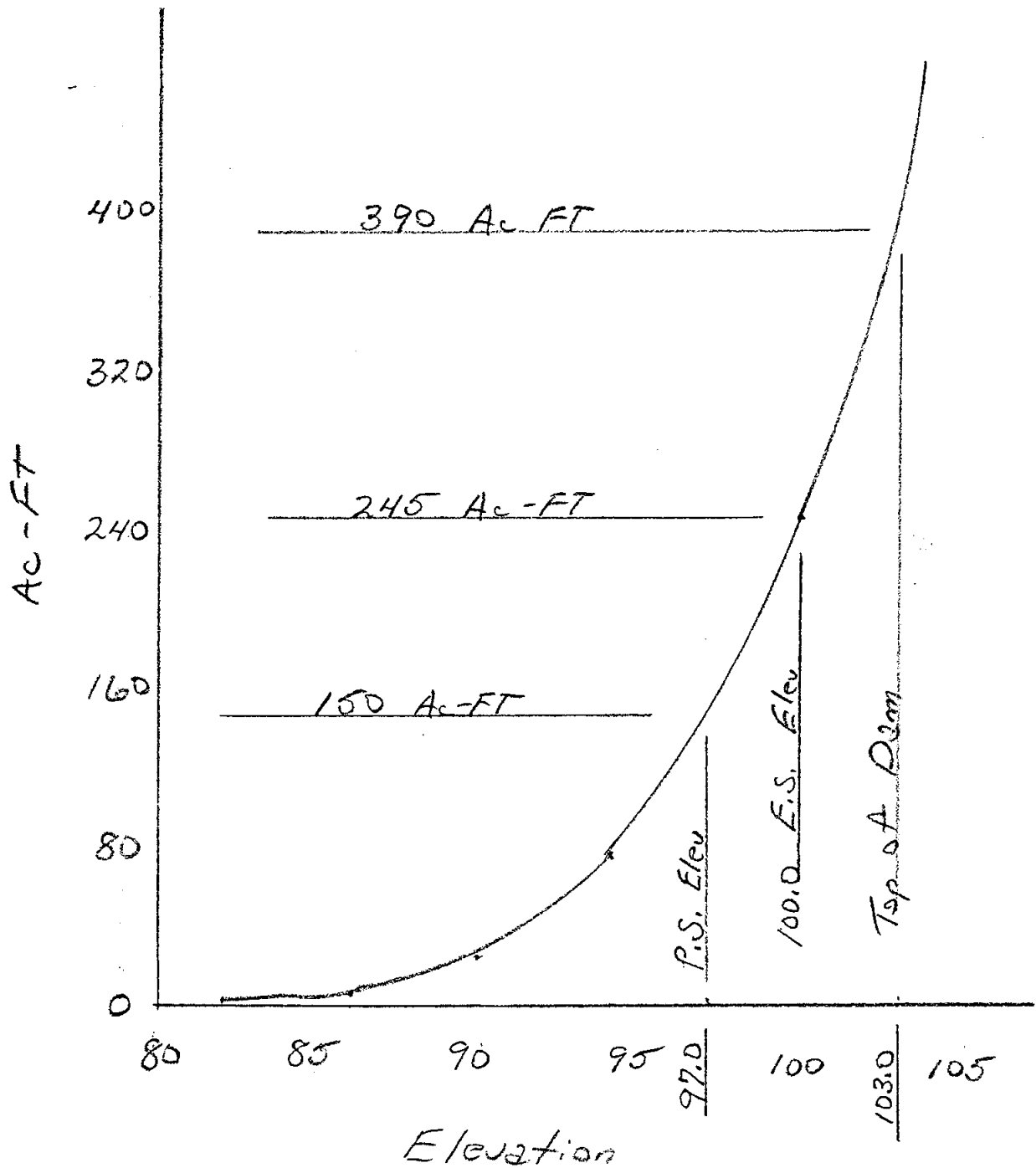
- sites flood routing
- stage – storage curve
- set of plans (seven sheets)

This is on old WPA structure that had a concrete spillway which has failed many years ago. The drainage area is 4,314 acres and the new water level will be at about the same water level as indicated for the original structure. The present top of the concrete wingwall which appears to be stable was assigned an elevation of 100.0. This elevation will be 3 feet below the top of dam new elevation. I could not determine the elevation of the concrete weir, but the proposed elevation of the riser for the new structure will be at elevation 97.0 or 6 feet below the top of dam... It appears from the topog that water will back up 4,150 feet.

Dave Konechne P.E.

Sec 2, T3S, R31E Jones Co.

DFK
Travis Hendricks



Locate principal spillway pipe at CL of dam sta. 5+00, at an angle of 90° to the CL of the dam.

Emergency spillway El. 100°

Principal spillway El. 97°

Berm, if required 3:1 slope normal to CL of dam

El. 91°

Trash rack and baffle plate not shown. See job plan no. 6.4

3:1 slope normal to CL of dam

12'

Top of dam after settlement El. 103°

Note: Allowance for settlement 5%

3:1 slope normal to CL of dam

60" dia. riser, see job plan no. 10.0

Antiseep collars see J.P. # 3.8

12% gr.

106' of 30" dia. pipe

26'

75'

Diagram illustrating an outlet detail without pipe support. The diagram shows a cross-section of a pipe with a prefabricated elbow. Key dimensions and labels include:

- Prefabricated elbow
- El.
- El.
- OUTLET DETAIL WITHOUT PIPE SUPPORT

1. ELBOW, IF REQUIRED, MAY BE FABRICATED BY CONTINUOUS WELDING SEPERATE PIPE SECTIONS OR BY FABRICATING A CONTINUOUS WELDED JOINT ON THE UPSTREAM END OF LAST SECTION OF PIPE.

-
- This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

[illegible]

CORRUGATED METAL PIPE
DROP INLET PRINCIPAL SPILLWAY

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

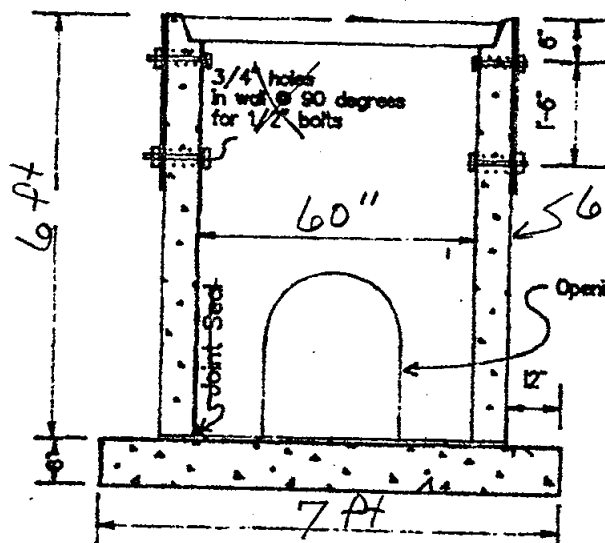
		Date	Approved by
Designed			Title
Drawn			Title
Traced			Sheet
			Drawing No.
Checked			No
			of

Rev. 8/80
JOB PLAN NO. 2.0

Sheet 2 of

Reinforced concrete pipe shall meet
ASTM-C-478

EL. 9'7"0



560" dia conc riser

Opening as required
30" dia PE Pipe

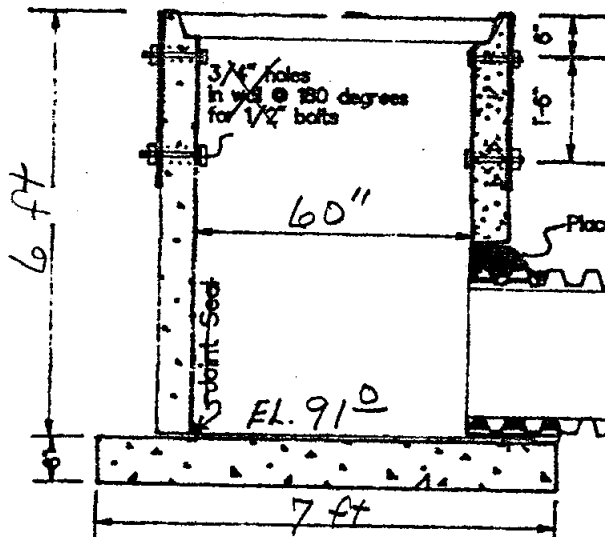
Concrete base

- 1.2 cy

- No. 4 rebar 12" c-c

- 55 lbs

FRONT VIEW



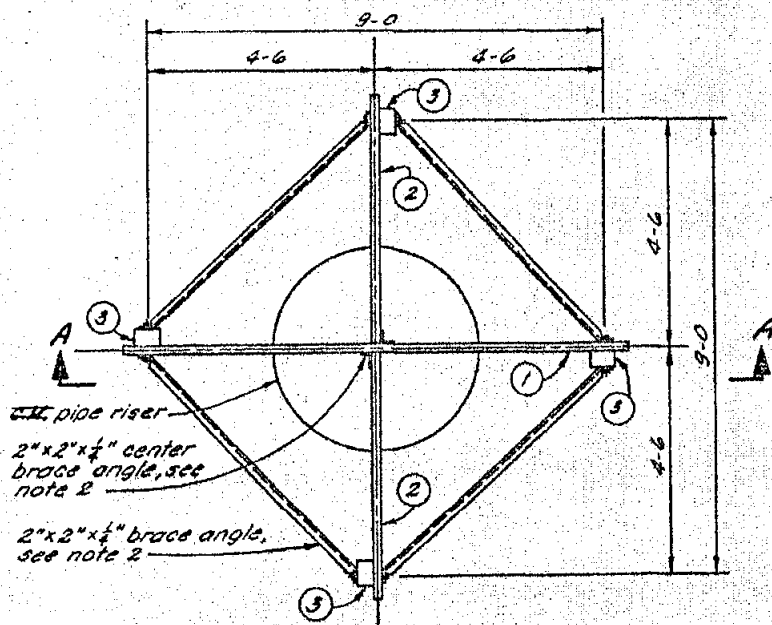
Place concrete grout around pipe

30"

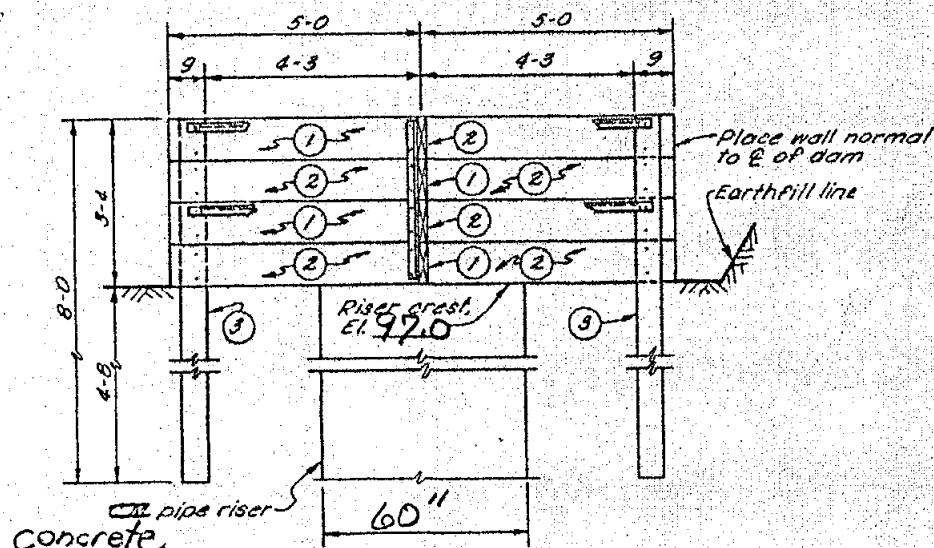
Duct-Wall Polyethylene Pipe

ADS N-12 or equal
with watertight joints

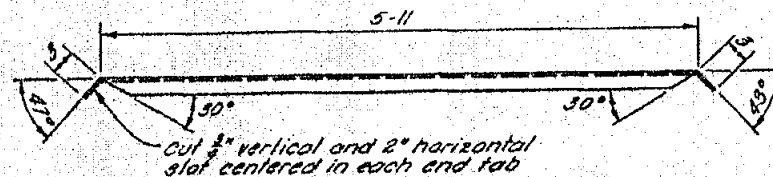
SIDE VIEW



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:

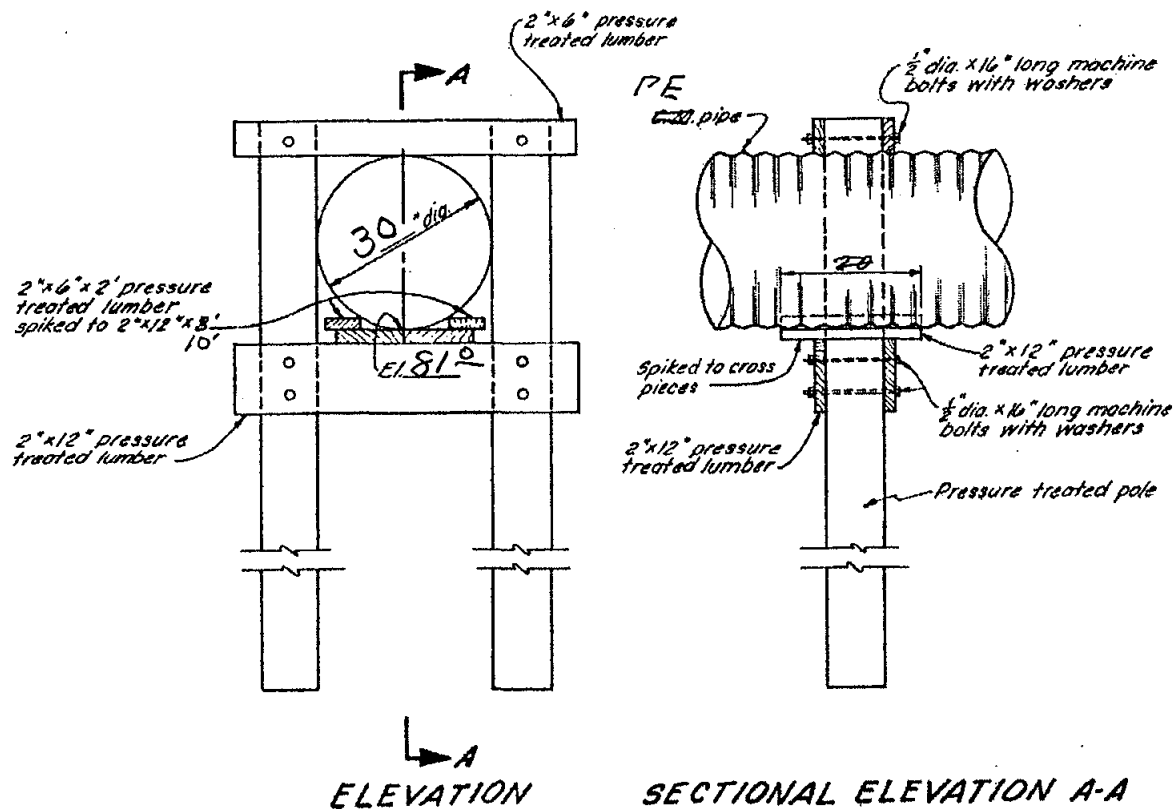
1. TO 4" X 6" POSTS (4 REQUIRED) BOLT 2" X 10" BOARDS USING TWO 5/8" X 8" BOLTS PER 2" X 10" BOARD. DO NOT PLACE BOLTS CLOSER THAN 1 1/2" FROM EDGE OF BOARD.
2. FOR CENTER BRACE ANGLES DRILL 8 - 9/16" HOLES 5/8" FROM OUTER EDGE OF EACH LEG OF EACH ANGLE AND CENTERED 5 1/4" APART ALONG THE LEG.
3. ATTACH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

OPERATOR: <u>Travis Hendricks</u>	
CONSERVATION DISTRICT: _____	
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	
Designed: _____	Approved by: _____
Drawn: _____	Title: _____
Traced: _____	Date: _____
Checked: _____	Sheet No. _____
	Drawing No. _____

JOB PLAN NO. 6.4

5, N-29, 073.6



NOTES:

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

TABLE OF QUANTITIES

ITEM	LENGTH FOR 30" DIA. C.M. PIPE	UNIT	QUANTITY
PRESSURE TREATED POLE 8" DIA.	8-0	EACH	2
2" X 12" PRESSURE TREATED LUMBER	10-0	EACH	2
2" X 6" PRESSURE TREATED LUMBER	2-0	EACH	2
2" X 12" PRESSURE TREATED LUMBER	6-0	EACH	2
2" X 6" PRESSURE TREATED LUMBER	6-0	EACH	2
1/2" DIA. MACHINE BOLTS WITH NUTS		EACH	
1/2" DIA. WASHERS		EACH	

REFERENCE: GUIDE PLAN NO. 4.0

JOB PLAN NO. 4.0

TIMBER PIPE SUPPORT

OPERATOR: Trauis Hendricks

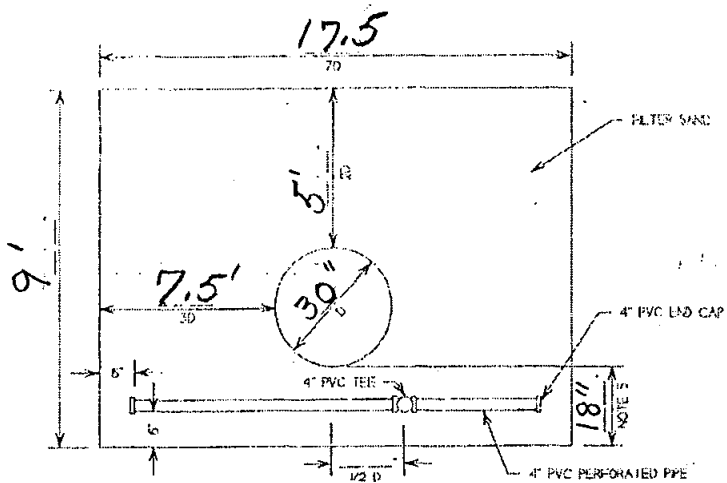
CONSERVATION DISTRICT: _____

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed _____	Date _____	Approved by _____
Drawn _____		Title _____
Traced _____		Total _____
Checked _____		Sheet _____ of _____

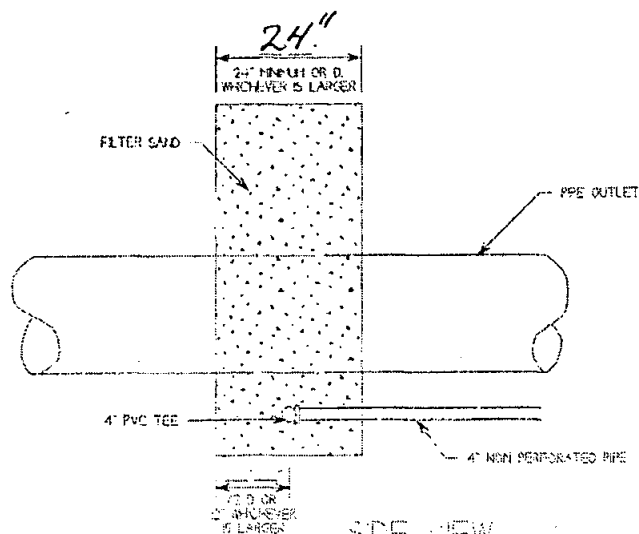
5, N-29,073.4a

Sheet 5 of 7

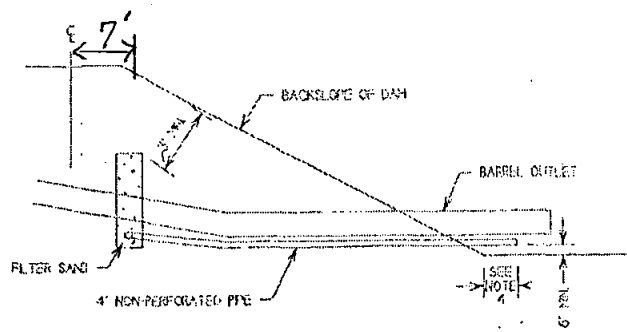


UPSTREAM VIEW

$$\text{Sand} = \frac{2' \times 9' \times 5'}{27} = 3.3 \text{ cy}$$



SIDE VIEW



OUTLET DETAIL

FILTER GRADATION

SEIVE SIZE	PERCENT PASSING
3/8"	100
#4	85-100
#8	80-100
#16	50-85
#30	25-50
#50	10-30
#100	2-10

- NOTE 1 THE 4" DIA. PIPE SHALL BE SCH 35 PVC OR STRONGER
2. PROVIDE AN ANIMAL GUARD ON DRAIN OUTLET PIPE. DRILL 3/2" DIA. HOLES ON 6" FROM END OF PIPE AND PLACE A 3/8" DIA. 5 1/2" LONG GALVANIZED STEEL BOLT THRU THEM AND SECURE WITH A NUT (PLACE BOLT HORIZONTAL)
3. FILTER SAND WILL BE CLEAN CONCRETE SAND.
4. 4" PIPE WILL BE SECURED TO PIPE SUPPORT AND EXTEND A MIN. OF 2' BEYOND SUPPORT.
5. DISTANCE EQUALS 18" MINIMUM IF BARREL AND 4" PIPE ARE LOCATED IN ORIGINAL FOUNDATION MATERIAL, AND 20" MINIMUM IF LOCATED IN FILL MATERIAL FOR DAM.
6. INSTALL COLLAR IN LOWER SEGMENT OF MIDDLE 1/3 OF DAM CROSS SECTION INTERCEPTED BY THE PRINCIPAL SILLWAY.

LIST OF MATERIALS

ITEM NO.	ITEM	UNIT	QUANTITY
1	4" PVC PERFORATED PIPE	LF	16
2	4" PVC NON-PERFORATED PIPE	LF	60
3	4" PVC END CAP	EA	2
4	4" PVC TEE	EA	1
5	SAND	CY	3.3
6	ANIMAL GUARD (see note 2)	PI	1

SAND ANTISEEP COLLAR

Travis Hendricks

USDA U.S. Department of Agriculture
Natural Resources Conservation Service

DESIGNED BY: TRH
PROJECT: 100-100-100
DATE: 10/1/10

Job Plan 3.8



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/dennr

April 5, 2006

Travis H. Hendricks
PO Box 115
Vivian, SD 57556

Dear Mr. Hendricks:

We have reviewed the plans and specifications for your dam project located in the NE ¼ SE ¼ of Section 2-T3S-R31E, in Jones County. The plans and specifications for the reconstruction of Liggett Dam (SD ID No. 01641) are approved. Approval of the plans and specifications does not authorize reconstruction of the dam. The reconstruction of the dam may not begin until Water Permit No. 2582-2 is approved.

Our review was to determine compliance with the requirements of the Water Management Board Safety of Dams Rules, Chapter 74:02:08. Approval of these plans and specifications does not release you, as owner of the dam, from the responsibility for operating and maintaining the dam in good repair to ensure the safety of the dam.

The Liggett Dam (SD ID No. 01641) is classified as a small size Category 3, Low Hazard dam with a dam height of 22.5 ft. and a normal storage capacity of 150 acre-feet and a maximum storage capacity of 390 acre-feet.

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

Sincerely,

Timothy G. Schaal, P.E.
Natural Resources Engineering Specialist
for Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

c: Dave Konechne

Water Permit Application No. 2582-2
Travis H. Hendricks

Repair of Liggett Dam (SD 01641)

Top of Dam Elev. - 103
2nd Spillway Elev. - 100
P. Spillway Elev. - 97
D/S Emb Toe Elev. - 80.5

Cat. 3 - Low Hazard Dam

Ht. = 22.5 ft.

Normal Storage Capacity 150 Ac-Ft
Int. Storage Capacity 245 Ac-Ft
Max Storage Capacity 390 Ac-Ft

Int. Capacity x Eff. Ht. = $245 \times 22.5 = 5022 > 3000 \therefore 50 \text{ yr}$
Minimum Spillway Design

From USGS WRI 98-4055 "Tech for Est Peak Flows ... in 50"
Region C DA = 4314 Ac
CN = 78 = 6.74 mi²

$$Q_{50} = 286 CA^{.570}$$

$$= 286 (6.74)^{.570}$$

$$= \underline{848 \text{ cfs}}$$

$$Q_{100} = 379 CA^{.566}$$

$$= 379 (6.74)^{.566}$$

$$= \underline{1116 \text{ cfs}}$$

Secondary Spillway Flow

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

$$= 2.6(100)(3)^{1.5}$$

$$= \underline{1350 \text{ cfs}}$$

C = 2.6
L = 100
H = 3 ft

Section 74:02:08:09

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

NRCS Annual Yield

DA = 4314 Ac CN = 78 ISO = 2

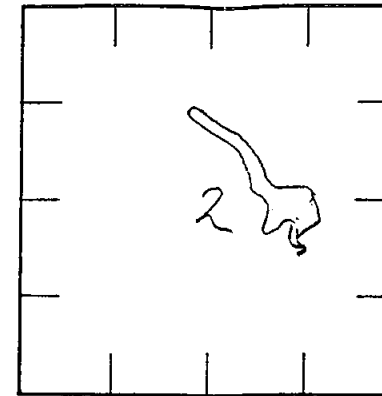
80% chance = 0.2
 $0.2 \times 4314/12 = \underline{72 \text{ Ac-Ft}}$

50% chance = 0.5
 $0.5 \times 4314/12 = \underline{180 \text{ Ac-Ft}}$

10% chance = 2.2
 $2.2 \times 4314/12 = \underline{790 \text{ Ac-Ft}}$

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.
4314	174	678	627	16	28	—	150



NE 1/4 Sec. 2, T. 35, R. 31 E
Jones County

LOCATION

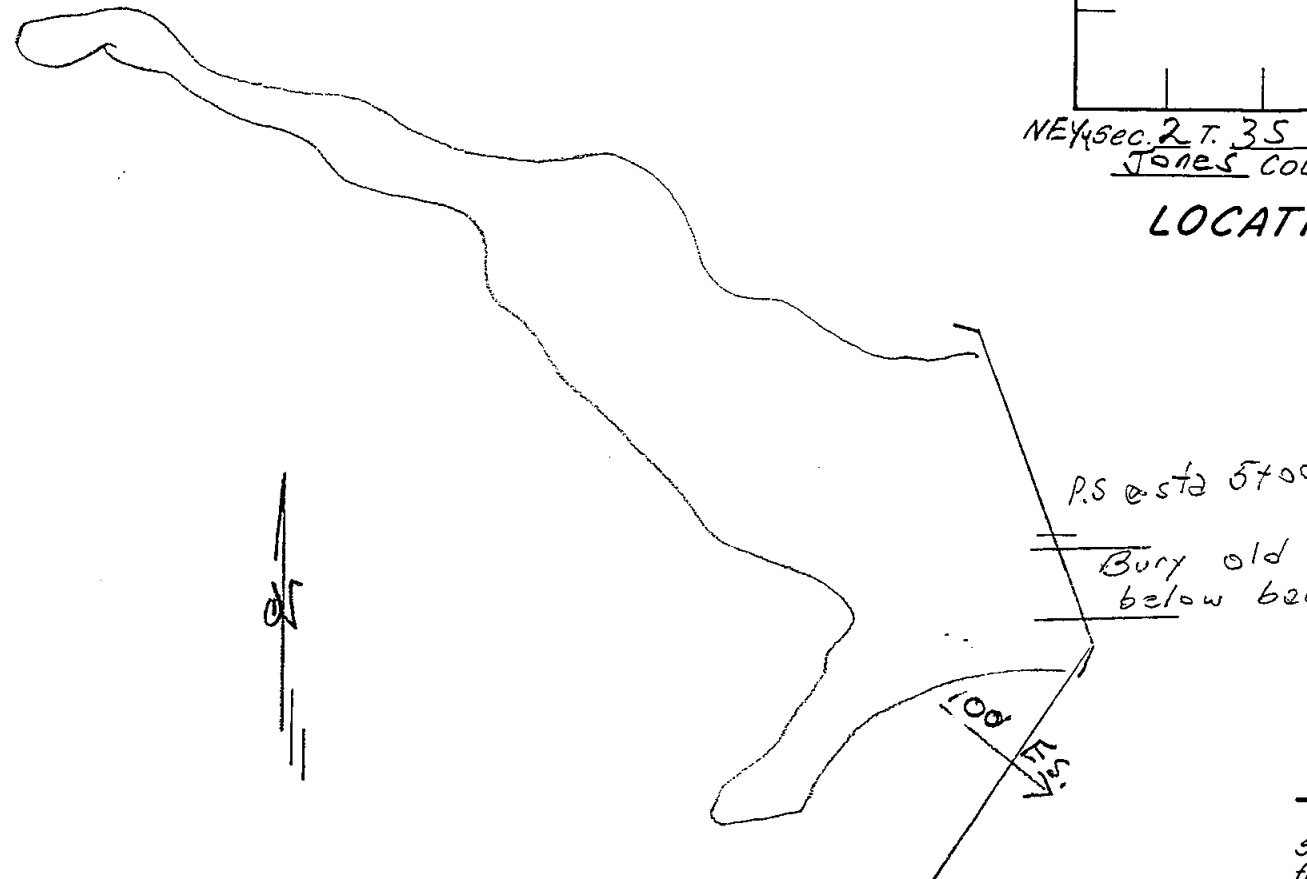
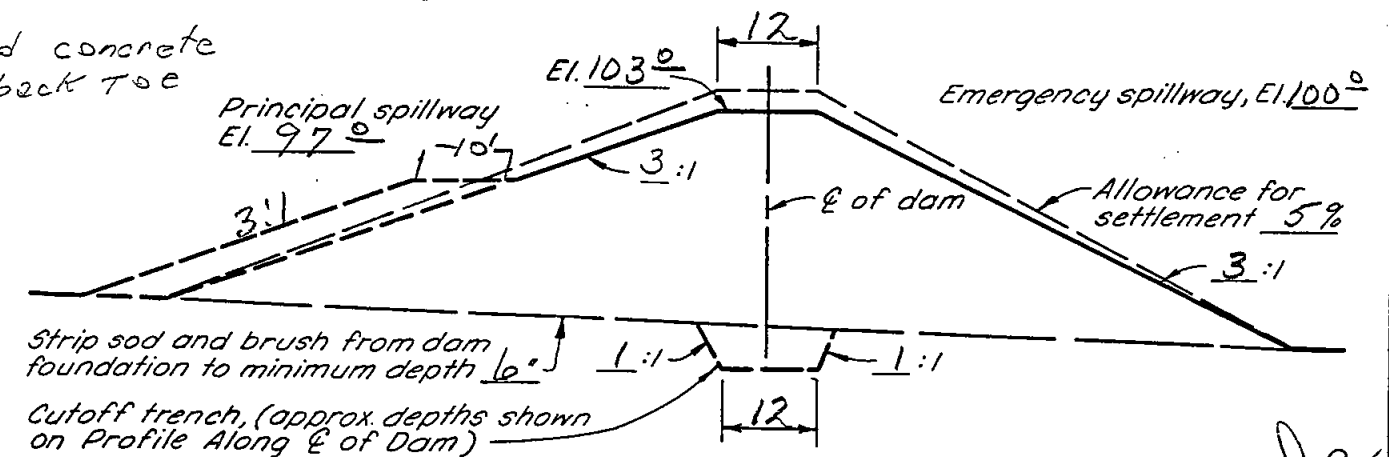


TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
Earth Fill	cu yd	9000
6 ft - 60 in dia concrete riser	e2	1
30 in dia N-12 PE pipe	lin ft	106
concrete base	cu yd	1.2
reinforcing steel	lb	55
sand seep collar	cu yd	3.3
4" PVC	lin ft	76
Timber Pipe Support	e2	1
Timber Trash Rack	e2	1
Clear & bury existing concrete	hr	4



TYPICAL CROSS SECTION OF DAM

S.D. CONSTRUCTION AND MATERIAL SPECIFICATIONS:

- SD-2 clearing & grubbing
- SD-12B concrete
- SD-9 drain fill
- SD-7s Earth Fill
- SD-14 wood & steel structures
- SD-55A PE Pipe

SKETCH PLAN OF DAM AND RESERVOIR AREA

Approximate scale 1" = NA

REFERENCE: GUIDE PLAN NO. 1.0

JOB PLAN NO. 1.0

OPERATOR: Travis

CONSERVATION DISTRICT: Sec 2, T 35, R 31 E

Class A Hazard *

Designed: D. Konechne

Drawn: _____

Traced: _____

Checked: _____

Date: _____

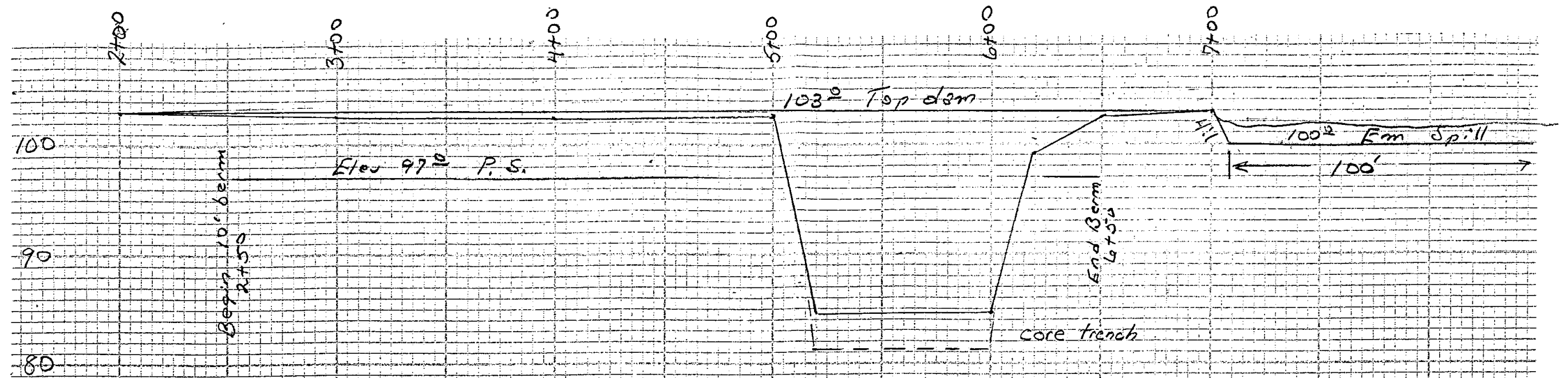
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Title: _____

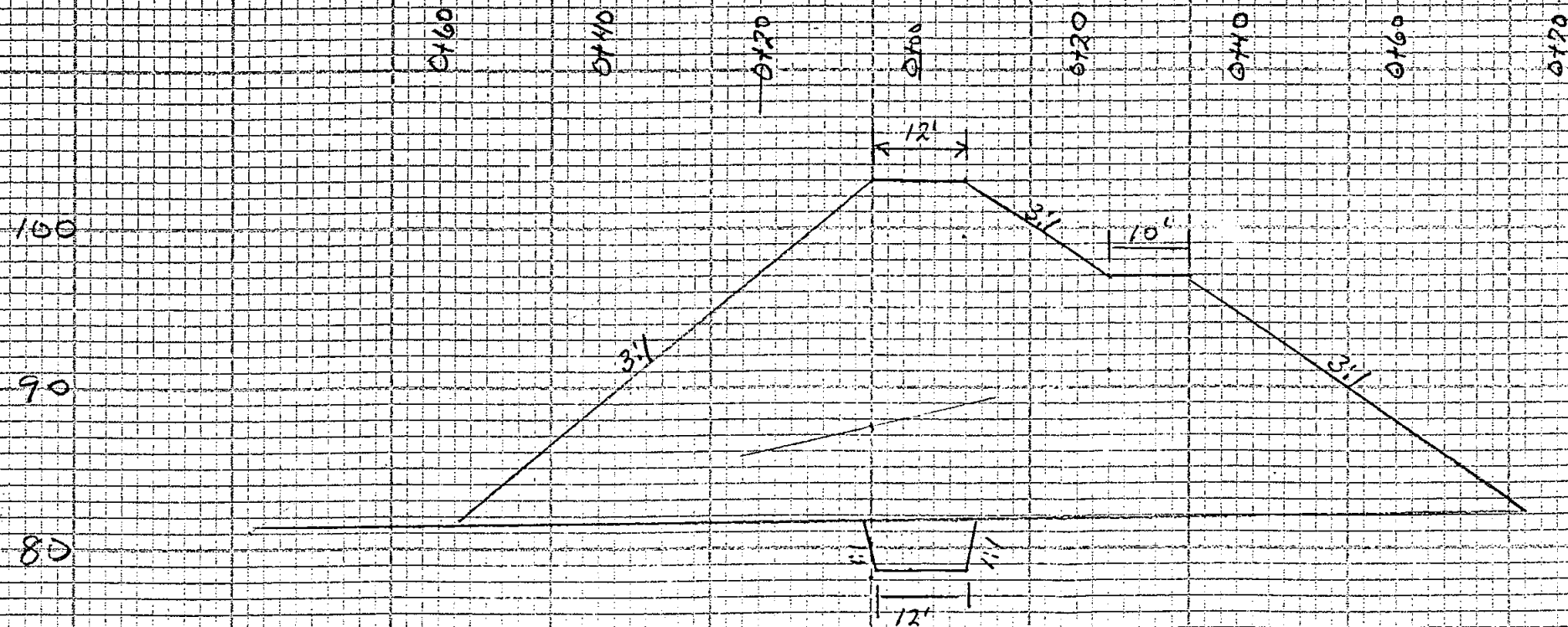
Sheet: _____

Drawing No. _____

(Rev. 4-73) 5, N-29, 073.1a(1),
sheet 1 of 7



CROSS SECTION AT CREST OF EMERGENCY SPILLWAY AND PROFILE ALONG C OF DAM

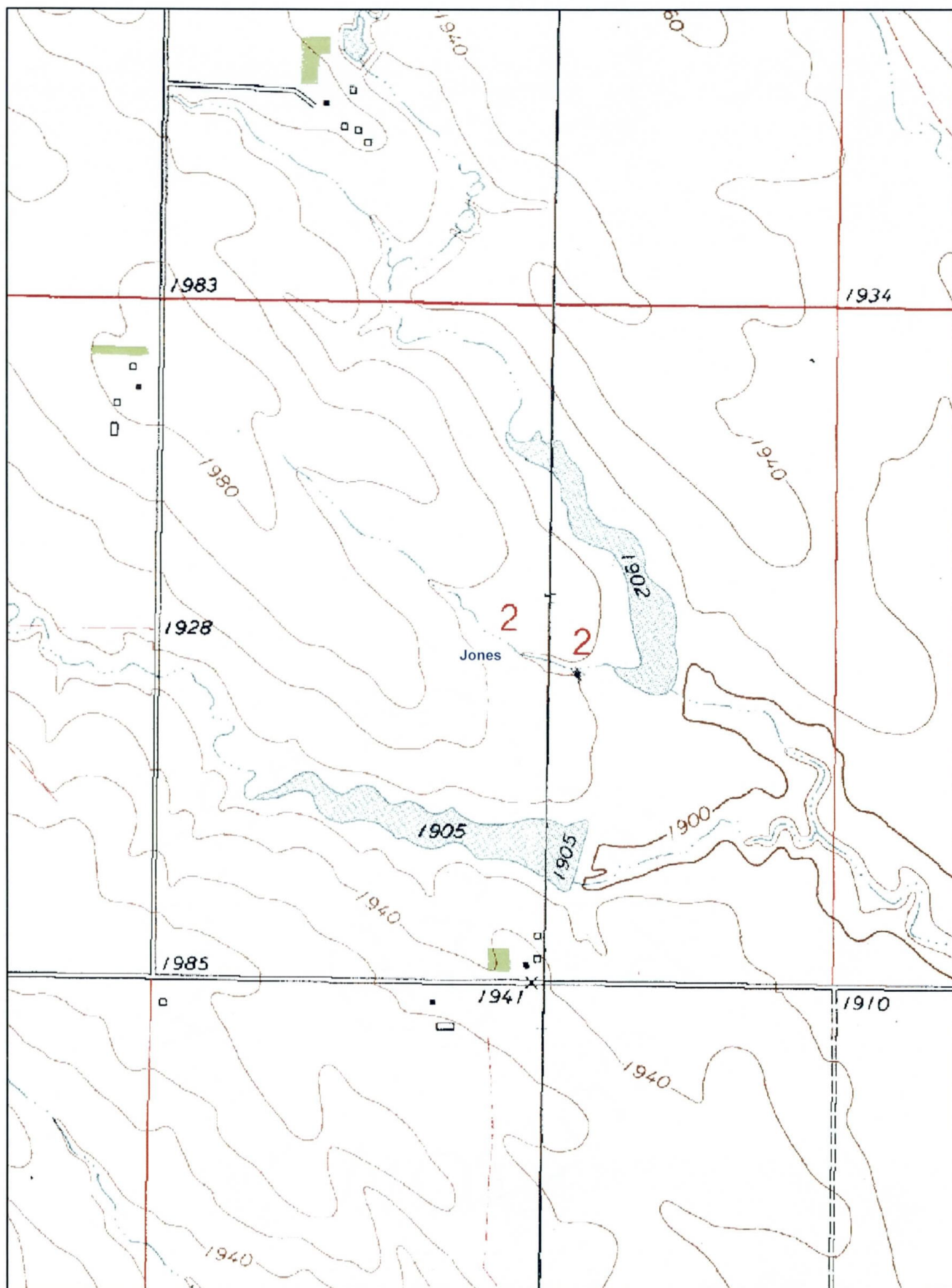


Dam Specifications

03/28/2006

Stateid	SD01640	Damname	HENDRICKS NUMBER 1				
Nationalid	SD01640	County	JONES	Latitude	43.810000	Longitude	100.373333
Quarter	SWSE	Sec	02	Twnshp	003S	Rng	31E
				Sectownran	SW SE SEC.2-T3S-R31E		
Ownername	HERMAN HENDRICKS			Ownertype	P	Distcity	0
Nearcity	NONE	Damdesign		Riverstrea	TR-WHITE RIVER		
Formername				Othername			
Maxdisch	2,100	Spwaywidth	0	Damtype	RE	Inspdate	/ /
Normstorag	125	Spwaytype		Privdamfed	N	Inspfreq	0
Maxstorage	156	Outletgate		Downhazard	L	Eap	NR
Damheight	22	Surfarea	0	Purposes	SR	Stateregda	Y
Hydheight	22	Damvolume	0	Yearcomp	1958	Stateregag	DENR
Strucheigh	22	Drainarea	0	Yearmod	0	Core	
Damlenght	540	Foundation					

Stateid	SD01641	Damname	HENDRICKS NUMBER 2				
Nationalid	SD01641	County	JONES	Latitude	43.813333	Longitude	100.368333
Quarter	NESE	Sec	02	Twnshp	003S	Rng	31E
				Sectownran	NE SE SEC.2-T3S-R31E		
Ownername	HERMAN HENDRICKS			Ownertype	P	Distcity	0
Nearcity	NONE	Damdesign		Riverstrea	TR-WHITE RIVER		
Formername				Othername			
Maxdisch	630	Spwaywidth	0	Damtype	RE	Inspdate	/ /
Normstorag	120	Spwaytype		Privdamfed	N	Inspfreq	0
Maxstorage	174	Outletgate		Downhazard	L	Eap	NR
Damheight	20	Surfarea	0	Purposes	SR	Stateregda	Y
Hydheight	20	Damvolume	0	Yearcomp	1937	Stateregag	DENR
Strucheigh	20	Drainarea	0	Yearmod	0	Core	
Damlenght	510	Foundation					



REPORT ON
WATER PERMIT APPLICATION No. 2582-2
Travis H. Hendricks
March 28, 2006

Water Permit Application No. 2582-2 has been filed by Travis H. Hendricks to impound 150 acre-feet of water by reconstructing Liggett Dam (SD ID No. 01641) located in the NE ¼ SE ¼ of Section 2-T3S-R31E, in Jones County. The application also requests impoundment of sufficient water to maintain water at the outlet elevation. The water will be used for fish and wildlife production and livestock watering purposes.

Discussion:

Liggett Dam is classified as a small size, Category 3, Low Hazard dam. David Konechne, P.E., working for the US Fish and Wildlife Service, has designed the dam. The plans and specifications have been reviewed and will be approved; however, construction of the dam can not begin until Water Permit Application No. 2582-2 is approved.

The dam embankment will be 22.5 feet high. The reservoir will have a normal storage capacity of 150 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 390 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 50-year frequency event.

The dam has a drainage area of 4314 acres or 6.74 square miles. The dam is designed to have a 60 inch concrete riser with a 30 inch HDPE barrel, with 6 feet of available freeboard, as the primary spillway; and a 100 foot wide earthcut spillway, with 3.0 feet of available freeboard, as the secondary spillway. A 50 year frequency event produces a peak runoff of approximately 850 cfs and a 100 year frequency event produces a peak runoff of approximately 1120 cfs. The earthcut secondary spillway has a capacity of approximately 1350 cfs.

The annual yield for this drainage area with an 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 72 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 180 acre-feet and the annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 790 acre-feet.

The Liggett Dam is located in the NE ¼ SE ¼ of Section 2-T3S-R31E on Williams Creek, about 10 miles upstream of the confluence of Williams Creek and the White River. There are no existing Water Permits/Rights located on Williams Creek between Liggett Dam and the White River.

Conclusions:

1. Water Permit Application No. 2582-2 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. 2582-2.



Timothy G. Schaal, P.E.
Natural Resources Engineering Specialist



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2582-2, Travis H. Hendricks**

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. 2582-2, Travis H. Hendricks, PO Box 115, Vivian SD 57556.

The Chief Engineer is recommending APPROVAL of Application No. 2582-2 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. Water Permit No. 2582-2 authorizes a dam with a storage capacity of 150 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

See report on application for additional information.

Garland Erbele, Chief Engineer
April 5, 2006

PUBLISHER'S AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA

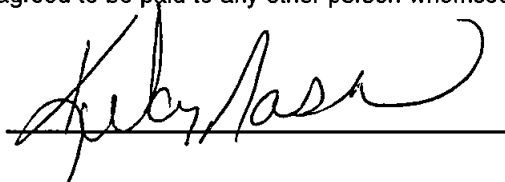
)ss

COUNTY OF JONES

Kelcy Nash _____, of said County and State, being duly sworn, on oath says: THE MURDO COYOTE is a weekly newspaper of general circulation, printed and published in MURDO, in said County and State and has been such newspaper during the times hereinafter mentioned; that the said THE MURDO COYOTE is a legal newspaper, and has been in existence for more than one year immediately preceding the first publication herein mentioned; and has more than 200 bonified subscribers; that I, the undersigned am Editor _____, of said newspaper, and in charge of the advertising department thereof, and have personal knowledge of all facts stated in this affidavit; and that the advertisement headed

Notice of Application No. 2582-2 to Appropriate Water

a printed copy of which is hereto attached, was printed and published in said newspaper for 2 successive issues, the first publication being on the 13th day of April _____, 2005, and the last publication on the 20th day of April _____, 2005, that \$45.36 being the full amount of the fee for publication of the annexed notice solely to the benefit of the publishers of the said newspaper, that no arrangement or understanding for a division thereof has been made with any person and that no part thereof has been agreed to be paid to any other person whomsoever.



Subscribed and sworn to before me this 20th day of April _____, 2005.



Notary Public, State of South Dakota
My Commission Expires
January 24, 2008

**Notice of Application
No. 2582-2 to
Appropriate Water**

Notice is given that Travis H. Hendricks, PO Box 115, Vivian, SD 57556 has filed an application for a water permit to impound 150 acre-feet of water from runoff by reconstructing Liggett Dam located in the NE 1/4 SE 1/4 Section 2 with water impounded in the N 1/2 SE 1/4, SW 1/4 NE 1/4, SE 1/4 NW 1/4 Section 2; all in T3S-R31E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2582-2 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. 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 May 1, 2006.

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

[Publish April 13 & 20, 2006]

RECEIVED
MAY 10 2006
WATER RIGHTS
PROGRAM

Instruction to Newspaper - Publish first Notice on April 13, 2006 with the second publication 7 days later. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 2582-2 to Appropriate Water

Notice is given that Travis H Hendricks, PO Box 115, Vivian SD 57556 has filed an application for a water permit to impound 150 acre-feet of water from runoff by reconstructing Liggett Dam located in the NE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 2 with water impounded in the N $\frac{1}{2}$ SE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 2; all in T3S-R31E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2582-2 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. 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 May 1, 2006.

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



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

April 5, 2006

Murdo Coyote
PO Box 465
Murdo SD 57559-0465

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 2582-2 to Appropriate Water to be published twice. Please publish the first notice on April 13, 2006 with the second publication 7 days later. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352.

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 Travis H. Hendricks, PO Box 115, Vivian, SD (Ph # 605-683-6202).

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. 2582-2

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

Date _____

We are in receipt of your letter of April 5, 2006 enclosing Notice to Appropriate Water by Application No. 2582-2 which was first published in our issue of _____. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

Name

Newspaper



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

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

April 5, 2006

Travis H Hendricks
PO Box 115
Vivian SD 57556

Dear Mr. Hendricks:

Water Permit Application No. 2582-2 for fish & wildlife propagation and livestock use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Publisher of the Murdo Coyote printed at Murdo, SD (Ph # 605-669-2271). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and a report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

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

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

enclosures

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



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

MAY 12 2008

Travis H Hendricks
PO Box 115
Vivian SD 57556

Dear Mr. Hendricks:

Enclosed is Water Permit No. 2582-2 authorizing construction of your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

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

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

Sincerely,

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

enclosures

Permit No. 2582-2
White 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, **November 4, 2009**, made a thorough examination of the water use system constructed by **Travis H. Hendricks** of **PO Box 115, Vivian, SD 57556** holder of Permit No. **2582-2**, bearing the priority of **March 16, 2006** authorizing the storage of **150** acre-feet of the waters of **runoff** for **fish & wildlife production and livestock water** purposes, in **Jones** County.

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

A. Works used to divert the water:

A 22.5 ft. high earthen dam with a normal storage capacity of 150 ac-ft. of water

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

N/A

C. Works used to apply water to beneficial use:

A 22.5 ft. high earthen dam with a normal storage capacity of 150 ac-ft. of water

The system is in the following condition **good**. The point of diversion is located **2200 ft. north & 1200 ft. west of the SE corner of Sec. 2-T3S-R31E (NE ¼ SE ¼) (Lat. 43.812868, Long. -100.371494)**. The works are capable of storing **150** acre-feet of water which is to be used for **fish & wildlife propagation and livestock water**. Water has been put to beneficial use to the maximum extent as follows:

A 22.5 ft. high earthen dam with a normal storage capacity of 150 ac-ft. of water

and the license should be issued for **150** acre-feet of storage.

Applicable permit qualifications have been complied with: Yes **X**

Exceptions to compliance are: **none** Date Report Completed: **March 4, 2010**



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

REPORT ON INSPECTION OF PERMIT NO. 2582-2

DATE OF INSPECTION: **November 4, 2009**

NAME & ADDRESS OF INSPECTION CONTACT/ **Travis H. Hendricks, PO Box 115, Vivian, SD 57556**

RELATIONSHIP TO PERMIT HOLDER, IF APPLICABLE: **owner**

NAME & ADDRESS OF PERMIT HOLDER: **same**

DIVERSION POINT LEGAL LOCATION: 2200 ft. north & 1200 ft. west of the SE corner of Sec. 2-T3S-R31E (NE ¼ SE ¼) (Lat. 43.812868, Long. -100.371494)

DAM INFORMATION:

- 1) Height to crest **22.5** feet
- 2) Height to primary spillway **16.5** feet
- 3) Height to secondary spillway **19.5** feet
- 4) Crest width **12** feet
- 5) Crest length **500** feet
- 6) Spillway length **XXX** feet
- 7) Spillway width **100** feet
- 8) Approx. storage (Normal) **150** acre-feet
- 9) Approx. storage (Maximum) **390** acre-feet
- 10) Date constructed: **2006**

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**

Water Permit Application No. 2582-2



0 0.25 0.5 1 Miles



Timothy G. Schaal 3/4/10

Timothy G. Schaal, P.E.
Natural Resources Engineering Specialist
SD DENR, Water Rights Program



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
denr.sd.gov

APR 23 2010

2582-2

Travis H Hendricks
PO Box 115
Vivian SD 57556 0115

Dear Mr. Hendricks:

Enclosed is your Water License No. 2582-2. The License is the final document which completes the process of obtaining a water right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

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

Sincerely,

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

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 2582-2

(1) Travis H Hendricks, PO Box 115, Vivian SD 57556 made Application No. 2582-2, March 16, 2006 for a water permit to impound 150 acre feet of runoff water in Liggett Dam, Jones County, South Dakota for fish & wildlife propagation and livestock watering purposes. Permit No. 2582-2, with a priority date of March 16, 2006 was approved May 1, 2006 and issued to the applicant for diversion of water with construction of the storage dam to be completed on or before May 1, 2011 and the application to beneficial use of said water on or before May 1, 2015.

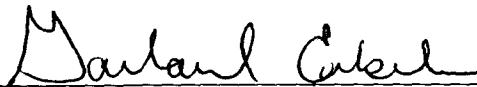
(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the storage dam and is entitled to impound 150 acre feet of water with sufficient water annually to maintain the water level to the outlet elevation. The location of Liggett Dam (spillway) is 2,200 feet north and 1,200 feet west of the SE corner of Section 2, T3S, R31E (NE ¼ SE 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 Travis H Hendricks, PO Box 115, Vivian SD 57556 the holder and/or owner of Water Right No. 2582-2 is issued a license to appropriate water, the right to impound 150 acre feet of water in Liggett Dam with a priority date of March 16, 2006 from the location specified in (2) of this license for the purpose of fish & wildlife propagation and domestic livestock watering purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 2582-2 and subject to the following qualifications:

- Water Right No. 2582-2 authorizes a dam with a storage capacity of 150 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
- Low flows as needed for downstream domestic use, including livestock watering and prior water rights must be bypassed.



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

APR 23 2010

date

