

WATER PERMIT NO. 2640-2

Name of Applicant: **Ft. Pierre National Grassland**

Address: **1020 N Deadwood St, Ft Pierre SD 57532** Phone: **605 224-5517**

Amount of Water Claimed: **61.4 AF** Total Acres: **NA**

Source of Water Supply: **runoff**

Water to be used for: **fwp & recreation** County: **Stanley**

Type of Waste Disposal System: **NA**

Location: **20 miles southeast of Ft. Pierre**

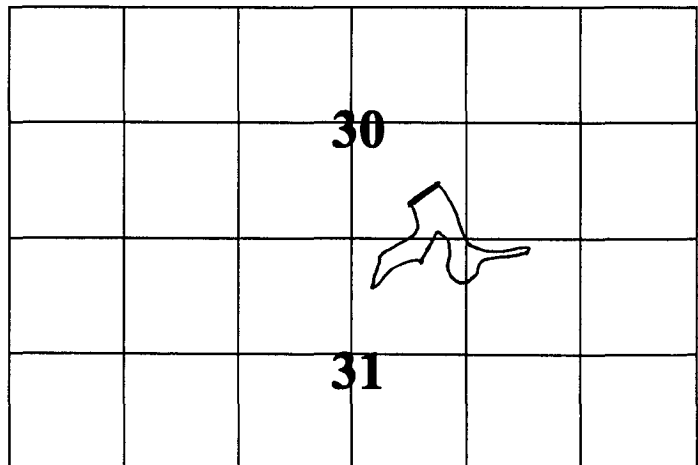
PRIORITY Date Received: **7-6-09** Application/License Fee: **\$700**

Corrected Application Received: Period of Annual Use: **January 1 – December 31**

Remarks: **Repairing Williams Dam which was originally covered under US 80-2**

Diversion Point: **SW ¼ SE ¼ Sec 30-T109N-R77W**

Land to be Irrigated: **S ½ SE ¼ Sec 30 and N ½
NE ¼ Sec 31; all in T109N-R77W**



Depth of Well: **NA**

Well Driller:

Remarks:

Type of Map: **plat**

Prepared by: **David Konechne, PE**

Reviewed and the Number Assigned on: **7-7-09**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

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>2640-2</u> (office use only)	Hydrologic Unit <u>10140101</u>
	Basin <u>Missouri River</u>	
	Newspaper <u>Capitol Journal</u>	<u>P.O. Box 878</u>
	<u>605-224-7301</u>	<u>Pierre 57501</u>

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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 _____	

Type of Application:
(check one)

☒ New ☐ Vested Right (Use predates Mar 2, 1955) ☐ Future Use Reservation
☐ 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.)

- In the name of the United States of America on behalf of the
USDA
1. Name of Applicant Ft. Pierre National Grassland Phone (605) 224-5317
(check one) ☒ Owner ☐ Tenant/lessee
- Mailing Address 1020 N. Deadwood St. Ft. Pierre State SD 57532
(Street, RR, or Box and City) (Zip Code)
2. Amount of water claimed _____ *CFS or _____ **GPM 61.4 ***AF
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)
3. Source of water supply runoff
4. Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W) County Stanley
SW1/4 SE1/4 Sec 30 T109 N. R77W
water impounded: S 1/2 SE 1/4 Sec 30 and N 1/2 NE 1/4 Sec 31 all in T109 N
Rng 77W
5. County or counties where water will be used Stanley
6. Annual period during which water is to be used yearly Jan 1 - Dec 31
7. Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

Repairing Williams Dam.

STATE OF SOUTH DAKOTA)

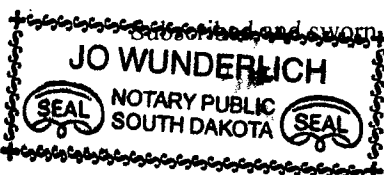
County of Hughes

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, Ruben M. Leal, 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

Ruben M. Leal on behalf of
Ft. Pierre National Grassland



2-2007

Jo Wunderlich
My Commission Expires
July 27, 2013

Notary Public signature

**SOUTH DAKOTA
WATER PERMIT NO. 2640-2**

Date of first receipt of application July 6, 2009.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2640-2 to Ft. Pierre National Grassland, c/o Ruben M Leal, 1020 N Deadwood St, Ft. Pierre SD 57532 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. 2640-2 authorizes impoundment of 61.4 acre-feet of water from runoff by reconstructing Williams Dam located in the SW ¼ SE ¼ Section 30 with water impounded in the S 1/2 SE 1/4 Section 30 and N 1/2 NE 1/4 Section 31; all in T109N-R77W.
2. The water appropriated shall be used for the purpose of fish and wildlife propagation, recreation, and livestock water 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. 2640-2 is August 7, 2009.
5. The date from which applicant may claim right is July 6, 2009.
6. One-fifth of the construction is to be completed on or before February 7, 2011.
7. All construction is to be completed on or before August 7, 2014.
8. Water is to be put to beneficial use on or before August 7, 2018.
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. 2640-2 authorizes a dam with a storage capacity of 61.4 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.

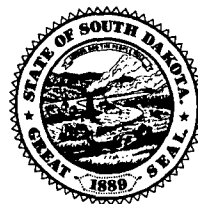
WATER MANAGEMENT BOARD

By: Garland Erbele

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

AUG 11 2009

date



Supplemental Information

(type or print in ink)

1. Well Information - Proposed Construction

- a) Drill Hole Diameter _____ Depth _____
- b) Casing Type _____ Diameter _____ Thickness _____
- c) Screen Type _____ Diameter _____ Thickness _____
- d) Gravel Pack _____ Length of Gravel Pack _____
- e) Depth to Top of Water Bearing Material _____
- f) Depth to Water (ground surface to water level) _____
- g) Distance to nearest existing domestic well:
 On applicants property _____ On property owned by others _____

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) _____
- b) System Capacity (gallons) _____ Year Constructed _____
- c) Connected to the City of _____ Sanitary System _____

3. Dugout Information

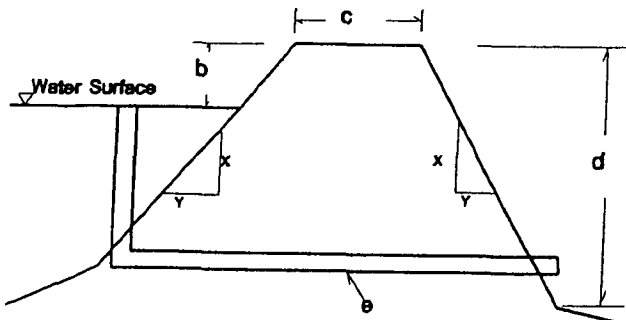
- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

4. Water Storage Dams

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

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

Konechne Engineering



- b) Freeboard 10 ft.
- c) Crest Width 12 ft.
 Crest Length 450 ft.
- d) Height 30 ft.
- e) Primary Outlet Capacity 253
 If pipe, diameter 60" riser 48" barrel
- f) Secondary Spillway Capacity 205
 Spillway Width 80 ft.
- g) X & Y Slope
 Upstream 3 to 1
 Downstream 3 to 1
- h) Surface Area of Impoundment 15.2 acres
- i) Storage 61.4 Acre Feet
- j) Drainage Area Above Dam 26.11 Acres

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WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 7/7, 20 09

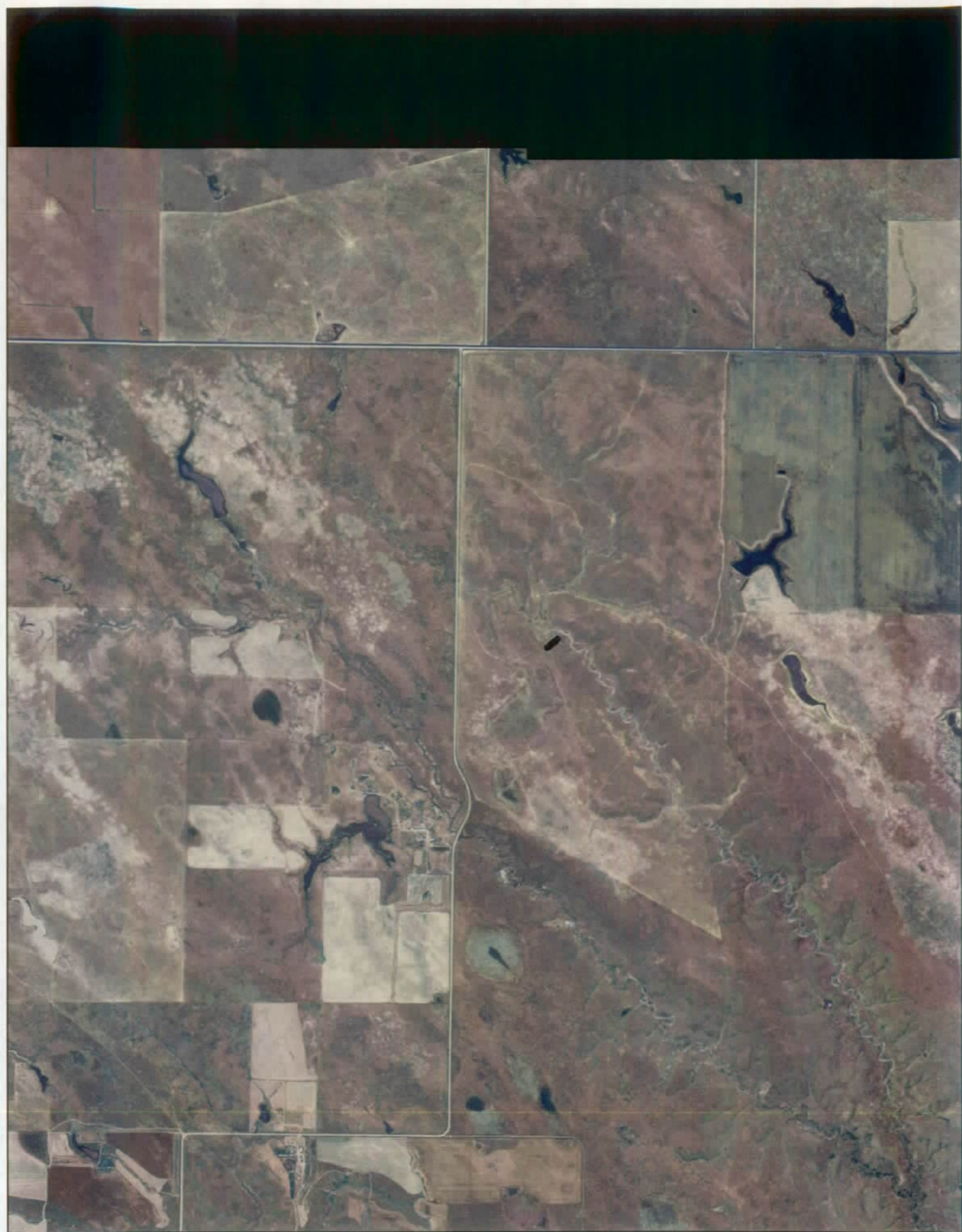
RECEIVED OF Carol Erickson USDA 1020 N Deadwood St. Fort Pierre SD 57532

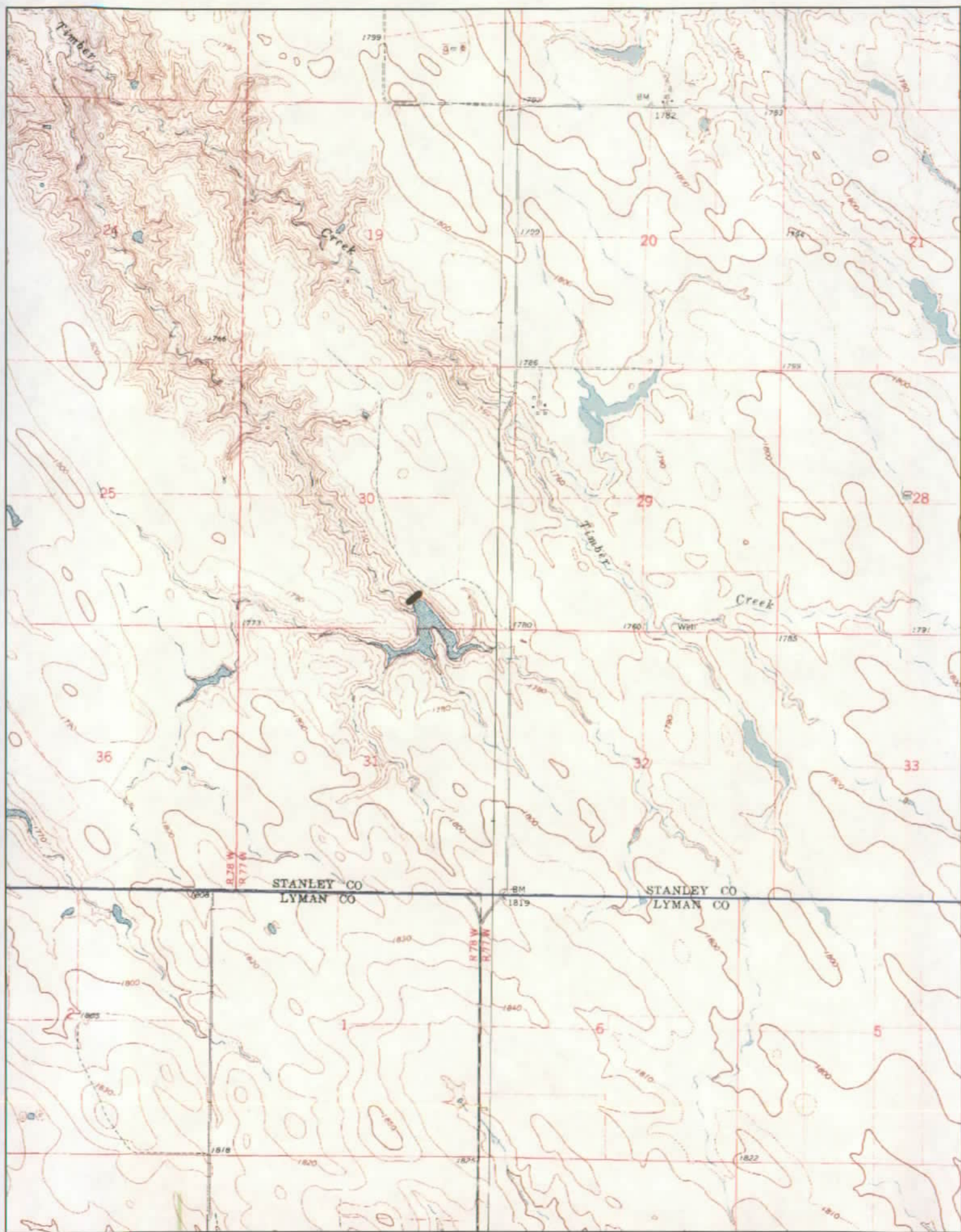
The following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>2640-2</u> to Appropriate Water, to construct and to put water to beneficial use	500	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>2640-2</u>	200	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	700 00

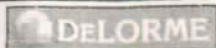
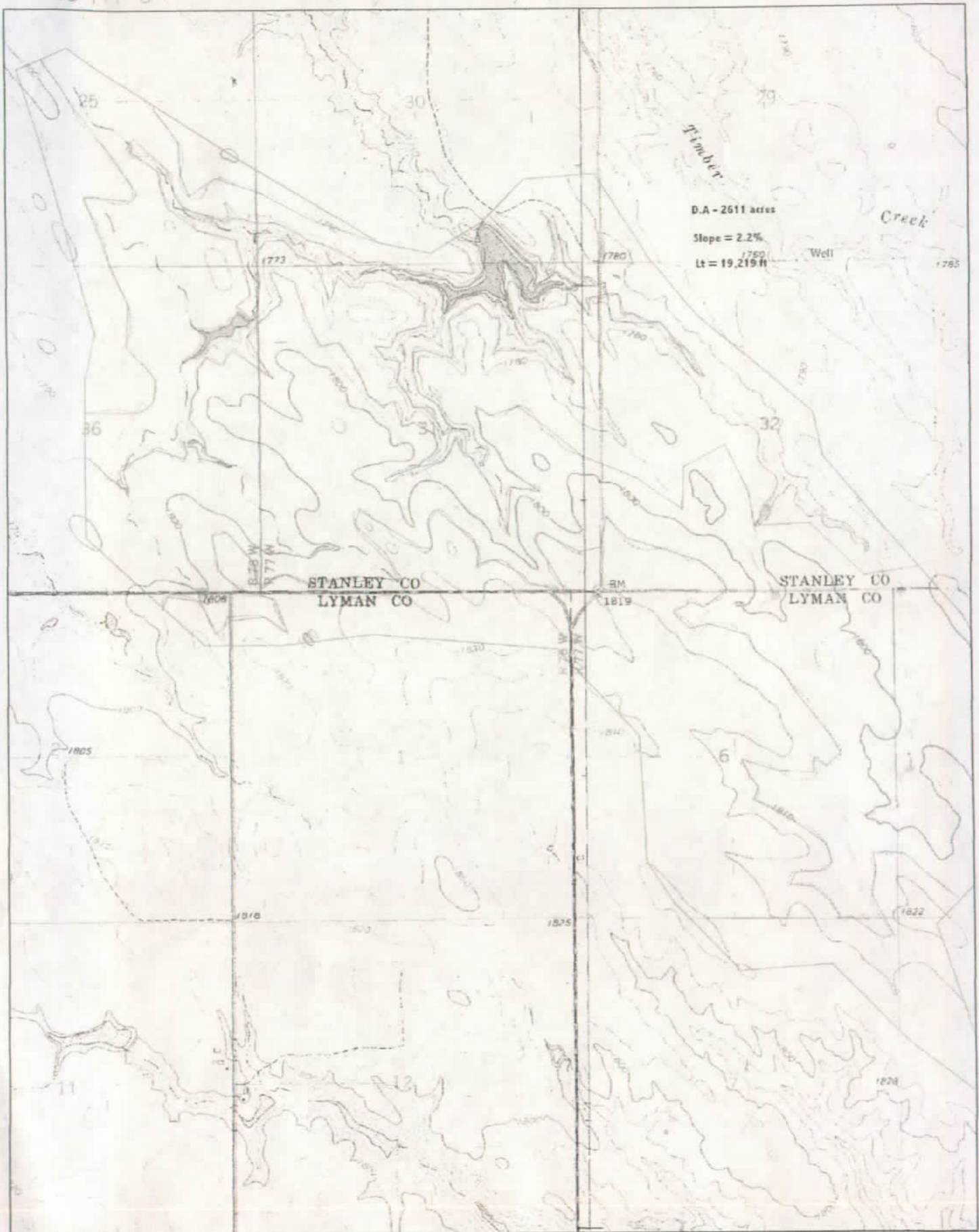
No. 04172

By [Signature] [Signature]
Chief Engineer



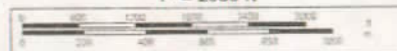


Willboms SE 30, 107N, R 71W



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Scale 1 : 25,000
1" = 2080 ft



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DRAINAGE AREA	ANNUAL YIELD	PEAK RUNOFF <i>Ac Ft</i>	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.
2611		462	602	10	15.2	—	61.4

LOCATION

N 44° 12.667
W 100° 07.876

↖ 80' Em Spill

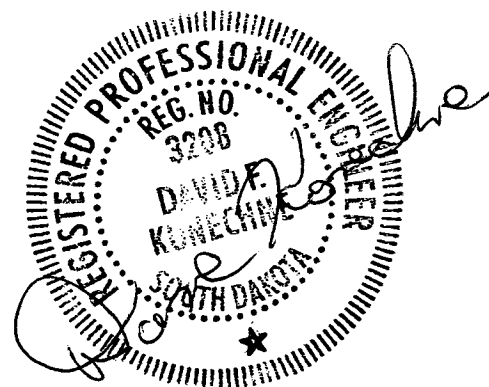
4490 P.S.

1402

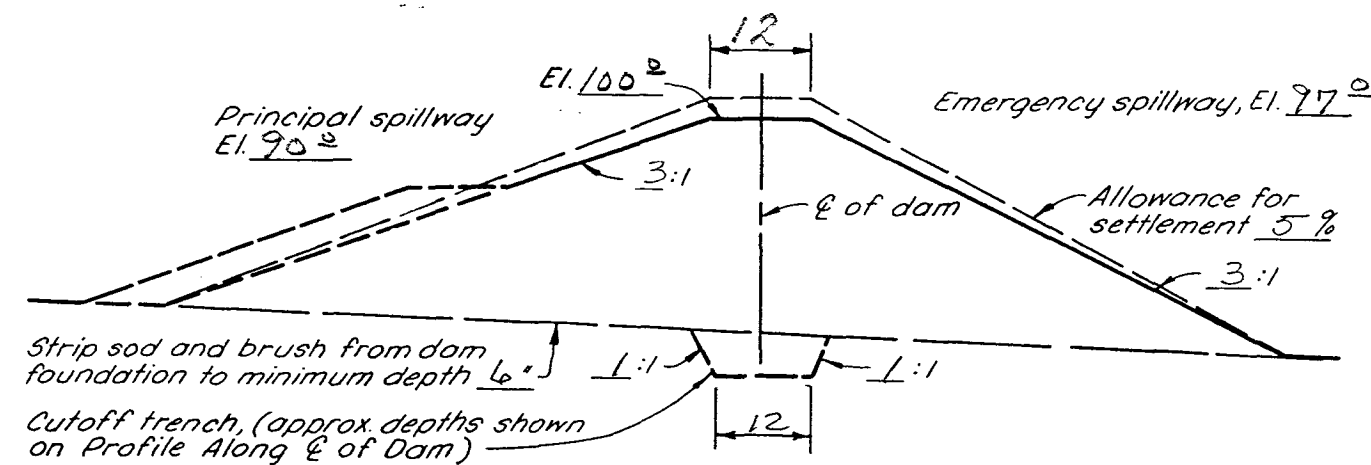
Undercut Em. Spillway &
Topsoil with 6"

ITEM	UNIT	QUANTITY
Earth Fill	c y	8,400
Emergency Spillway Excavate	c y	5000
Emergency Spillway Topsoil @ 6"	sq yd	1700
60 inch Dia Riser 8ft long with 4ft - 48" stub	ea	1
48 inch Dia Spiral CMP uinyle clad	lin Ft	130
Concrete	c y	1.9
reinforcing steel	lb	61
sand deep collar	c y	58
PVC 4 inch dia drain pipe	lin Ft	123
Timber Pipe Support	ea	1
Timber Trash Rack	ea	1

**WATER RIGHTS
PROGRAM**



see topog



SKETCH PLAN OF DAM AND RESERVOIR AREA

Approximate scale 1" = _____

REFERENCE: GUIDE PLAN NO. 1.0

S.D. CONSTRUCTION AND MATERIAL SPECIFICATIONS:

SD-2 Clearing & Grubbing
SD-7s Earth Fill
SD-9 Drain Fill
SD-12B Concrete
SD-15 CMP
SD-19 PVC
SD-16 Timber Fabrication

OPERATOR: Williams Dam - USFS

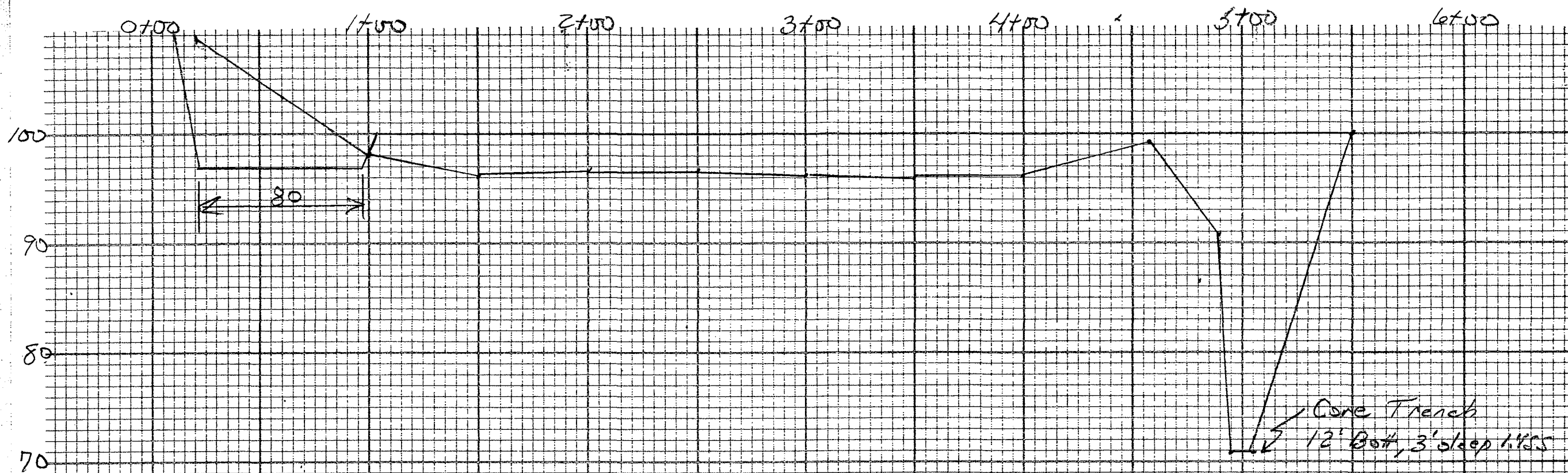
CONSERVATION DISTRICT: _____

Class "A" Hazard

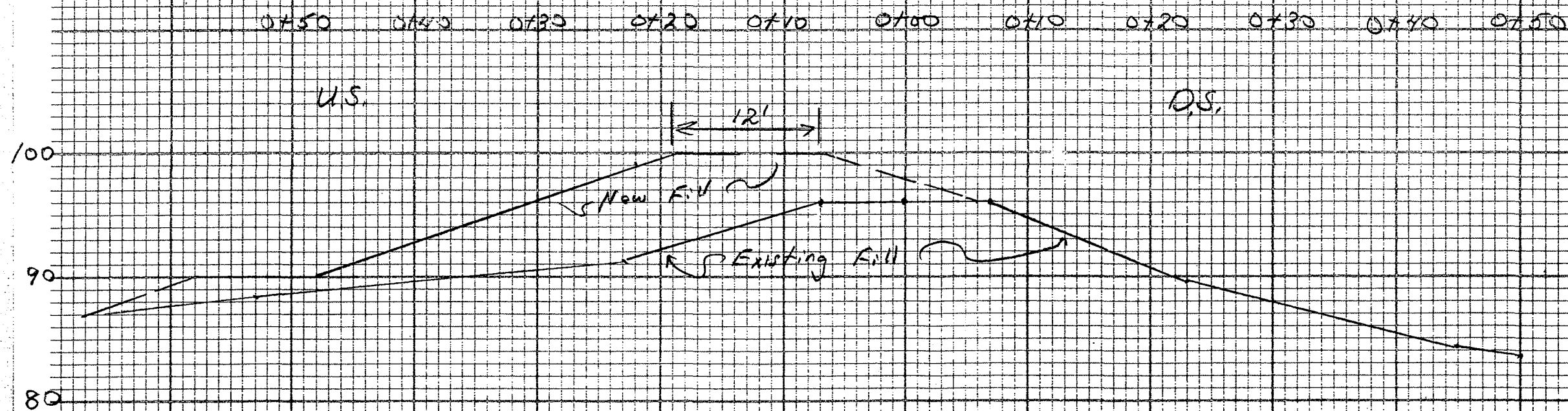
		Date	Approved by	
Designed			Title	
Drawn			Title	
Traced			Sheet	Drawing No.
Checked			No	
			of	

JOB PLAN NO. 1.0

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



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



Williams Dam - USFS

Locate principal spillway pipe at $\mathcal{C}$ of dam sta. $4+90$, at an angle of 90° to the $\mathcal{C}$ of the dam.

Emergency spillway El. 97^2

Principal spillway El. 90^2

Berm, if required $3:1$ slope normal to $\mathcal{C}$ of dam

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

$3:1$ slope normal to $\mathcal{C}$ of dam

Top of dam after settlement El. 100^2

Note: Allowance for settlement 5%

$3:1$ slope normal to $\mathcal{C}$ of dam

$60''$ dia. riser, see job plan no. 5.3

91°

Antiseep collars

sand seep collar - job plan 3.8

El. 82.7

8% gr.

$130'$ of $48''$ dia. pipe

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

SPECIFICATION NOTES

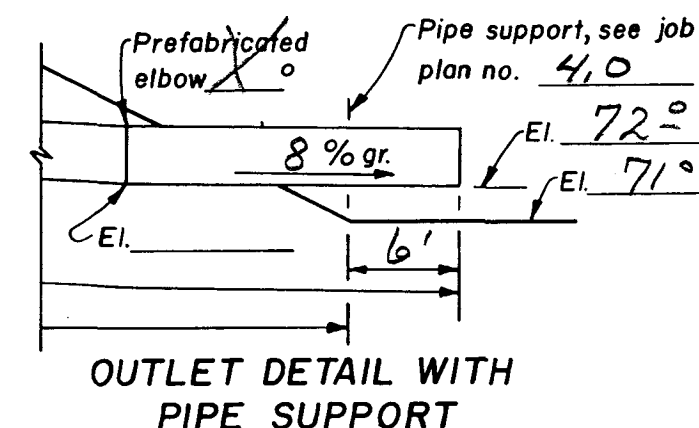
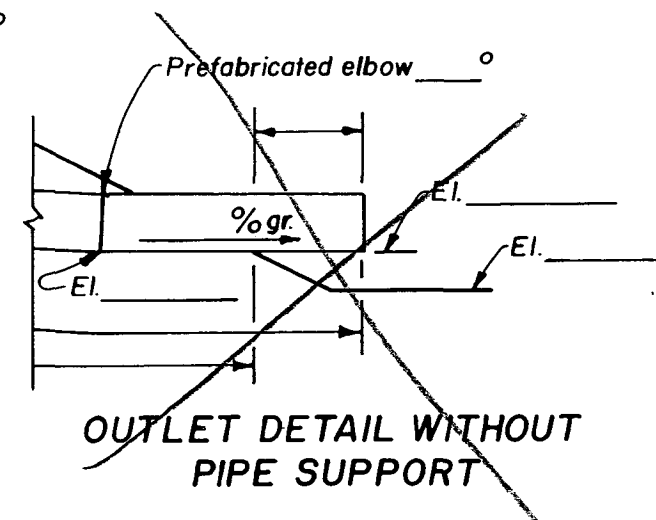
1. ELBOW, IF REQUIRED, MAY BE FABRICATED BY CONTINUOUS WELDING SEPERATE PIPE SECTIONS OR BY FABRICATING A CONTINUOUS WELDED JOINT ON THE UPSTREAM END OF LAST SECTION OF PIPE.
2. PIPE WALL THICKNESS SHALL BE 10 GAGE OR 0.138 INCHES.

All pipe & fittings to be single clad

TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY

APPLICABLE STANDARD S.C.S. SPECIFICATIONS



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

LOCATION

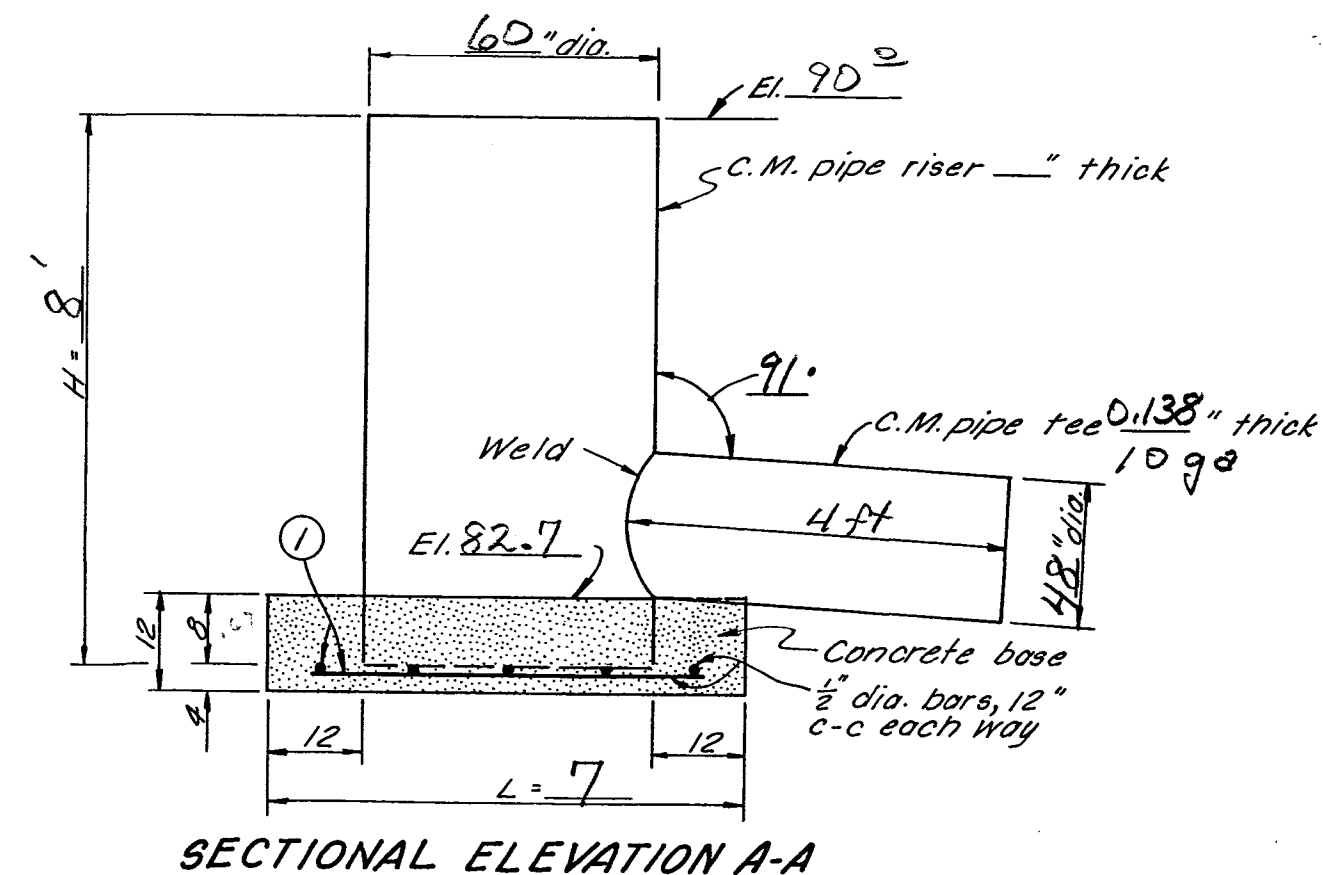
CORRUGATED METAL PIPE
DROP INLET PRINCIPAL SPILLWAY

OPERATOR Williams Dam

CONSERVATION DISTRICT _____

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

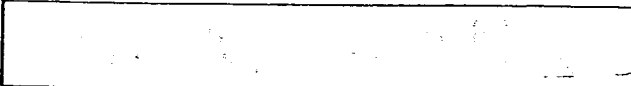
Date _____ Approved by _____
Designed _____ Title _____
Drawn _____ Title _____
Traced _____ Sheet _____ Drawing No. _____
Checked _____ of _____

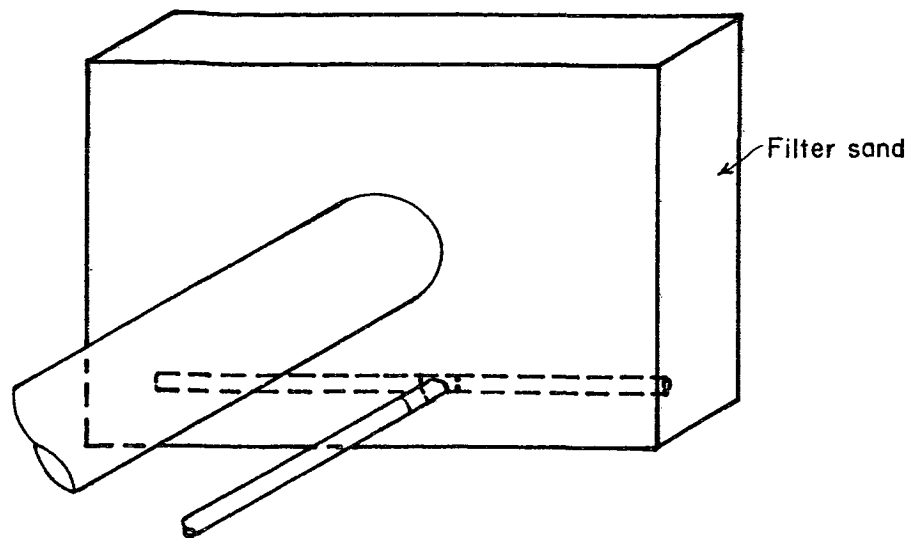


RISER DIA. IN.	BAR SIZE	MARK	TYPE	NO. REQ'D.	LENGTH FT.-IN.	TOTAL LENGTH FT.-IN.	TOTAL WT. LB.	C IN.	L FT.-IN.
60	4	I	STR.	14	6-6	91-0	61	6	7-0

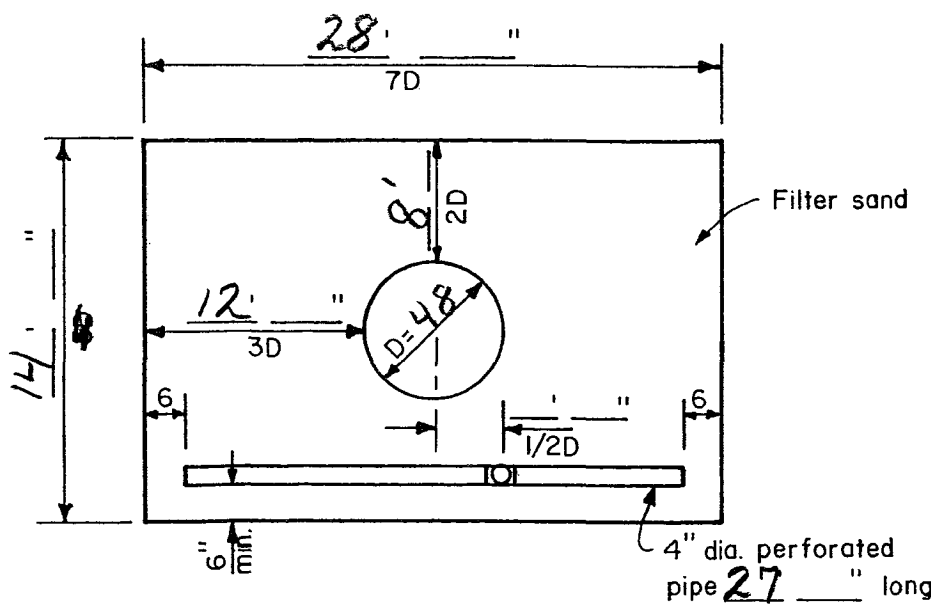
ITEM	UNIT	QUANTITY
CONCRETE	CU.YD.	1.9
REINFORCING STEEL	LB.	61

NOTE: All Pipe to be vinyl clad CMP

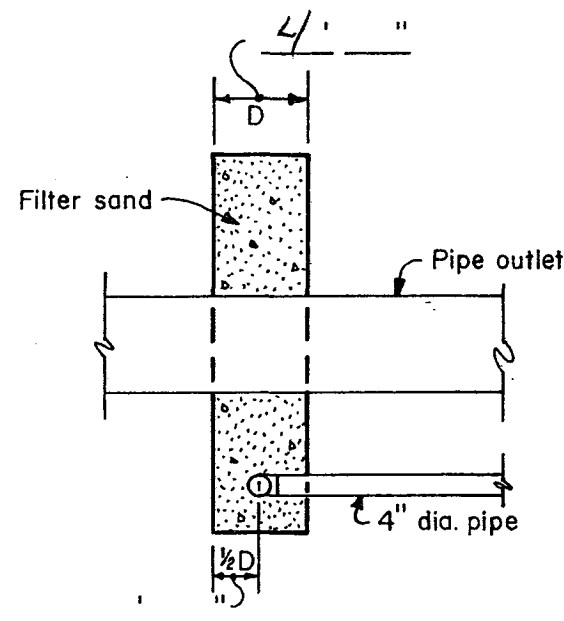
OPERATOR: <u>Williams Dam</u>	
CONSERVATION DISTRICT: _____	
	
Date _____	Approved by _____
Designed _____	Title _____
Drawn _____	Title _____
Traced _____	Sheet _____
Checked _____	No _____
	Drawing No. _____



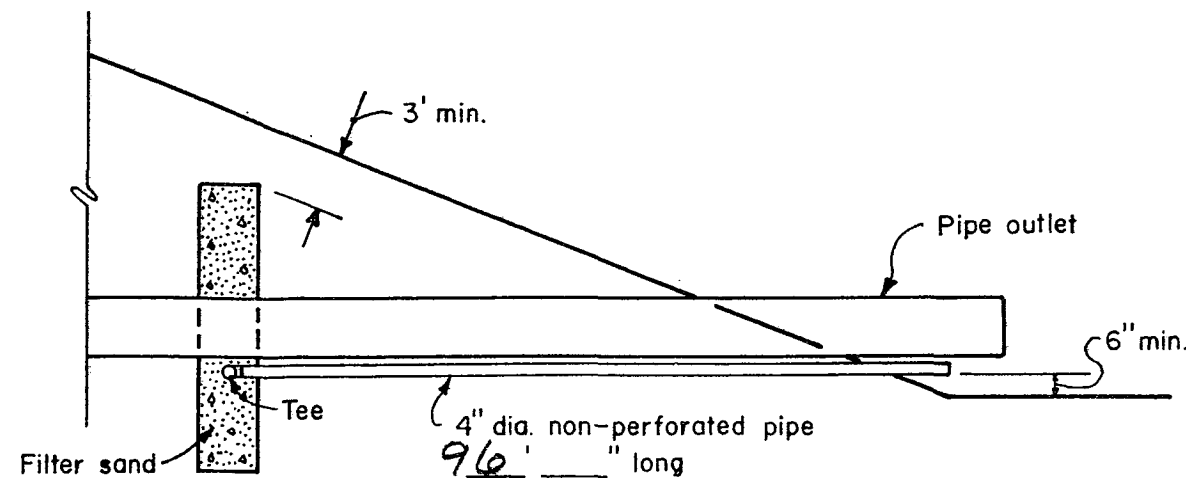
ISOMETRIC VIEW



UPSTREAM VIEW



SIDE VIEW



OUTLET DETAIL

FILTER GRADATION	
SIEVE SIZE	PERCENT PASSING
3/8"	100
4	95-100
8	80-100
16	50-85
30	25-60
50	10-30
100	2-10

See spec 50-9

58ay

Sec. _____, T. _____, R. _____

_____ County

LOCATION

SAND ANTISEEP COLLAR

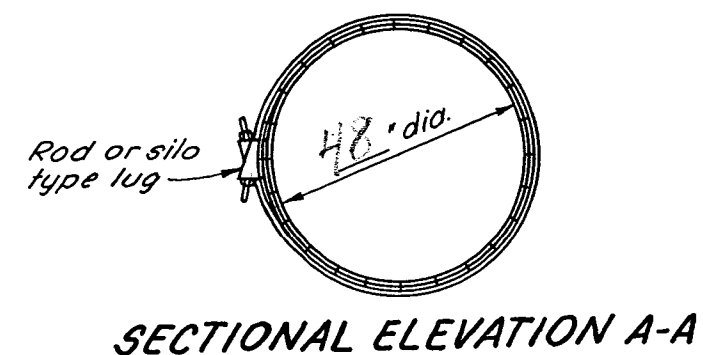
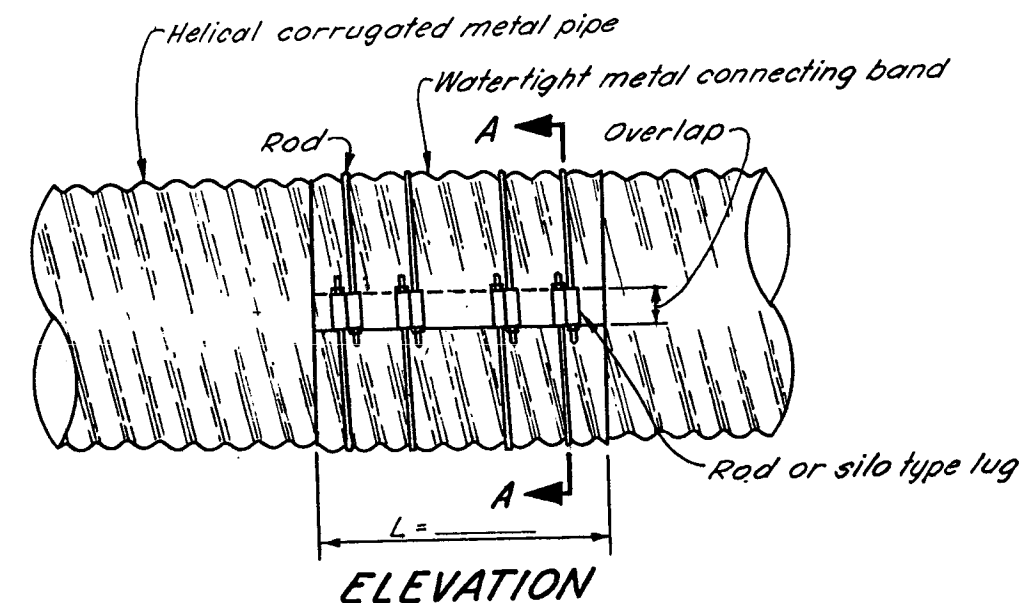
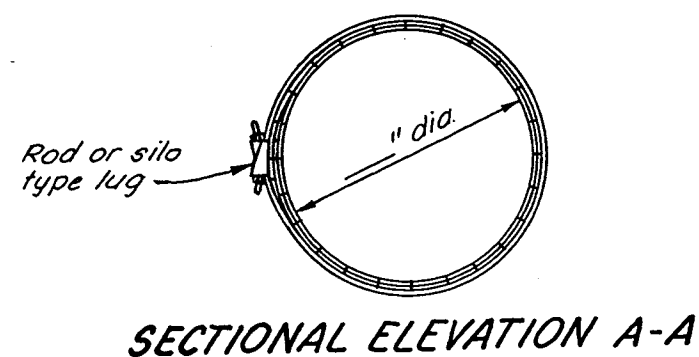
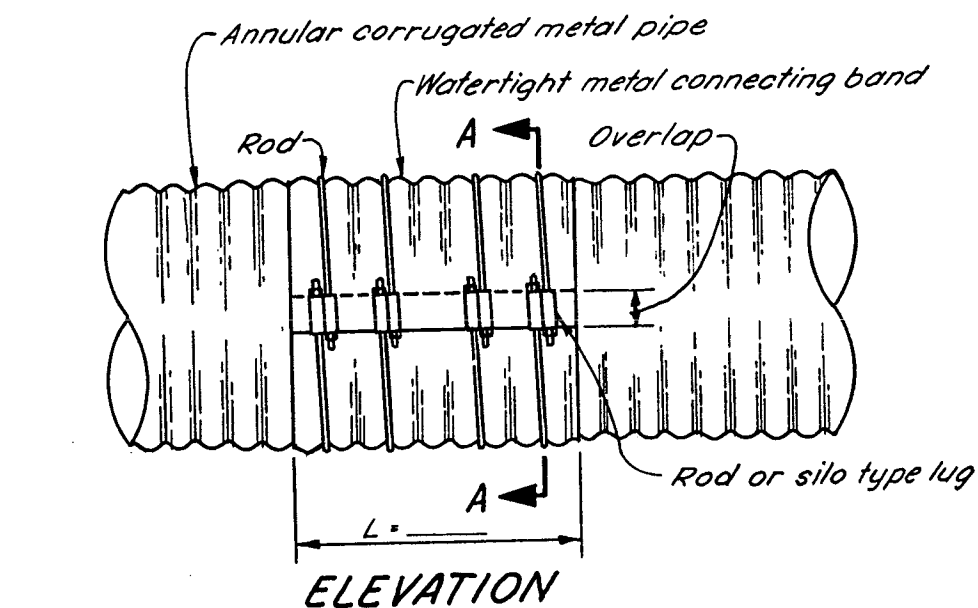
OPERATOR Williams Dam

CONSERVATION DISTRICT _____

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

NOTE:

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



DIMENSIONS AND QUANTITIES

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

NOTES:

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

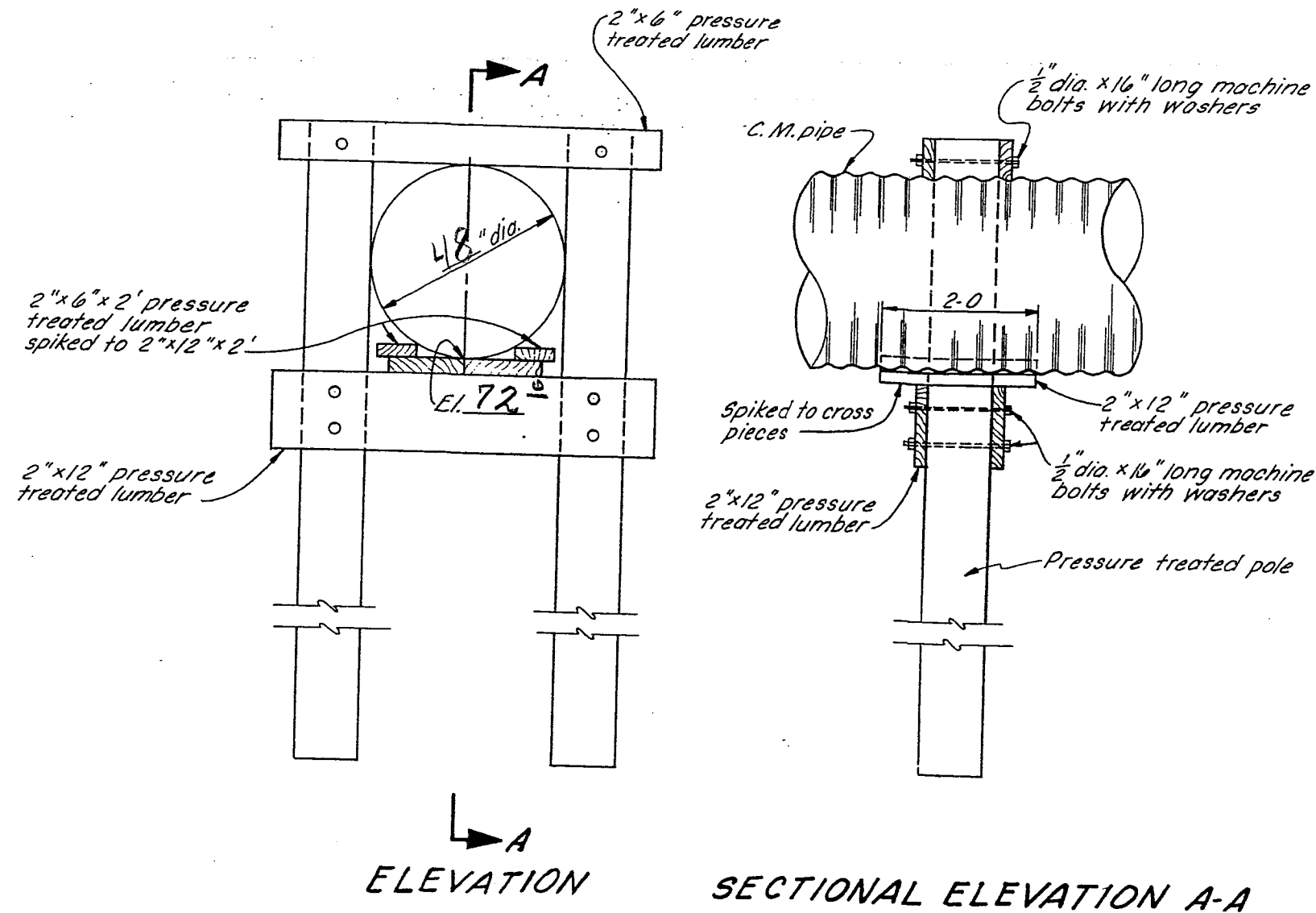
All pipe to be vinyl clad CMP

WATERTIGHT CONNECTING BAND FOR ANNULAR AND HELICAL CORRUGATED METAL PIPE

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

JOB PLAN NO. 3.0

5 N-29, 073.30



NOTES:

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

TABLE OF QUANTITIES

ITEM	LENGTH FOR 48" DIA. C.M. PIPE	UNIT	QUANTITY
PRESSURE TREATED POLE 10" DIA.	12-0	EACH	2
2" X 12" PRESSURE TREATED LUMBER	6-0	EACH	2
2" X 6" PRESSURE TREATED LUMBER	6-0	EACH	2
2" X 12" PRESSURE TREATED LUMBER	2-0	EACH	3
2" X 6" PRESSURE TREATED LUMBER	2-0	EACH	2
1/2" DIA. MACHINE BOLTS WITH NUTS	1-4	EACH	10
1/2" DIA. WASHERS		EACH	20

REFERENCE: GUIDE PLAN NO. 4.0

JOB PLAN NO. 4.0

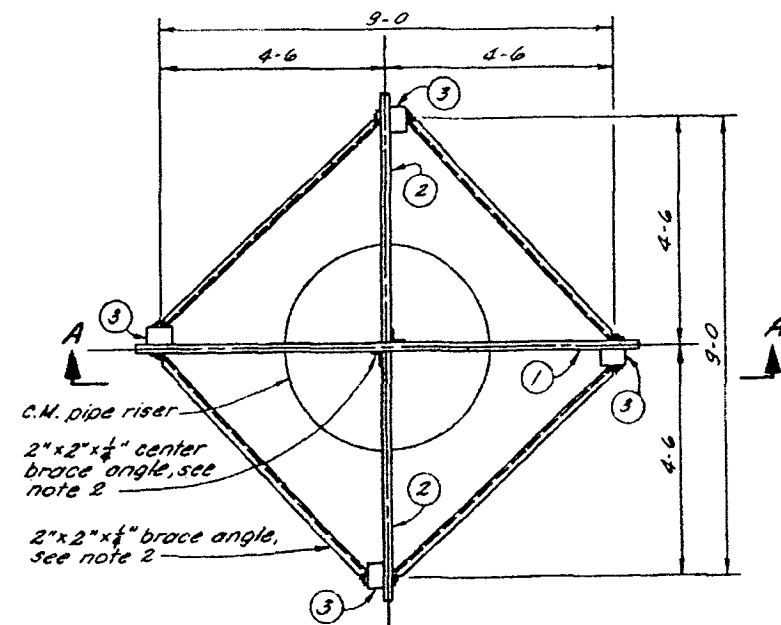
TIMBER PIPE SUPPORT

OPERATOR: Williams Dam

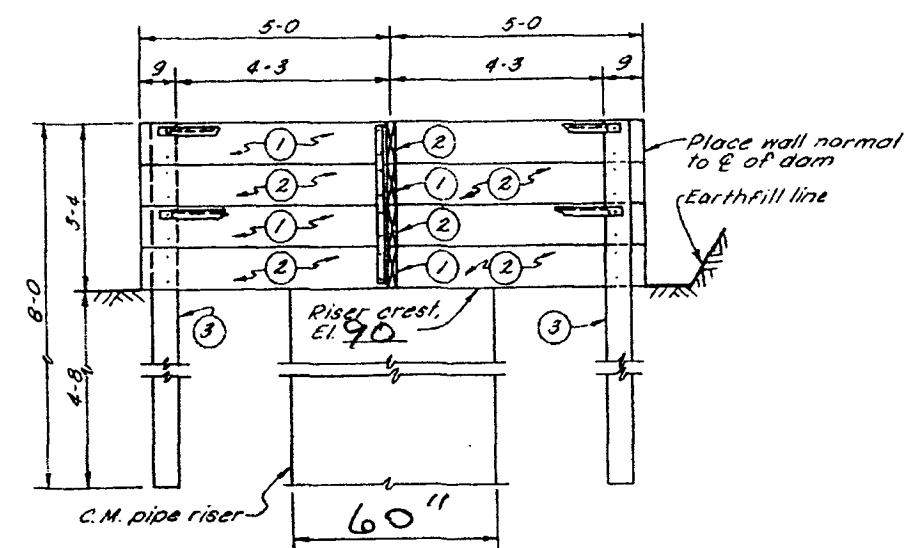
CONSERVATION DISTRICT: _____

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

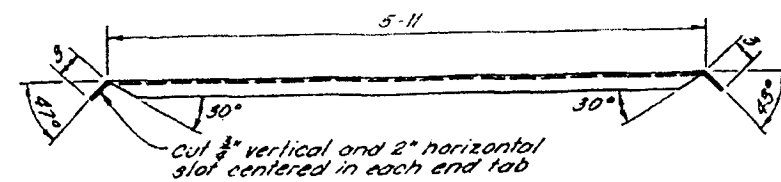
5, N-29,073.4a



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:

- 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.
- 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.
- ATTACH BRACE ANGLES TO TOP BOLT ON TOP 2" X 10" BOARD AND TO TOP BOLT ON NEXT TO BOTTOM BOARD.

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

OPERATOR: Williams Dam

CONSERVATION DISTRICT: _____

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed: _____ Date: _____
Drawn: _____ Title: _____
Traced: _____
Checked: _____

JOB PLAN NO. 6.4

5, N-29, 073.6-40

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PROGRAM

1*****
SITES XEQ 08/29/2007 WATER RESOURCE SITE ANALYSIS COMPUTER PROGRAM
VER 2000 (USER MANUAL - DATED MAY 2001)
TIME 09:58:17

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

SITES 05/01/2000 Williams Dam - USFS 4.0796875 H5
SAVMOV 0 101
SAVMOV 101 1 1
STRUCTURE Williams
80 0
82 1.5
84 3.2
90 15.2
94 22.4
96 30.2
100 50

P.S @ Elev 90
ES @ 97
T.D. @ 100

ENDTABLE
WSDATA 5A1 AC 80 2611 19219 2.2
PDIRECT 3.5 .00 4.10
POOLDATA ELEV 90 90 70 70 SC
PSINLET 1 15.7
PSDATA 1 128 48 .025 71
ASDATA 41 100 80 2 .1 2
ASINSURF 41 .035
ASINLET 41 0.0 0.0 80 0.0 3
140 8
ENDTABLE
ASEXSURF 41 .035
.65 0
3
2 0
.02
ENDTABLE
ASEXIT 41 N 120
BTMWIDTH FEET 80
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 08/29/2007 Williams Dam - USFS WSID=
 VER 2000 Williams SUBW= A
 TIME 09:58:17 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
 3.50 0.00 0.00 4.10

WSDATA - CN DA-SM TC/L -/H QRF
 80.00 4.08 19219.00 2.20 0.00

SITEDATA- PERM POOL CREST PS FP SED VALLEY FL 378?
 90.00 90.00 0.00 70.00 YES

BASEFLOW INITIAL EL EXTRA VOL SITE TYPE
 0.00 0.00 0.00 DESIGN

PSDATA - NO. COND COND L DIA/W -/H
 1.00 128.00 48.00 0.00

 PS N KE WEIR L TW EL
 0.025 1.00 15.70 71.00

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 0.00 100.00 80

AUX.DATA - INLET N SIDE SLOPE EXIT N EXIT SLOPE ACTUAL AUX?
 0.035 2.00 0.035 0.100 NO

BTM WIDTH - BW1 BW2 BW3 BW4 BW5
 ft 80.00 0.00 0.00 0.00

AUXILIARY SPILLWAY RATING DEVELOPED USING WSPVRT.

1SITES -----
 XEQ 08/29/2007 Williams Dam - USFS WSID=
 VER 2000 Williams SUBW= A
 TIME 09:58:17 SITE = S 1 PASS= 1 PART= 2

PERM POOL 90.00 FT 61.4 ACFT 15.20 AC 0.0 CFS

CREST PS 90.00 FT 61.4 ACFT 15.20 AC 0.0 CFS
 SED ACCUM 90.00 FT 61.4 ACFT 15.20 AC 0.0 CFS
 START ELEV 90.00 FT 61.4 ACFT 15.20 AC 0.0 CFS
 NRCS-PSH D= 24.00 HR P= 3.50 IN Q= 1.64 IN DA= 4.08 SM
 TC= 3.80 HR CN= 80.00 VOL= 356.0 ACFT
 PEAK = 852.2 CFS, AT 14.2 HRS.

ROUTED RESULT - HYD TYPE EMAX VOL-MAX AMAX QMAX
 NRCS-PSH 97.14 FT 226.7 ACFT 35.83 AC 247.5 CFS

PS STORAGE 165.3 ACFT, BETWEEN AUX. CREST AND SED. ACCUM ELEVATIONS.

DRAWDOWN (DDT) TEST 90.00 FT 61.4 ACFT 0.00 CFS
 CONTROL IS 0.000 DETENTION STORAGE

TIME = 1.92 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	90.00	0.00	0.00	0.00	61.40	15.20
2	90.70	28.25	28.25	0.00	72.41	16.45
3	91.39	79.89	79.89	0.00	84.29	17.70
4	92.09	146.77	146.77	0.00	97.05	18.96
FULL CONDUIT FLOW, ELEV = 92.78 FT						
5	92.78	225.96	225.96	0.00	110.67	20.21
6	93.69	230.67	230.67	0.00	129.64	21.83
7	94.59	235.21	235.21	0.00	150.43	24.69
8	95.49	239.66	239.66	0.00	174.29	28.21
9	96.39	244.04	244.04	0.00	201.40	32.14
10	97.29	248.34	248.34	0.00	232.41	36.60
11	98.20	252.56	252.56	0.00	267.44	41.07
12	99.10	256.72	256.72	0.00	306.51	45.53
13	100.00	260.80	260.80	0.00	349.60	50.00

1SITES -----
 XEQ 08/29/2007 Williams Dam - USFS WSID=
 VER 2000 Williams SUBW= A
 TIME 09:58:17 SITE = S 1 PASS= 1 PART= 3

AUX. CREST 97.14 FT 226.7 ACFT 35.83 AC 247.5 CFS

PS STORAGE 165.3 ACFT, BETWEEN AUX. CREST AND SED. ACCUM ELEVATIONS.

START ELEV 90.00 FT 61.4 ACFT 15.20 AC 0.0 CFS

EFFECTIVE HEIGHT(H)= 27.1 FEET, PRODUCT= 6152. (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= 4.10 IN Q= 2.12 IN DA= 4.08 SM
TC= 3.80 HR CN= 80.00 VOL= 462.2 ACFT

PEAK = 1123.2 CFS, AT 14.2 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	90.00	0.00	0.00	0.00	61.40	15.20
2	90.70	28.25	28.25	0.00	72.41	16.45
3	91.39	79.89	79.89	0.00	84.29	17.70
4	92.09	146.77	146.77	0.00	97.05	18.96
FULL CONDUIT FLOW, ELEV = 92.78 FT						
5	92.78	225.96	225.96	0.00	110.67	20.21
6	93.33	228.84	228.84	0.00	121.94	21.19
7	93.87	231.61	231.61	0.00	133.73	22.17
8	94.42	234.35	234.35	0.00	146.24	24.02
9	94.96	237.06	237.06	0.00	159.89	26.14
10	95.50	239.74	239.74	0.00	174.70	28.27
11	96.05	242.38	242.38	0.00	190.66	30.44
12	96.59	245.00	245.00	0.00	207.95	33.13
13	97.14	247.59	247.59	0.00	226.72	35.83
14	97.28	255.09	248.27	6.82	231.90	36.53
15	97.42	262.60	248.95	13.65	237.18	37.24
16	97.68	293.18	250.16	43.03	246.94	38.52
17	98.00	357.50	251.63	105.87	259.32	40.08
18	98.57	540.78	254.28	286.50	283.08	42.91
19	99.28	844.83	257.56	587.26	315.07	46.46
20	100.00	1234.09	260.80	973.29	349.60	50.00

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	20.	100.	0.0	0.035	**	**	CREST
2	100.	220.	10.0	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 97.14 FT.

DRAWDOWN (DDT) TEST 90.00 FT 61.4 ACFT 0.00 CFS
CONTROL IS 0.000 DETENTION STORAGE

TIME = 1.82 DAYS, TO 0.0 CFS (LIMIT = 10.00 DAYS)

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX ACFT	AUX.-HP FT	VOL-AUX. ACFT
NRCS-FBH	80.0	98.31	272.3	41.6	1.18	45.6

PEAK - CFS	Q-PS	Q-AUX.	Q-TOT.
DISCHARGE =	253.1	204.4	457.5

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-Sc FT/FT	25% OF Q Sc FT/FT
AUXILIARY SPILLWAY —	0.58	4.31	0.022	0.029

EFFECTIVE STRESS FOR STABILITY ANALYSIS OF AUX. EXIT CHANNEL
(Refer to Ag. Handbook 667, Chapt. 3, for allowable stresses.)
Aux. Discharge = 204. cfs; Bottom Width = 80. ft

REACH NO.	FROM STA	TO STA	SLOPE %	MANNING'S n	VELOCITY ft/s	STRESS lb/ft^2
2	100.	220.	10.00	0.035	6.86	1.402

AUXILIARY SPILLWAY DURATION FLOW = 7.8 HOURS
ATTACK, OE/B = 0.7 ACFT/FT

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

EXIT CHANNEL FLOW SUPERCRITICAL: MAX VELOCITY= 6.9 FT/SEC
EXIT SLOPE = 0.100 FT/FT
FLOW DEPTH = 0.4 FT

>>>>> NHCP378 RUN - MINIMUM FLOW IN AUX. SPILLWAY FROM TR60

USING FORMULA WITHOUT 200 CFS MINIMUM LIMIT (474. CFS).

ROUTED RESULTS	BTM	WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	AUX.-HP	VOL-AUX.
	FT	FT	ACFT	AC	FT		ACFT
MIN. AUX.	80.0	99.02	303.0	45.2	1.88		76.3

PEAK - CFS Q-PS Q-AUX. Q-TOT.
DISCHARGE = 256.4 474.0 730.4

CRITICAL CRITICAL CRITICAL 25% OF Q
DEPTH VELOCITY SLOPE-Sc Sc
AUXILIARY FT FT/SEC FT/FT FT/FT
SPILLWAY — 1.02 5.66 0.018 0.024

>>>> NHCP378 RUN - MINIMUM DEPTH, CREST AUX. TO TOP OF DAM IS 2.00 FT.
NEW TOP OF DAM ELEVATION = 99.14.

ROUTED RESULTS	BTM	WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	AUX.HP	VOL-AUX.
	FT	FT	ACFT	AC	FT		ACFT
MINIMUM AUX.	80.0	99.14	308.5	45.7	2.00		81.8

PEAK - CFS Q-PS Q-AUX. Q-TOT.
DISCHARGES = 256.9 525.2 782.1

CRITICAL CRITICAL CRITICAL 25% OF Q
DEPTH VELOCITY SLOPE-Sc Sc
AUXILIARY FT FT/SEC FT/FT FT/FT
SPILLWAY — 1.09 5.85 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 = 99.31.

ROUTED RESULTS	BTM	WIDTH	MAX ELEV	VOL-MAX	AREA-MAX	AUX.HP	VOL-AUX.
	FT	FT	ACFT	AC	FT		ACFT
MINIMUM AUX.	80.0	99.31	316.5	46.6	2.18		89.7

PEAK - CFS Q-PS Q-AUX. Q-TOT. E.S.
DISCHARGES = 257.7 602.8 860.5

CRITICAL CRITICAL CRITICAL 25% OF Q
DEPTH VELOCITY SLOPE-Sc Sc
AUXILIARY FT FT/SEC FT/FT FT/FT
SPILLWAY — 1.20 6.12 0.017 0.023

INFLOW HYD 1 PSH-PEAK = 247.55 CFS AT 18.48 HRS, LOCATION POINT

INFLOW HYD 1 FBH-PEAK = 457.52 CFS AT 17.06 HRS, LOCATION POINT
HYDOUT 1

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

Williams Dam - USFS

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	4.08	80.	3.80	4.08	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)	(CY)	(FT)	(FT/SEC)			
1	48.0	97.1	80.0	2.2	99.3	0.	0.	6.9	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\williams\williams-48-90.D2C

OUTPUT - DATED 08/29/2007 09:58:17

C:\data\Engineering\sites\williams\williams-48-90.OUT

GRAPHICS FILES GENERATED

OPTION "L" DATED 08/29/2007 09:58:17

C:\data\Engineering\sites\williams\williams-48-90.DRG

Water Permit Application No. 2640-2
Ft. Pierre National Grasslands

Top of Dam Elev. - 100
 2nd Spillway Elev. - 97
 P. Spillway Elev. - 90
 Dis Emb Toe Elev. - 70

Ht. = 30 ft

Cont. 3 - Low Hazard Dam

Williams Dam
 SD ID No. - #SD 01123

Normal Storage Capacity - 61.4 A.-Ft
 Int. Storage Capacity - 227
 Max. Storage Capacity - 349

Int. Capacity x Eff Ht. = $227 \times 27.1 = 6152 > 3000$ $\therefore$ 50 year
Minimum Spillway Design

From USGS WRI 98-4055 "Tech. Ser. Est Peak Flows ... in SD"
 Region C DA = 2611 A = 4.08 mi² CN = 80

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

$$= 286 (4.08)^{.570}$$

$$= 286 (2.2288)$$

$$= \underline{638 \text{ cfs}}$$

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

$$= 379 (4.08)^{.566}$$

$$= 379 (2.2163)$$

$$= \underline{840 \text{ cfs}}$$

Secondary Spillway Capacity

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

$$C = 2.6$$

$$L = 80$$

$$H = 3$$

$$= 2.6(80)(3)^{1.5}$$

$$= \underline{1080 \text{ cfs}}$$

NRCS Annual Yield
 CN = 80 DA = 2611 ISS = 2

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 Cont. 3 - OK

$$80\% \text{ chance} = 0.2$$

$$0.2 \times 2611^{1/2} = \underline{44 \text{ A.-Ft}}$$

$$50\% \text{ chance} = 0.62$$

$$0.62 \times 2611^{1/2} = \underline{135 \text{ A.-Ft}}$$

$$10\% \text{ chance} = 2.2$$

$$2.2 \times 2611^{1/2} = \underline{479 \text{ A.-Ft}}$$

RECEIVED

JUL - 6 2009

WATER RIGHTS
PROGRAM

CONSTRUCTION SPECIFICATIONS

DAM REPAIR

WILLIAMS DAM - USFS

SE SECTION 30, T109N, R77W
STANLEY COUNTY, SOUTH DAKOTA

KONECHNE ENGINEERING
PIERRE, SOUTH DAKOTA

CONSTRUCTION SPECIFICATION

SD – 2 CLEARING AND GRUBBING

2.1 SCOPE

The work shall consist of the clearing and grubbing of the area within the stake limits by removal and disposal of trees, snags, logs, stumps, shrubs, and rubbish.

2.2 REMOVAL

Unless otherwise specified all material to be cleared and grubbed shall be removed to a depth of 1 foot below the embankment foundation after stripping and 2 feet below a concrete subgrade.

2.3 DISPOSAL

Where brush piles for wildlife are not specified, cleared and grubbed materials shall be disposed of by burning or burying at locations selected by the contractor and approved by the landowner or engineer. Materials to be buried shall be placed at least 2 feet below the surrounding ground line and have a minimum of 2 feet of cover with the finished surface graded to drain. Any burning operations shall be subject to all public laws governing such operations, and any required permits to be obtained by the contractor.

2.4 PAYMENT

Payment for this item shall be included in the cost of earth fill and is subsidiary to Construction Specification SD-7S, Earth Fill – Class S.

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 engineer.

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 frozen surface.

7S-3 FOUNDATION PREPARATION

After stripping, 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 structure 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 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 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

7S-7 PAYMENT

Earth Fill is a bid item and payment for earth fill shall be by the cubic yard and computed to the specified neat lines on the drawings for excavation and the specified neat lines of the completed earthfill.

Items subsidiary to earth fill are, Construction Specifications SD-2, and SD-5.

CONSTRUCTION SPECIFICATION

SD – 9 DRAIN FILL AND FILTER

9.1 SCOPE

The work shall consist of furnishing and placing drain fill and filter sands or gravels.

9.2 MATERIALS

a. Quality

Aggregates shall be sand, gravel, or crushed stone, composed of clean, hard, durable mineral particles free from organic matter, clay balls, soft particles or other substances that would interfere with their free draining properties.

b. Gradation

The aggregates shall meet the following gradation requirements unless otherwise specified in the plans.

<u>Size</u>	<u>% Finer</u>
3"	100%
1"	90-100%
#4	50-85%
#50	10-40%
#200	0-5%

9.3 BASE PREPRATION

Surfaces on which drain fill will be placed shall be as undisturbed as possible (do not scarify), and will be free of standing water during placement of the fill. Care shall be taken to prevent trench walls from sliding.

9.4 PLACEMENT

Material shall be placed in uniform, approximately 6-inch thick layers. Extreme care shall be taken to assure uniformity of the drain fill, and to prevent segregation or contamination of the drain fill with foreign matter. When collector pipes are included in drains, the fill materials shall be placed in a manner to avoid displacing the pipe.

9.5 PAYMENT

Drain fill is a bid item and payment will be by the cubic yard basis as shown on the plans and computed to the neat lines of the drawings.

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.

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 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 1 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
1 1/2"	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 engineer.

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 engineer.

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 degrees F and 80 degrees 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.

12B.8 PAYMENT

Concrete is a bid item and payment will be by the cubic yard basis and will be calculated to the neat lines on the drawings,

CONSTRUCTION SPECIFICATION

SD-15 CORRUGATED METAL PIPE CONDUITS

15.1 SCOPE

The work shall consist of furnishing and placing circular, arched, or elliptical corrugated metal pipe and the necessary fittings as shown on the plans.

15.2 MATERIALS

Pipe and fittings shall conform to the requirements of Material Specification SD-50 or Material Specification SD-51, whichever is specified. When specified, caulked seam corrugated metal pipe shall conform to the following additional requirements:

- (1) Caulked seam corrugated metal pipe shall have all circumferential and horizontal seams caulked with an asphalt compound before riveting. This shall be accomplished by applying a uniform bead ($\frac{1}{4}$ inch minimum diameter) of the asphalt compound to the inner lap surface before riveting such that when the rivets are in place all voids are filled and a coating of asphalt is between the lap surfaces.
- (2) The asphalt compound shall consist of an asphalt base combined with asbestos fiber and other inert filler material to form a heavy-bodied compound that will not sag or run out of the seam. The compound should contain 63 to 68 percent solids by weight. It shall be similar in type and equal in quality to Trumbull 5X Asphalt Mastic, knife grade, as manufactured by the Trumbull Asphalt Company of Delaware.

15.3 HANDLING THE PIPE

The Contractor shall furnish such equipment as is necessary to place the pipe without damaging the pipe or coatings. The pipe shall be transported and handled in such a manner as to prevent bruising, scaling, or breaking of the zinc, bituminous or plastic coating.

Whenever the coating of zinc coated pipe is damaged in any individual area larger than 12 square inches, or if more than 0.2 percent of the total surface area of the pipe is damaged, the section will be rejected.

Whenever the coating on bituminous or plastic coated pipe is damaged in any individual area that exceeds 36 square inches or when the total area of breaks exceeds 0.5 percent of the total surface area of the pipe, the section will be rejected.

15.4 REPAIR OF DAMAGED COATINGS

Breaks, scuffs, or other damage to the various coatings shall be repaired as follows:

- (1) Zinc Coating - by thoroughly wire brushing and cleaning the damaged area with solvent, and then painting two coats of one of the following paints:
 - a. Zinc Dust - Zinc Oxide Primer conforming to Federal Specification TT-P-641, Type III.
 - b. Zinc Dust Chlorinated Rubber conforming to Federal Specification TT-P-1046a.
 - c. Zinc Dust Paint conforming to Military Specification MIL-P-21035.
 - d. Epoxy-Polyamide Paint conforming to Defense Specification DOD-P-15145B.
- (2) Bituminous Coating - by the application of two coats of hot asphaltic paint or a coating of cold-applied bituminous mastic. The repair coating shall be at least 0.05 inches thick after hardening and shall bond securely and permanently to the pipe. The material shall meet the physical requirements of the original coating.
- (3) Plastic or Vinyl Coating - by using a plastic coating similar and equal to Scotch-Clad Protective Coating 1706, manufactured by 3M Co., 3M Center, St. Paul, Minnesota. Surfaces to be coated must be clean and dry. A 10 mil coating thickness is required. If the repair coating thickness is not measured, four coats shall be applied allowing 30 minutes drying time between coats.

15.5 LAYING AND BEDDING THE PIPE

Unless otherwise specified, the pipe shall be installed in accordance with the manufacturer's recommendations. The pipe shall be laid with the outside laps of circumferential joints pointing upstream and with longitudinal laps at the sides at about the vertical midheight of the pipe. Field welding on corrugated galvanized iron or steel pipe will not be permitted. Unless otherwise specified, the pipe sections shall be joined with water-tight coupling bands, with a minimum width of 12 inches, or flanges for a flange-type connection. The area between pipe and coupling band shall be coated with either an asphalt cement to insure a water-tight joint or a rubber neoprene gasket 3/8 inch thick and as wide as the connecting band $\pm$ 1 inch.

The trench or foundation width in or on which the pipe will be laid should be at least: (a) 2 times the pipe diameter, or (b) the pipe diameter plus 2 feet, whichever is the greater.

Pipe should be laid on a moist, compacted foundation (not wet nor hard and dry). Just before the pipe is laid, spread a 2-to 3-inch layer of moist loose soil for the pipe to be placed on. The pipe should make uniform contact with the soil along its entire length.

Perforated pipe shall be laid with perforation down and oriented symmetrically about a vertical centerline. Perforations shall be clear of any obstructions at the time the pipe is laid.

15.6 BACKFILLING

The pipe shall be loaded sufficiently during backfilling around the side to prevent its being lifted from the bedding.

Backfill around the pipe shall be placed in layers not more than 4 inches thick before compaction. Each layer of backfill shall be compacted with power tampers or hand tamping to the same density requirements as specified for the adjacent embankment. Backfill over and around the pipe shall be brought up uniformly on all sides and shall extend a minimum of 2 feet over the pipe before earth embankment with earth moving equipment over the pipe is started. Special care shall be taken not to disturb the grade and alignment during backfill operations.

CONSTRUCTION SPECIFICATION

SD – 19 PVC DRAIN FOR SAND SEEP COLLAR

1. **SCOPE**

The work shall consist of furnishing and installing polyvinyl chloride (PVC) plastic pipe, fittings and appurtenances as shown on the drawings. The specification covers drains for sand seep collars.

2. **MATERIAL**

Pipe shall have a minimum 160 psi pressure rating, shall meet ASTM D1785 or D2241, and shall be defect free. Pipe compound shall meet ASTM D1784, Class 12454-B. Fittings and appurtenances shall be made of the same material as the pipe, and be designed for use with the pipe at a minimum pressure rating of 160 psi, except as noted otherwise. Solvent cement for the pipe joints shall meet ASTM D25634.

Rubber gasket joints shall conform to ASTM D3129.

3. **PIPE PLACEMENT**

Pipe must be installed to specified lines and grades without blocking, distortion or damage. The pipe must be uniformly supported on firm stable soil (or other specified bedding) over its entire length.

4. **BACKFILL**

All backfill recommendations of the pipe manufacture shall be met. Vehicles or construction equipment shall not cross the pipe until earth cover over the pipe exceeds two feet. Initial backfill to six inches above the top of the pipe is required. Except as otherwise specified, earth haunching and initial backfill shall consist of soil that is free of rocks, hard clods or other objects more than one inch in diameter. Earth fill shall be worked and compacted under the haunches of the pipe to provide continuous support in layers not more than six inches thick. Care shall be taken to insure the pipe is not deformed, damaged, or displaced. Final backfill shall consist of remaining backfill from top of initial backfill to ground surface, including mounding for settlement. Final backfill shall be free of debris, rocks or other objects three inches nominal diameter or larger. Final backfill shall be approximately uniform, void free, compacted layers.

5. **MEASUREMENT AND PAYMENT**

This item consists of furnishing and installing the PVC drain pipe used in the sand seep collar. The quantity will be measured to the nearest foot by measurement as indicated by the neat lines on the drawings. Such payment will constitute full compensation for furnishing, transporting, and installing the pipe complete in place.

CONSTRUCTION SPECIFICATION

SD-17 METAL FABRICATION AND INSTALLATION

17.1 SCOPE

The work shall consist of furnishing, fabricating, and installing metalwork including metal parts of composite structures.

17.2 MATERIALS

A. Steel

Except as noted below, steel shall be carbon steel of a malleable, weldable quality.

High strength, weather resistant steel shall conform to the requirements of ASTM A-242, A-588, or A-514.

Bolts, nuts, washers, rods, rivets, etc. shall be of a material equal to the steel being fastened.

B. Aluminum

Aluminum alloy products shall be Alloy 60610T6.

17.3 PROTECTIVE COATINGS

A. Galvanizing

If specified on the drawings, steel shall be galvanized. Galvanizing shall conform to ASTM A-386, A-153, A-164 Type RS, or A-165 Type TS.

B. Painting

Unless shown otherwise on the plans, non galvanized metal shall be cleaned and painted using the following procedure.

(1) Cleaning – Remove all dirt, oil, and grease by means of a mineral spirit cleaning. Next, thoroughly wet the metal with a dilute (about 5 percent strength) phosphoric acid solution. Allow the acid to dry and then thoroughly rinse the surfaces with clear water and again allow to dry.

(2) Paint – Apply two coats of one of the following paints:

- a. Zinc Dust – Zinc Oxide Primer conforming to Federal Specification TT-P-641, Type III.
- b. Zinc Dust Chlorinated Rubber conforming to Federal Specification TT-P-1046a.
- c. Zinc Dust Paint conforming to Military Specification MIL-P-21035.

d. Epoxy-Polyamide Paint conforming to Defense Specification DOD-P-15145B.

- (3) Application – Paints shall be thoroughly mixed at the time of application. The first coat of paint shall be applied by brushing. All other coats may be applied by brush or spray. Each coat shall be applied in such a manner as to produce a continuous paint film of uniform thickness.

Paint shall not be applied when the temperature of the item to be painted or of the surrounding air is less than 50 degrees F. Painting shall be done only when the humidity and temperature of the surrounding air and temperature of the metal surfaces are such that evaporation rather than condensation will result during the application and drying time.

The finished surface of each coat shall be free from runs, drops, ridges, laps, or excessive brush marks and shall present no variation in color, texture, and finish. Surfaces shall be thoroughly dry before application of each coat of paint. The surface of each dried coat shall be cleaned as necessary before application of the next coat. After installation of the metalwork, all damage to painted surfaces shall be repaired.

17.4 FABRICATION

Metal items shall be fabricated to close fit, closely conforming to the drawings. Joints to be welded, shall be welded all around, in a manner developing as much strength as possible.

17.5 ERECTION

The metal shall be erected true and plumb, closely conforming to the drawings.

Riveting and welding shall not be done until as much of the structure as will be stiffened thereby has been properly aligned.

17.6 PAYMENT

This item shall consist of furnishing and installing the metal Anti-Vortex device as shown on the plans. Payment for this item will be on the lump sum basis.

CONSTRUCTION SPECIFICATION

SD-16 TIMBER FABRICATION AND INSTALLATION

16.1 SCOPE

This specification covers the quality and installation of plywood and pressure treated structural timber poles, posts and lumber structure and timber and lumber portions of composite structure.

16.2 MATERIAL

a. Plywood

Plywood shall be new, exterior grades, and shall meet Product Standard PS 1-66
Plywood for use underground shall be pressure treated in accordance with the American Wood Preservers Bureau AWPB-FDN Standard (stamped on plywood).

b. Structural Timber and Lumber

Structural timber and lumber shall be structural grade or better. Structural timber poles, posts, and lumber shall be new, sound, decay free, straight, not warped or cracked. Unless otherwise specified on the drawings, all lumber and timber except re wood and red cedar shall be treated by any of the following preservatives:

Commercial Coal Tar Creosote
Hot and Cold Bath Creosote
Pentachlorophenol – Commercial Treatment
Pentachlorophenol – Cold soaking Method
AWPB-FDN Standard Preserving Salts

c. Hardware

Bolts, rods, nuts, washers, and other hardware shall be an appropriate grade of steel, and if to be placed underground, shall be galvanized or otherwise corrosion protected.

16.3 INSTALLATION

The material shall be of the dimensions, and installed at the location, as shown on the drawings. All lumber to be treated shall be cut to size, insofar as practical, prior to treatment. Raw ends of lumber which has been cut after treatment shall be immersed in the preservative solution, or painted with four (4) heavy coats of the solution. Each application should be allowed to dry. For home treatment, the preservative manufacturer's directions shall be carefully followed.

16.4 PAYMENT

This item shall consist of furnishing and installing the Timber Pipe Support as shown on the plans. Payment for this item is on the lump sum basis.

Any Level Yardage Calculation

(see Technical Note Design SD-1 for AnyLevel Method guidance)

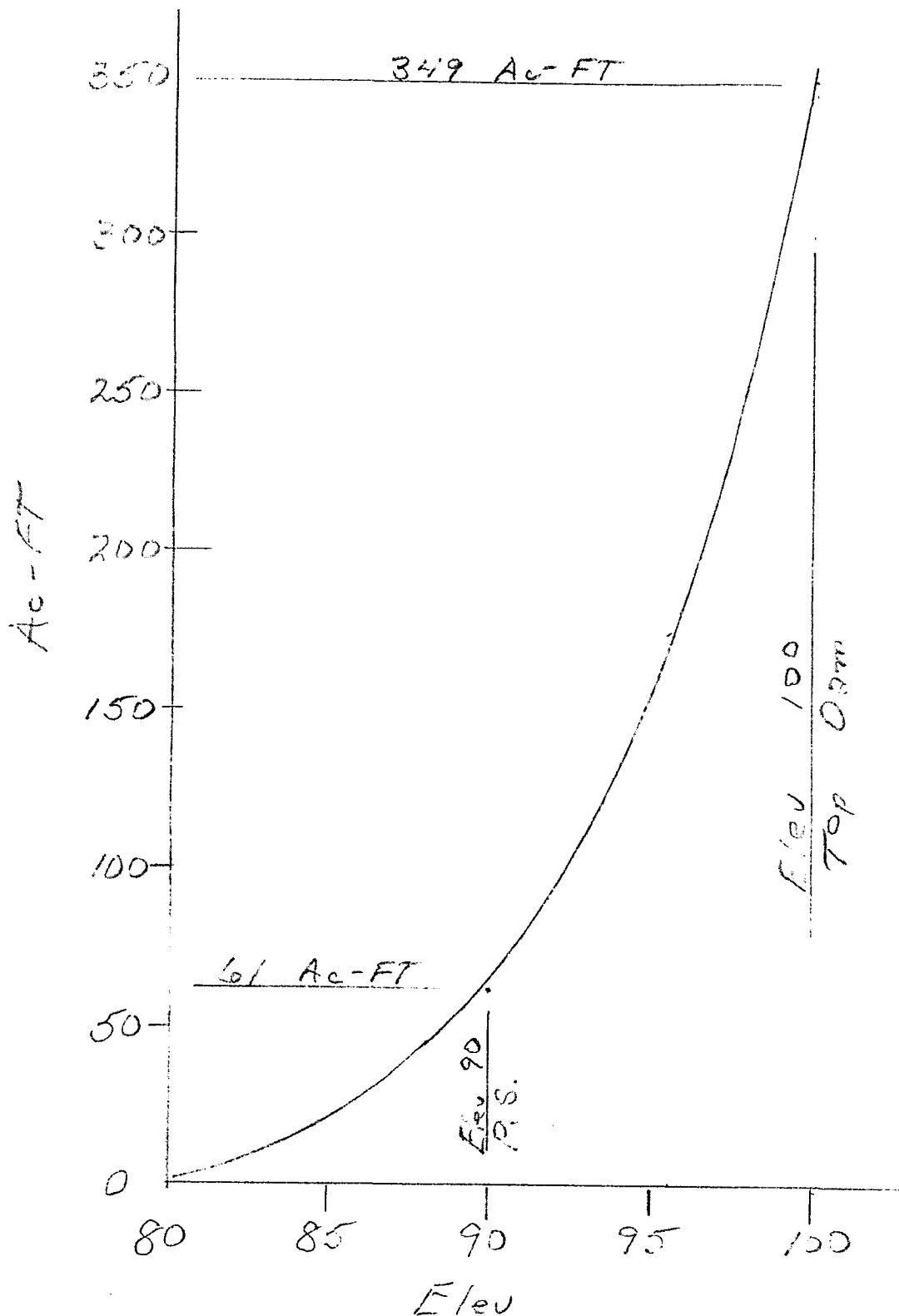
Name:		Williams Dam - USFS										Section:		30		Township:		109N		Range:		77W	
Computations By:		Dave Konechne										Date:		8/31/2007		County:		Stanley					
Type of Earthwork:		Dam										Is this a earth fill quantity?										Yes	
STATION		1	2	3	4	5	6	7	8	9	10	11	12	13	END AREA	AVE AREA	DISTANCE	CY					
0+00	ELEVATION														0.0								
	DISTANCE															57.5	50.	106.4					
0+50	ELEVATION	100.4	104.5	104.5	98.5	100.5	100.4								114.9								
	DISTANCE	-18.3	-6.0	6.0	24.0	0.0	-18.3									169.0	50.	312.9					
1+00	ELEVATION	100.5	104.5	104.5	94.5	94.5	91.5	98.5	100.5	100.5					223.0								
	DISTANCE	-18.0	-6.0	6.0	36.0	46.0	55.0	0.0	-6.0	-18.0						223.0	50.	413.0					
1+50	ELEVATION	100.5	104.5	104.5	94.5	94.5	91.5	98.5	100.5	100.5					223.0								
	DISTANCE	-18.0	-6.0	6.0	36.0	46.0	55.0	0.0	-6.0	-18.0						223.0	50.	413.0					
2+00	ELEVATION	100.5	104.5	104.5	94.5	94.5	91.5	98.5	100.5	100.5					223.0								
	DISTANCE	-18.0	-6.0	6.0	36.0	46.0	55.0	0.0	-6.0	-18.0						223.0	50.	413.0					
2+50	ELEVATION	100.5	104.5	104.5	94.5	94.5	91.5	98.5	100.5	100.5					223.0								
	DISTANCE	-18.0	-6.0	6.0	36.0	46.0	55.0	0.0	-6.0	-18.0						223.0	50.	413.0					
3+00	ELEVATION	100.5	104.5	104.5	94.5	94.5	91.5	98.5	100.5	100.5					223.0								
	DISTANCE	-18.0	-6.0	6.0	36.0	46.0	55.0	0.0	-6.0	-18.0						223.0	100.	825.9					
4+00	ELEVATION	100.5	104.5	104.5	94.5	94.5	91.5	98.5	100.5	100.5					223.0								
	DISTANCE	-18.0	-6.0	6.0	36.0	46.0	55.0	0.0	-6.0	-18.0						333.0	90.	1,110.0					
4+90	ELEVATION	94.5	104.5	104.5	94.5	94.5	93.5	94.5	94.5						443.0								
	DISTANCE	-36.0	-6.0	6.0	36.0	46.0	49.0	0.0	-36.0							1736.5	5.	321.6					
4+95	ELEVATION	74.5	104.5	104.5	94.5	94.5	84.5	74.5	74.5						3030.0								
	DISTANCE	-96.0	-6.0	6.0	36.0	46.0	106.0	0.0	-96.0							3030.0	10.	1,122.2					
5+05	ELEVATION	74.5	104.5	104.5	94.5	94.5	84.5	74.5	74.5						3030.0								
	DISTANCE	-96.0	-6.0	6.0	36.0	46.0	106.0	0.0	-96.0							1515.0	45.	2,525.0					
5+50	ELEVATION														0.0								
	DISTANCE																						
	ELEVATION																						
	DISTANCE																						
	ELEVATION																						
	DISTANCE																						

VOLUME
5% Settlement
TOTAL VOLUME

7,975.8 CU. YD
398.8 CU. YD
8,374.6 CU. YD

COMPUTATION SHEET

BY	DATE	PROJECT	SHEET ____ OF ____
CHKD BY	DATE	FEATURE	
DETAILS <i>Willow Dam SE 20, T109N, R77W</i>			



RECEIVED
JUL - 6 2009
WATER RIGHTS
PROGRAM

Table of Quantities & Cost Estimate

Date: AUGUST 31, 2007

**WATER RIGHTS
PROGRAM**

[illegible]



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

July 13, 2009

Ruben M. Leal
District Ranger
Fort Pierre National Grasslands
1020 N. Deadwood Street
Ft. Pierre, SD 57532

Dear Mr. Leal:

We have reviewed the plans and specifications for the Williams Dam project located in the SW ¼ SE ¼ of Sec. 30-T109N-R77W, in Stanley County. The plans and specifications for the project 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. 2640-2 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 Williams Dam (SD ID No. SD01123) is classified as a small size Category 3, Low Hazard dam with a dam height of 30 feet and a normal storage capacity of 61.4 acre-feet and a maximum storage capacity of 349 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, Konechne Engineering



**DEPARTMENT of ENVIRONMENT
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**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2640-2, USDA, Ft Pierre National Grasslands**

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. 2640-2, USDA, Ft Pierre National Grasslands, c/o Ruben M. Leal, District Ranger, 1020 N. Deadwood Street, Ft. Pierre SD 57532.

The Chief Engineer is recommending APPROVAL of Application No. 2640-2 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. 2640-2 authorizes a dam with a storage capacity of 61.4 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
July 13, 2009

NOTE: USDA holds US Withdrawal No. 80-2 for this dam to be reconstructed. However, since the dam has been in a breached state for a period greater than 3 years, No. 80-2 is subject to cancellation due to abandonment and/or forfeiture. The Water Rights Program intends to schedule No. 80-2 for cancellation once Permit No. 2640-2 is approved.

REPORT ON
WATER PERMIT APPLICATION NO. 2640-2
Ft. Pierre National Grasslands
July 10, 2009

Water Permit Application No. 72640-2 has been filed by the Ft. Pierre National Grasslands to impound 61.4 acre-feet of water from runoff by reconstructing Williams Dam located in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 30-T109N-R77W, in Stanley County. The application also requests impoundment of sufficient water to maintain water to the outlet elevation. The water will be used for fish and wildlife production and livestock water purposes.

Discussion:

The dam will be classified as a small size, Category 3, Low Hazard dam. The dam has been designed by Konechne Engineering. The plans and specifications have been reviewed and will be approved; however, reconstruction of the dam can not begin until Water Permit Application No. 2640-2 is approved.

The reconstructed dam will be 30 feet high with a normal storage capacity of 61.4 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 349 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 2611 acres or 4.08 square miles. The dam is designed to have a 60 inch diameter CMP riser with a 48 inch diameter CMP barrel with 10.0 feet of freeboard as the primary spillway, and an 80 foot wide earthcut secondary spillway with 3.0 feet of freeboard. A 50 year frequency event produces a peak runoff of approximately 640 cfs and a 100 year frequency event produces a peak runoff of approximately 840 cfs. The earthcut spillway will have a capacity of approximately 1080 cfs.

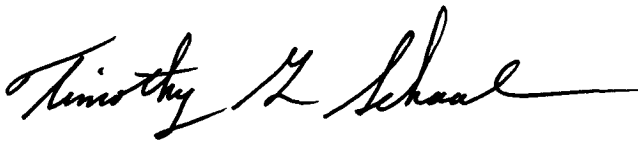
The annual yield for this drainage area with an 80 percent chance of occurrence, or 8 out of 10 years, is expected to be 44 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 135 acre-feet and the annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 479 acre-feet.

The Williams Dam (SD ID No. SD01123) is located in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 30-T109N-R77W on Timber Creek, about 5 miles upstream of the confluence of Timber Creek and Antelope Creek and 7 miles upstream of the confluence of Antelope Creek and the Missouri River. The United States Department of Agriculture holds US Withdrawal Permit No. 80-2 for storage of 100 acre-feet of water in Williams Dam. Since Williams Dam has been breached for a number of years, more than the required 3 year period, US Withdrawal Permit No. 80-2 should be considered abandoned and/or forfeited. There are no existing Water Permits/Rights filed on the unnamed tributary between the proposed dam and the Missouri River.

Page 2
Application No. 2640-2
July 10, 2009

Conclusions:

1. Water Permit Application No. 2640-2 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 domestic use should be a qualification on Water Permit Application No. 2640-2.
3. US Withdrawal Permit No. 80-2 should be scheduled for cancellation, due to abandonment and/or forfeiture.

A handwritten signature in black ink, reading "Timothy G. Schaal". The signature is fluid and cursive, with a long horizontal line extending from the end.

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

Schlaak, Karen

From: Schlaak, Karen
Sent: Wednesday, July 15, 2009 4:28 PM
To: 'rleal@fs.fed.us'
Subject: Recommendation of Chief Engineer

Attached is the Recommendation of the Chief Engineer for Water Permit Application No. 2640-2, USDA, Ft. Pierre National Grassland. Please toss the recommendation that was incorrectly sent to you.

Sorry for the inconvenience.

Karen Schlaak
Water Rights Program, DENR
605 773-3352
email: Karen.Schlaak@state.sd.us

07/15/2009

RECEIVED

JUL 31 2009

Form 8

WATER RIGHTS
PROGRAM

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)

County of Hughes)

I, Marylin Baker

certify that the attached printed Notice was
taken

from the Capital Journal

printed and published in Pierre

County of Hughes and

state of South Dakota. The notice was
published

in the newspaper on the following two dates:

July 20, 2009

July 27, 2009

Cost of Printing \$56.46

Marylin Baker
(Signature)

Bookkeeper
(Title)

7-30-09

(Date Signed)

Public Notice

elevation. The water is for fish and wildlife propagation, recreation, and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2840-2 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 this 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 this 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, Fore 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 August 7, 2009.

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

Notice is given mailing address of that USDA, F. Pierre National the petitioner's in Grassland, 1020 gal counsel, if in N Deadwood St, gal counsel is ob. Ft. Pierre SD failed. Contact 57532 has filed an Eric Gronlund at application for a the above Water water permit to in- Rights Program pound 61.4 address to request acre-foot of water copies of information by re- tion pertaining to constructing Will- this application. isms Dam located Steven M. Pierre, in the SW 1/4 SE Secretary, Depart- 1/4 Section 30 ment of Environ- with water im- ment and Natural pounded in the S Resources.

1/2 SE 1/4 Section Published twice 30 and N 1/2 NE at the total ap- 1/4 Section 31; all proximate cost of in T109N-R77W in

Stanley County.

This application requests impoundment of sufficient water to maintain water to the outlet

224-7201 44 29 4 10



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

July 14, 2009

Capital Journal
PO Box 878
Pierre SD 57501

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 2640-2 to Appropriate Water to be published twice. Please publish the first notice on July 20, 2009 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 USDA, Fort Pierre National Grasslands, c/o Ruben M Leal, 1020 N Deadwood St., Fort Pierre SD 57532 (Ph # 605-224-5517).

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. 2640-2

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

Date _____

We are in receipt of your letter of July 14, 2009 enclosing Notice to Appropriate Water by Application No. 2640-2 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.

July 14, 2009

USDA Fort Pierre National Grassland
c/o Ruben M Leal
1020 N Deadwood St
Fort Pierre SD 57532

Dear Mr. Leal:

Water Permit Application No. 2640-2 for fish and wildlife 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 Capital Journal printed at Pierre SD (Ph # 605-224-7301). You will need to contact the newspaper and authorize publication of this notice. For your information, a copy of the notice, the recommendations of the Chief Engineer and reports on the applications 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 Notices 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 applications.

Sincerely,

Eric Gronlund
Natural Resources Engineer
(605) 773-3352

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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.

Instruction to Newspaper - Publish first Notice on July 20, 2009 with the second publication 7 days later. The applicant is responsible for payment. The text of the notice can be e-mailed to your paper by contacting Karen Schlaak at (605) 773-3352 or email: Karen.schlaak@state.sd.us.

NOTICE OF APPLICATION NO. 2640-2 to Appropriate Water

Notice is given that USDA, Ft. Pierre National Grassland, 1020 N Deadwood St, Ft. Pierre SD 57532 has filed an application for a water permit to impound 61.4 acre-feet of water from runoff by reconstructing Williams Dam located in the SW ¼ SE ¼ Section 30 with water impounded in the S ½ SE ¼ Section 30 and N ½ NE ¼ Section 31; all in T109N-R77W in Stanley County. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation, recreation, and livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2640-2 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 this 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 this 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 August 7, 2009.

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.
Published twice at the total approximate cost of _____.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

AUG 11 2009

Fort Pierre National Grasslands
c/o Ruben M Leal
1020 N Deadwood St
Fort Pierre SD 57532

Dear Mr. Leal:

Enclosed is Water Permit No. 2640-2 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

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c: Tim Olson, Game Fish and Parks, Foss Building, Interoffice

Permit No. 2640-2
Missouri River - Water District

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

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

I have this day, June 8, 2011, made a thorough examination of the water use system constructed by Ft. Pierre National Grasslands of 1020 N. Deadwood Street, Ft. Pierre, SD 57532 holder of Permit No. 2640-2, bearing the priority of July 6, 2009 authorizing the storage of 61.4 acre-feet of the waters of runoff for fish & wildlife production and recreational use purposes, in Stanley County.

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

A. Works used to divert the water:

A 30 ft. high earthen dam with a normal storage capacity of 61.4 acre-feet

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

N/A

C. Works used to apply water to beneficial use:

A 30 ft. high earthen dam with a normal storage capacity of 61.4 acre-feet

The system is in the following condition good. The point of diversion is located 550 ft. north & 1850 ft. west of the SE corner of Section 30-T109N-R77W (SW ¼ SE ¼), Lat. 44.210700 Long. -100.131558. The works are capable of storing 61.4 acre-feet of water which is to be used for fish & wildlife production and recreational use.

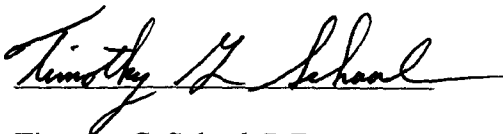
Water has been put to beneficial use to the maximum extent as follows:

A 30 ft. high earthen dam with a normal storage capacity of 61.4 acre-feet

and the license should be issued for 61.4 acre-feet of storage.

Applicable permit qualifications have been complied with: Yes X

Exceptions to compliance are: none Date Report Completed: March 12, 2012



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

REPORT ON INSPECTION OF PERMIT NO. 2640-2

DATE OF INSPECTION: June 8, 2011

NAME & ADDRESS OF PERMIT HOLDER: Ft. Pierre National Grasslands, 1020 N. Deadwood St.
Ft. Pierre, SD 57532

DIVERSION POINT LEGAL LOCATION: 550 ft. north & 1850 ft. west of the SE corner of
Section 30-T109N-R77W (SW ¼ SE ¼), Lat. 44.210700 Long. -100.131558.

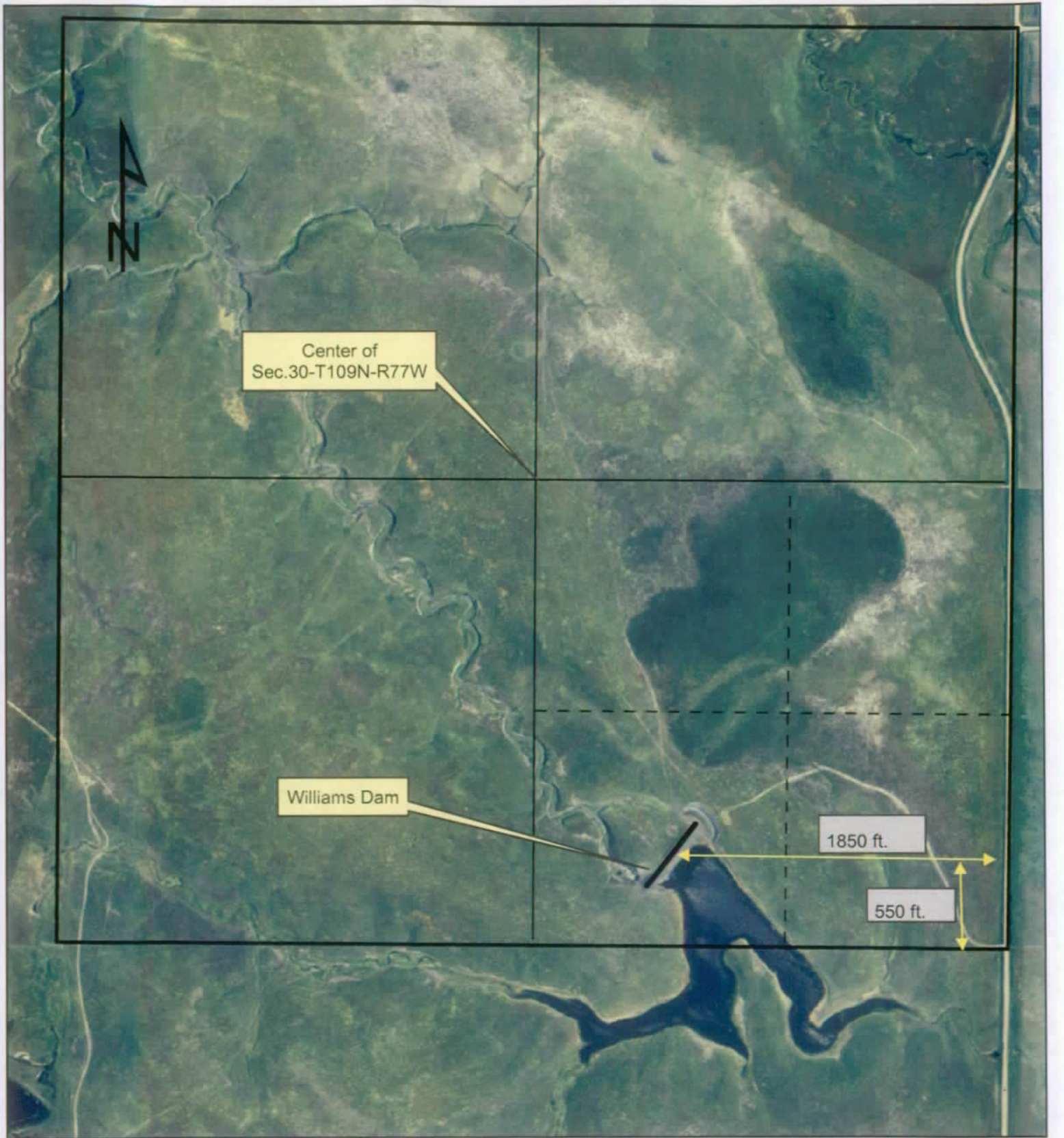
DAM INFORMATION:

- 1) Height to crest 30 feet
- 2) Height to primary spillway 20 feet
- 3) Height to secondary spillway 27 feet
- 4) Crest width 12 feet
- 5) Crest length 450 feet
- 6) Spillway length XXX feet
- 7) Spillway width 80 feet
- 8) Approx. storage (Normal) 61.4 acre-feet
- 9) Approx. storage (Maximum) 349 acre-feet
- 10) Date constructed: 2009

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. 2640-2



0 0.25 0.5 1 Miles

Timothy G. Schaal

Timothy G. Schaal, P.E.
Engineer IV
SD DENR, Water Rights Program

3/11/12



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

APR 25 2012

2640-2

Ruben M Leal
Ft Pierre National Grassland
1020 N Deadwood St
Ft Pierre SD 57532

Dear Mr. Leal:

Enclosed is Water License No. 2640-2. A map of the area as prepared by the staff engineer who conducted the field investigation is also included. The water license is the final document which completes the process of obtaining a water right.

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

Sincerely,

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

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 2640-2

(1) Ft Pierre National Grassland, 1020 N Deadwood St, Ft Pierre SD 57532 made Application No. 2640-2, July 6, 2009 for a water permit to impound 61.4 acre feet of water from runoff, by reconstructing Williams Dam, located in Stanley County, South Dakota for fish & wildlife propagation, recreation and domestic livestock water purposes. Permit No. 2640-2, with a priority date of July 6, 2009 was approved August 7, 2009 and issued to the applicant for diversion of water with construction of the storage dam to be completed on or before August 7, 2014 and for the application to beneficial use of said water on or before August 7, 2018.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the project and is entitled to impound 61.4 acre feet of water for beneficial use with sufficient water annually to maintain the water level to the outlet elevation.

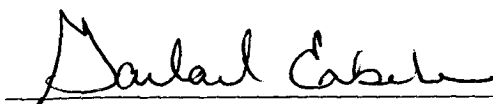
The location of the storage dam (spillway) is 550 feet north and 1,850 feet west of the SE corner of Section 30, T109N, R77W (SW ¼ SE ¼).

(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 Ft Pierre National Grassland, 1020 N Deadwood St, Ft Pierre SD 57532 the holder and/or owner of Water Right No. 2640-2 is issued a license to appropriate water, the right to impound 61.4 acre feet of water from runoff with a priority date of July 6, 2009 from the location specified in (2) of this license for fish & wildlife propagation, recreation and domestic livestock water purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 2640-2 and subject to the following qualification:

- Water Right No. 2640-2 authorizes a dam with a storage capacity of 61.4 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 water and prior water rights must be bypassed.


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

APR 25 2012

date

