

WATER PERMIT NO. 8161-3

Name of Applicant: Michael Kroupa

Address: 35680 241st St, Kimball SD 57355

Phone: 605 680-1083

Amount of Water Claimed: 48.45 AF

Total Acres: NA

Source of Water Supply: runoff

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

County: Brule

Type of Waste Disposal System:

Location: 10 miles north of Kimball

PRIORITY

Date Received: 5-18-15

Application/License Fee: \$ 700

Corrected Application Received:

Period of Annual Use: Jan 1 – Dec 31

Remarks:

Diversion Point: NE 1/4 SW 1/4 Sec 10-T105N-
R68W

Water Impounded: NE 1/4 SW 1/4, NW 1/4 SE
1/4 Sec 10-T105N-R68W

Depth of Well: NA

Well Driller:

Remarks:

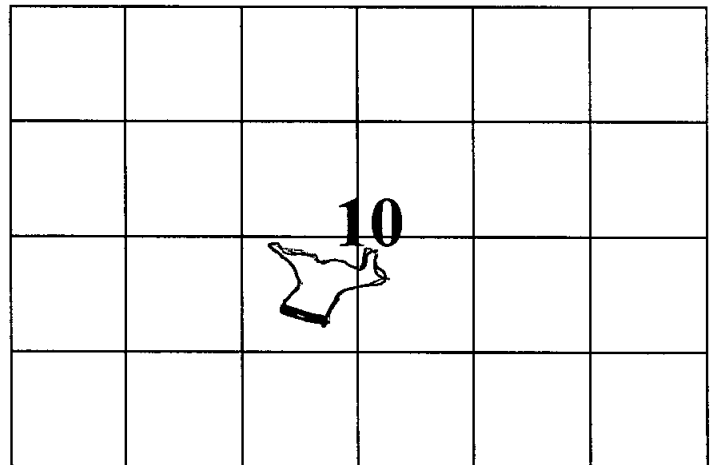
Type of Map: aerial

Prepared by:

Reviewed and the Number Assigned on: 5-19-15

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



SD EForm - 1585LD V4

FORM 2: Application for uses other than irrigation
(type or print)Mail to:
PMB 2020
DENR - Water Rights
523 E Capitol Ave
Pierre, SD 57501-3182
ph. (605) 773-3352

No. 8161-3 (office use only) Hydrologic Unit 10140105
 Basin Missouri River
 Newspaper Central Dakota Times, Chamberlain
Daily Republic, Mitchell

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 MAY 18 2015
 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 Livestock Water

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.)

1. Name to Appear on Water Permit Michael Kroupa(check one) ☒ Owner ☐ Tenant/lessee ☐ Owner's Legal Agent

(name and complete address if different than above name)

Mailing Address 35680 241st St.

(Address)

Kimball

(City)

☒ SD ☒

(State)

57355

(Zip Code)

Home Phone 605-778-6303Cell 605-680-1083

Email _____

2. Amount of water claimed _____ *CFS or _____ **GPM 48.45 ***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 Surface Runoff water impounded: NE 1/4 SW 1/4 & NW 1/4 SE 1/4 Sec 10

4. Location of point of diversion Dam in NE 1/4 SW 1/4 Sec. 10-T105N-R68W County Brule ☒
 (example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W)

If not a public water supply (e.g. municipal), will water be used outside of the area described above? ☐ Yes ☒ No

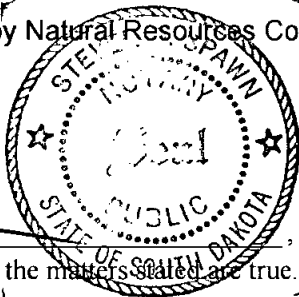
If "Yes," where will water be used? _____

(example - NW 1/4 section 12-T104N-R53W)

5. County or counties where water will be used Brule6. Annual period during which water is to be used March - November January 1 - December 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)

See attached design completed by Natural Resources Conservation Service Engineer, Daniel Ostrem.



Commission Expires:

October 9, 2019

Date

Steven D. Brown

I, Michael Kroupa, the applicant, certify that I have read this application,
 have examined the attached map, and that the matters stated are true.

Notary Public
May 7, 2015

2012-09

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Also, attach map and any other technical information. (see instructions)

**SOUTH DAKOTA
WATER PERMIT NO. 8161-3**

Date of first receipt of application May 18, 2015.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8161-3 to Michael Kroupa, 35680 241st St, Kimball SD 57355 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. 8161-3 authorizes impoundment of 48.45 acre-feet of water from runoff by constructing a dam located in the NE 1/4 SW 1/4 Section 10 with water impounded in the NE 1/4 SW 1/4 and the NW 1/4 SE 1/4 Section 10; all in T105N-R68W.
2. The water appropriated shall be used for the purpose of fish and wildlife propagation 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. 8161-3 is June 29, 2015.
5. The date from which applicant may claim right is May 18, 2015.
6. One-fifth of the construction is to be completed on or before December 29, 2017.
7. All construction is to be completed on or before June 29, 2020.
8. Water is to be put to beneficial use on or before June 29, 2024.
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. 8161-3 authorizes an impoundment with a storage capacity of 48.45 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: *Jeanne Goodman*
Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

AUG 04 2015
date



Supplemental Information

(type or print)

1. Well Information (check one or both as applicable) ☐ Drilling new well(s) ☐ Using existing well(s)

a) If new wells, how many ____ Have test holes been drilled ☐ Yes ☐ No Drilled by ____
(if yes, please provide copies of logs)

b) If existing wells, how many ____ Provide copy of log(s), if available. Drilled by ____

c) Well Depth ____ Depth to Top of Water Bearing Material ____ Depth to Water from Surface ____

d) Distance to nearest existing domestic well:

On applicant's 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:

Natural Resources Conservation Service
Attn: Daniel Ostrem, P.E.
1820 N. Kimball St.
Mitchell, SD 57301
(605) 996-1564

b) Freeboard 2.6 Feet

c) Crest Width 14 Feet

Crest Length 330 Feet

d) Height 24.9 Feet

e) Primary Outlet Capacity 205 cfs

If pipe, diameter ____

f) Secondary Spillway Capacity ____

Spillway Width ____

g) X & Y Slope (e.g. 3 to 1 is a typical slope)

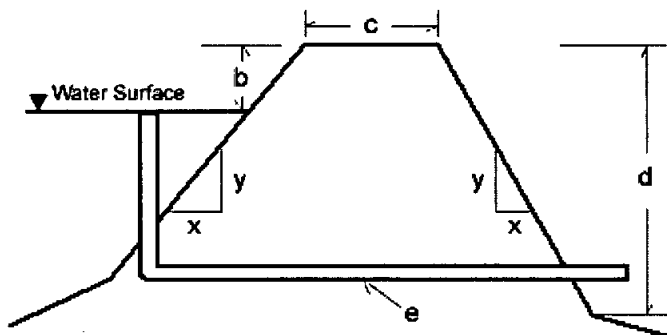
Upstream 3:1

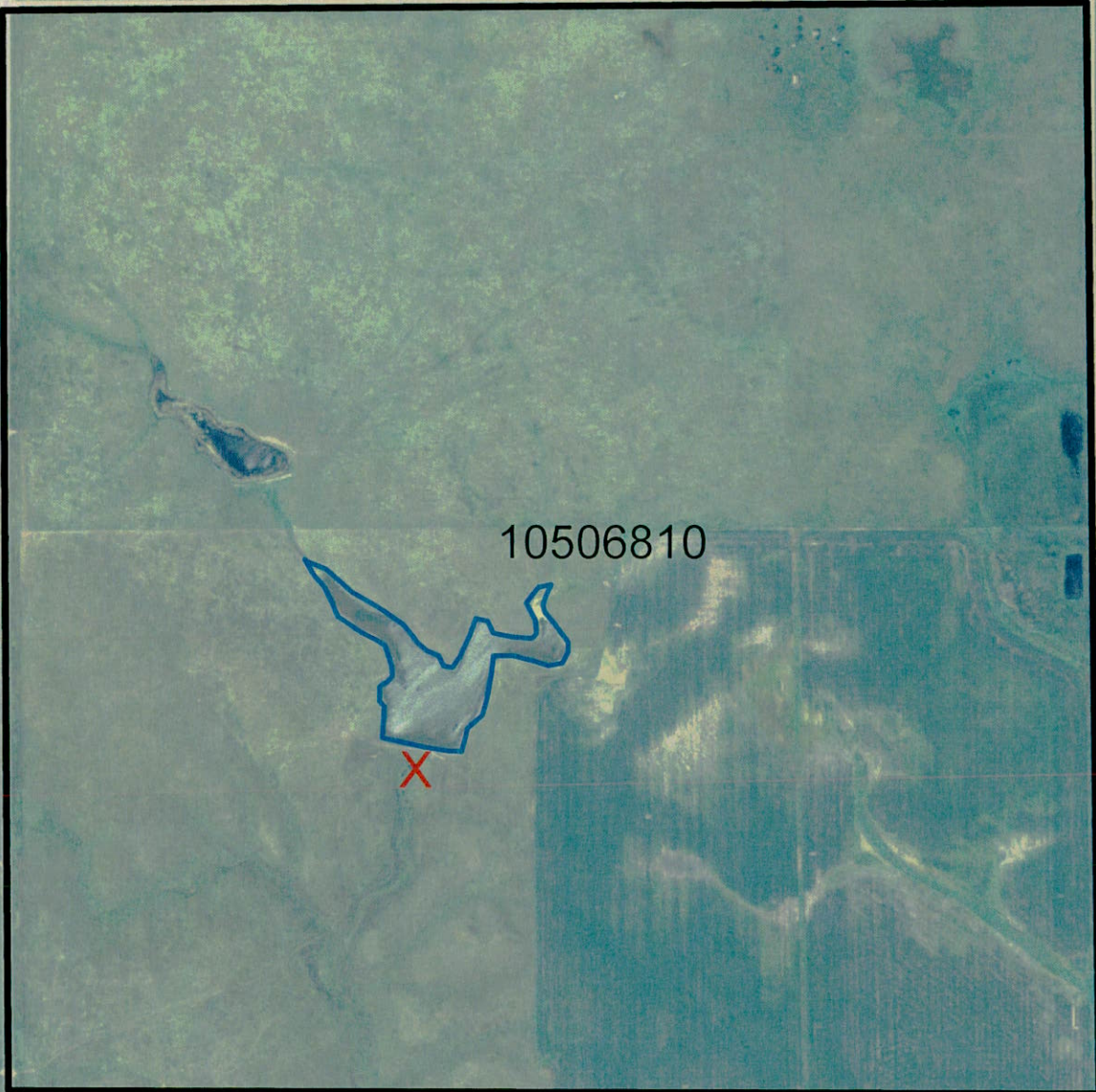
Downstream 2.5:1

h) Surface Area of Impoundment 9.5 Ac.

i) Storage 48.45 Acre Feet

j) Drainage Area Above Dam 412 Acres





10506810



United States Department of the Interior

FISH AND WILDLIFE SERVICE
LAKE ANDES NATIONAL WILDLIFE REFUGE COMPLEX
38672 291st Street
LAKE ANDES, SOUTH DAKOTA 57356-6838

605-487-7603



PMB 2020 Dept. of Environment and Natural Resources
Water Rights Program
523 East Capitol Ave.
Pierre, SD 57501-3182

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May 15, 2015

Enclosed is an application for water permit for Aurora Co. landowner, Michael Kroupa. The U.S. Fish & Wildlife Service will pay the fee for this application. Please send the invoice to the address below. In the past, Norma Martin in our Brookings office has coordinated credit card payment with your office in Vermillion. Please call with any questions.

Brookings WHO
Attn.: Norma Martin
P.O. Box 247
Brookings, SD 57006

Thank-you,

Steve D. Spawn
Steve Spawn

Biologist, Partners for Fish & Wildlife Program

USFWS, Lake Andes NWR

(605) 487-7603 ext. 108 - office

(605) 481-1333 - cell

I would appreciate anything you can do to expedite this process as the funding for this project is only available through summer 2015.

Thank-you!
Steve Spawn

* INVOICE *

SD DENR - Water Rights
523 E Capitol Ave
Pierre SD 57501

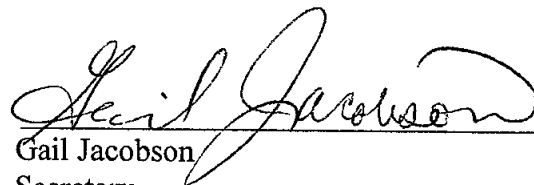
May 18, 2015
Invoice No. USFWS518

Brookings WHO
Norma Martin
PO Box 247
Brookings SD 57006

Michael Kroupa Water Rights Application

PLEASE PAY THIS AMOUNT:

\$700.00



Gail Jacobson
Secretary
Water Rights Program
(605) 773-3352

NORMA J MARTIN
BROOKINGS WHO

XXXX XXXX XXXX 0807

EXPIRATION
☒ DATE
CHECKED

06/17

SIGN HERE

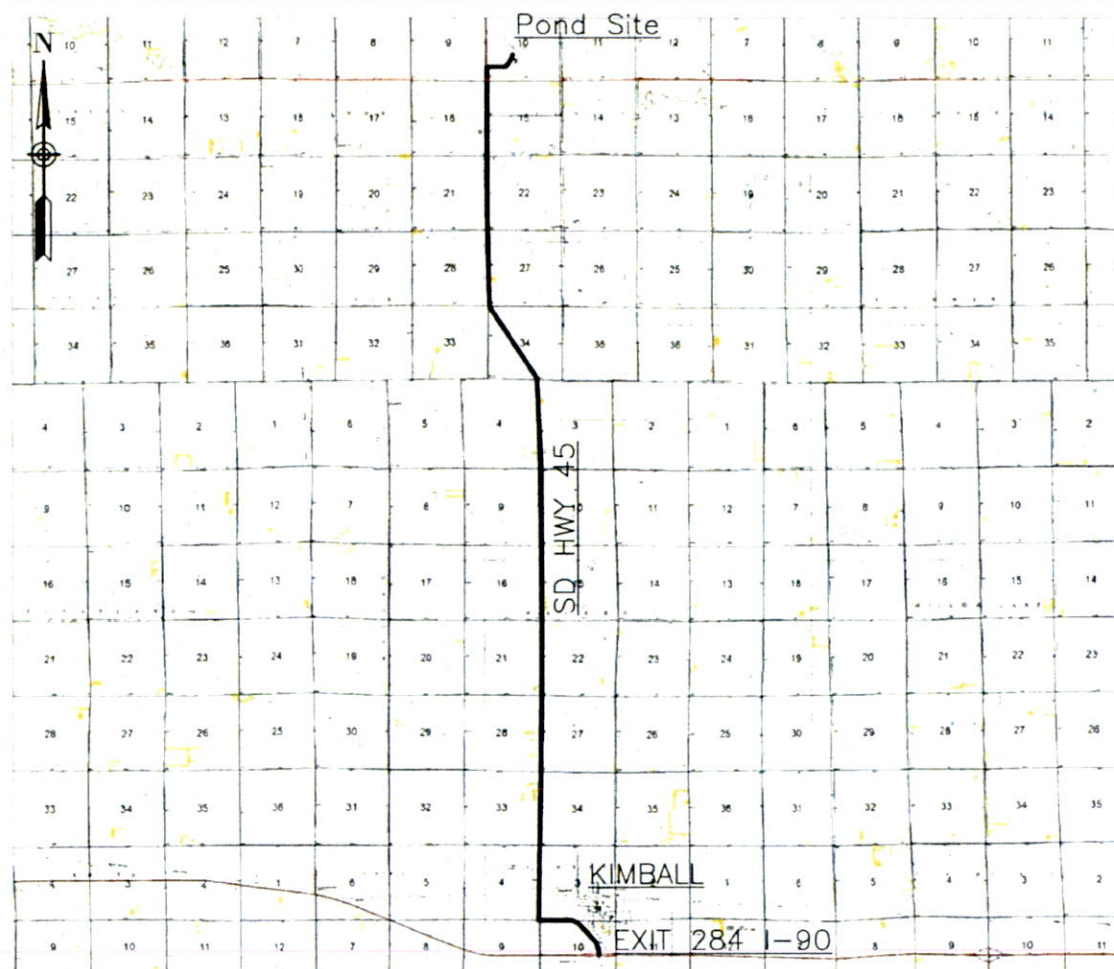
X

The issuer of the card identified on this item is authorized to pay the amount shown as TOTAL upon proper presentation. I promise to pay such TOTAL (together with any other charges due thereon) subject to and in accordance with the agreement governing the use of such card.

QTY.	CLASS	DESCRIPTION	PRICE	AMOUNT
		MICHAEL KROUPA WR APP		
		PERMIT FEE		500.00
		LICENSE FEE		200.00
DATE		AUTHORIZATION		
05/21/2015		056989		
REFERENCE NO.			SERVER	
001			TAX	
ID-FOLIO / CHECK NO. / LIC. NO. STATE			REG./DEPT	
			CLERK	
			TIP	
			MISC.	
			TOTAL	700.00

SALES SLIP
COPY

RETAIN THIS COPY FOR YOUR RECORDS



SKETCH PLAN OF DAM AND RESERVOIR AREA

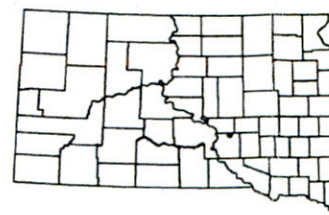
Scale: 1 Inch = 12,500 Feet

SEDIMENT YIELD					
Erodibility Area	Gross Rate (A.F./Ac./Yr.)	Drainage Area (Acres)	Delivery Rate (%)	Design Period (Years)	Req. Sed. Volume (Ac.-Ft.)
K	0.0059	412.5	32	20	15.580

STRUCTURE DATA		
Length of Top of Dam	313	Feet
Water Depth to Crest of Auxiliary Spillway	20.4	Feet
Height of Downstream Toe to Top of Dam	27.5	Feet
Effective Height	24.9	Feet
Product of Storage X Effective Height	1206.4	Ac.-Ft ²

POOL DATA			
	ELEV.	AREA	STORAGE
Crest of Auxiliary Spillway	1634.4	9.50 Ac.	48.45 Ac.-Ft
Top of Dam	1637	12.13 Ac.	72.30 Ac.-Ft

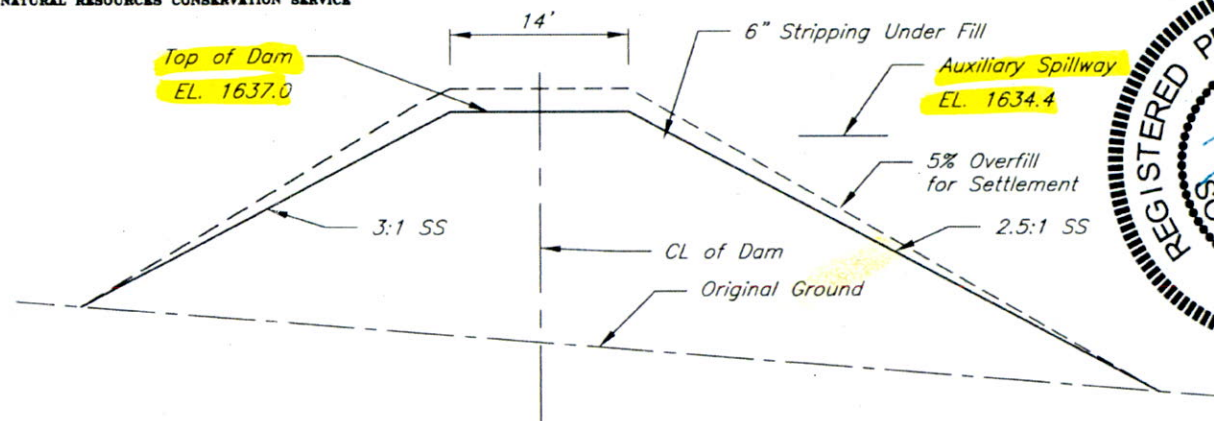
NO EXCAVATOR MAY BEGIN ANY EXCAVATION WITHOUT FIRST NOTIFYING THE ONE-CALL NOTIFICATION CENTER OF THE PROPOSED EXCAVATION AT 1-800-781-7474.



LOCATION MAP

PLANS FOR THE CONSTRUCTION OF A
POND (378) for
MICHAEL KROUPA in
BRULE COUNTY,
SOUTH DAKOTA

PREPARED BY
U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE



TYPICAL CROSS SECTION OF DAM

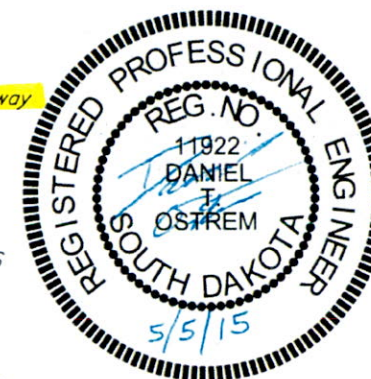
CONSTRUCTION NOTES

- If cultural resources are discovered during construction, discontinue construction and notify the local Natural Resources Conservation Service office.
- The landowner is responsible for complying with all federal, state, and local laws.
- Clear and grub the entire area within the work limits.
- Any shale, gravel, or sand that is exposed during borrow operations shall be immediately backfilled with 2 feet of clay material.
- All fill material must not contain frozen material, sod, roots, or other perishable material, or rock larger than eight inches in diameter as described in SD Construction Specification SD-7S.
- Six inches topsoil will be incorporated into the earthfill to meet the neat lines shown on the typical section.
- All areas top-dressed with topsoil and disturbed during construction will be seeded according to SD Construction Specification SD-28.

HYDRAULIC DATA		
Drainage Area	412	Acres
Annual Runoff Yield	9.3	Ac. Ft.
Time of Concentration	1.9	Hours
Runoff Curve Number	69	
Auxiliary Spillway, 50 Year - 24 Hour Rainfall	4.8	Inches
Peak Runoff 50 Year - 24 Hour Rainfall	252	CFS
Auxiliary Spillway Discharge	205	CFS
Auxiliary Spillway Flow Depth	1.45	Feet

TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY	AS-BUILTS
Earthfill Class S - Embankment	Cu. Yd.	1289	
Earthfill Class S - Stripping	Cu. Yd.	171	
Total Earthfill	Cu. Yd.	1460	
Topsoil Auxiliary Spillway	Cu. Yd.	280	
Spillway Excavation below Stripping	Cu. Yd.	812	
Seeding (Earthfill and Auxiliary Spillway)	Acre	1	



SD CONSTRUCTION AND MATERIAL SPECIFICATIONS

SD-4 Stripping
SD-5 Excavation
SD-7S Earthfill - Class S
SD-10 Salvaging And Spreading Topsoil
SD-28 Seeding
For A Full Text Version See
http://www.sd.usda.gov/technical/SD_Engineering.html

NRCS HAZARD CLASS A
NRCS JOB CLASS IV

STATEMENT OF COMPLIANCE

Construction (was) (was not) completed in accordance with approved construction plans and specifications.

JAA Date

POND WITHOUT PRINCIPAL SPILLWAY PIPE

Designed D. Ostrem 4/27/2015
Drawn D. Ostrem 4/27/2015
Checked D. Edwards 5/4/2015
Approved [Signature] 5/8/15

COVER
POND (378)

United States
Department of
Agriculture
USDA
Natural Resources
Conservation Service

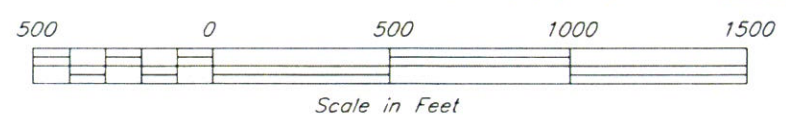
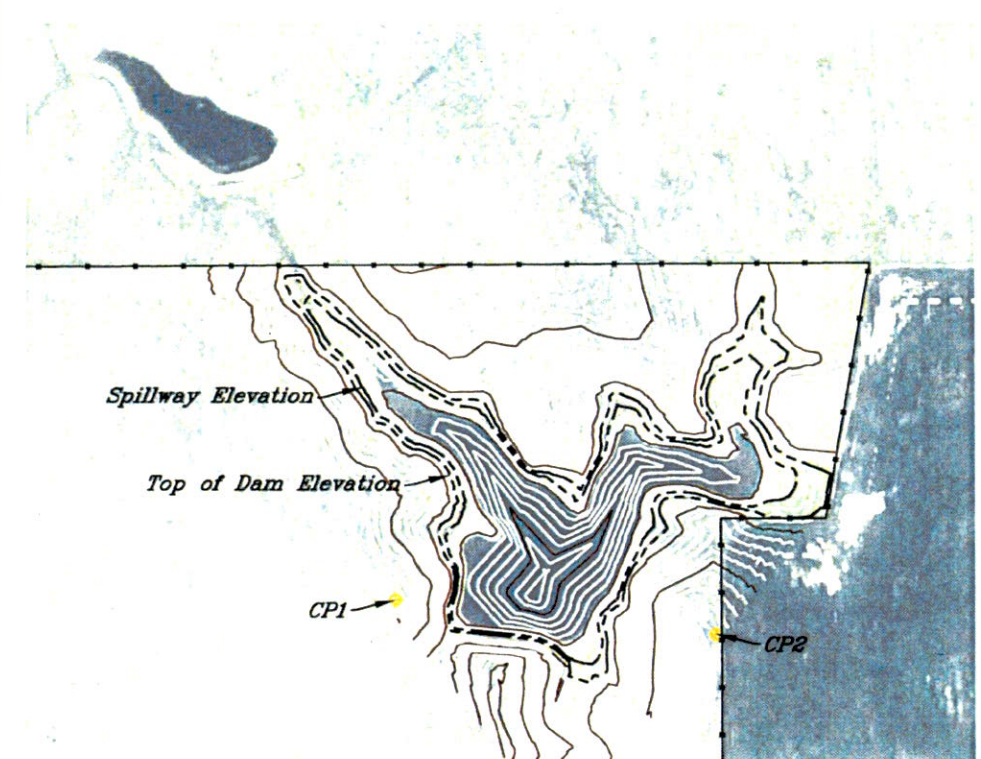
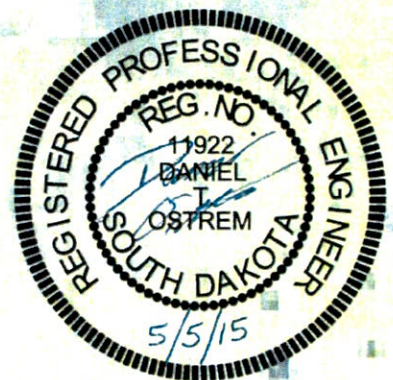
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Drawing No.
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Sheet 1 of 5

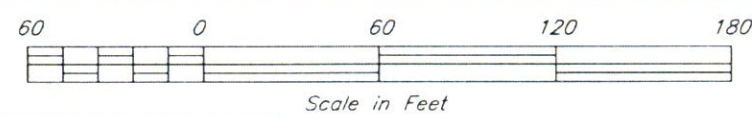
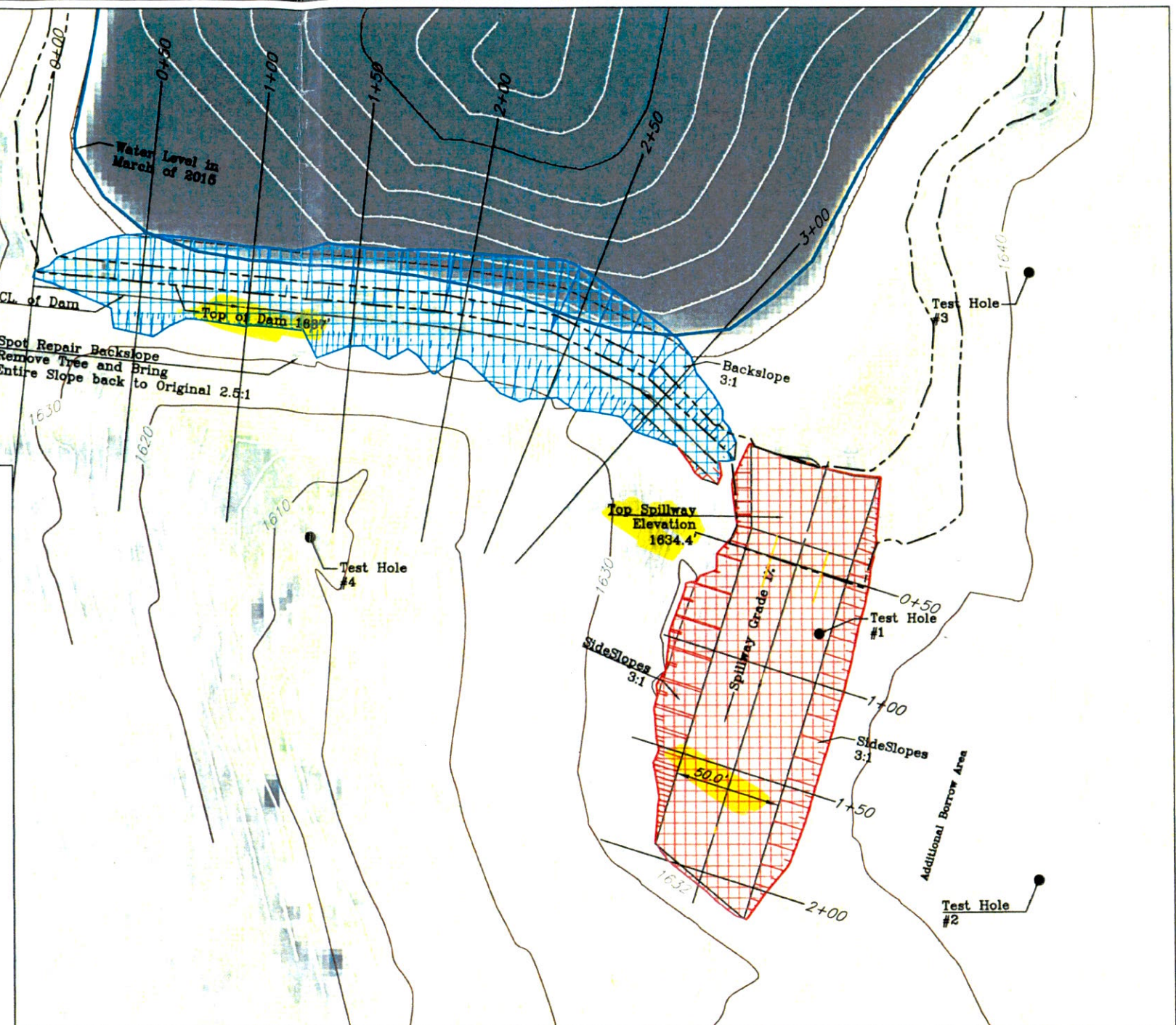
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BENCH MARKS				
NO.	Northing	Easting	Elevation	Description
Control Point (CP) Base 1	15951422.76	1645484.11	1659.28	Just North of Parking Area on West Side of Dam
Control Point (CP) 2	15951324.51	1646378.16	1658.27	Near Fence East of Dam



Stage Storage From SITES		
Elevation (ft)	Outflow (cfs)	Storage (AF)
1634.4	0	48.45
1634.66	1.12	50.84
1635.18	38.83	55.61
1636.35	395.39	66.34
1637	788.32	72.30

Designed D. Ostrem 4/27/2015
Drawn D. Ostrem 4/27/2015
Checked D. Edwards 5/4/2015
Approved [Signature] 5/8/15

PLAN VIEW
POND (378)

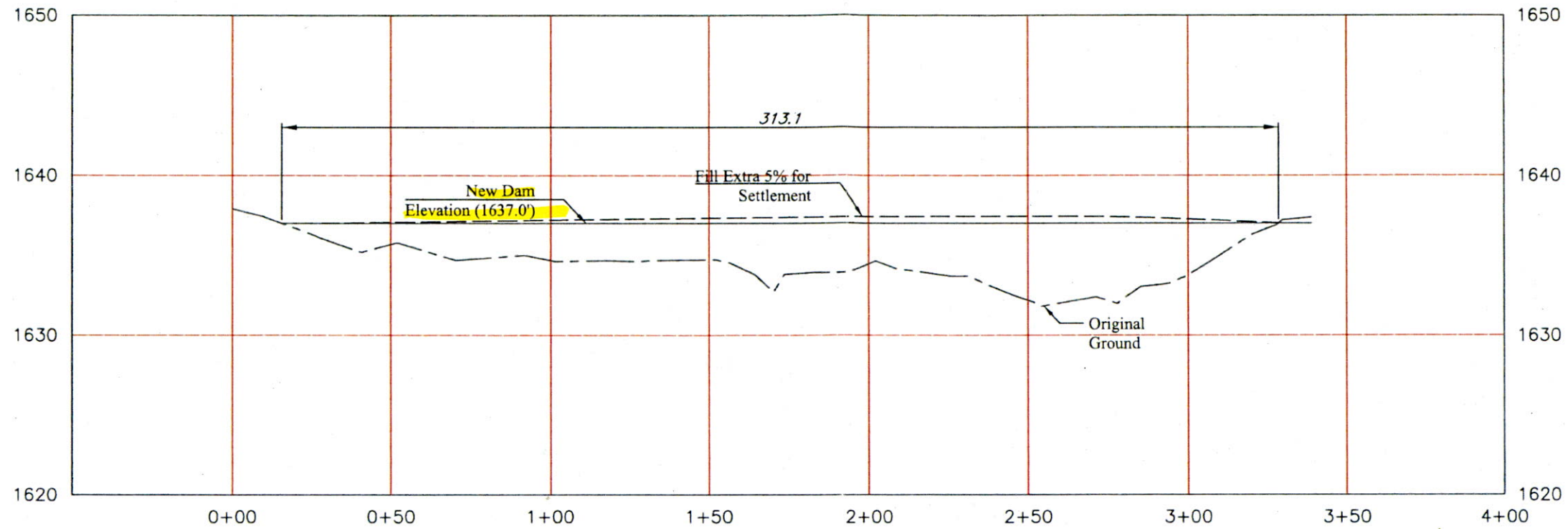
SW 1/4" S10 T105N R68W, Michael Kroupa Brule County, South Dakota



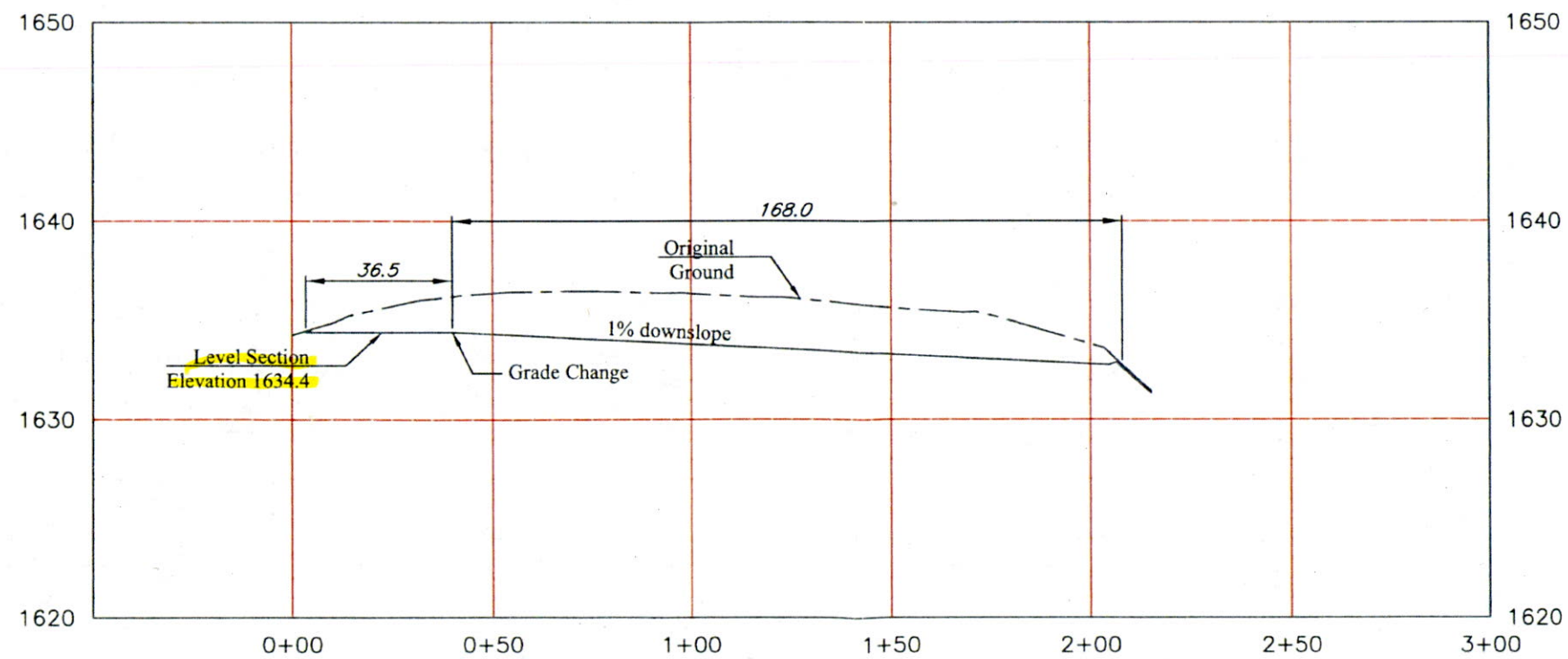
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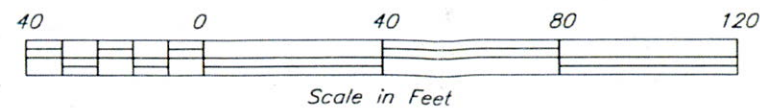
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Sheet 2 of 5



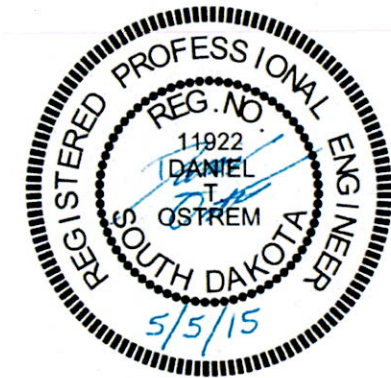
CL. OF DAM PROFILE



SPILLWAY PROFILE



----- Original Ground
 _____ Design Channel Bottom



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Sheet 3 of 5

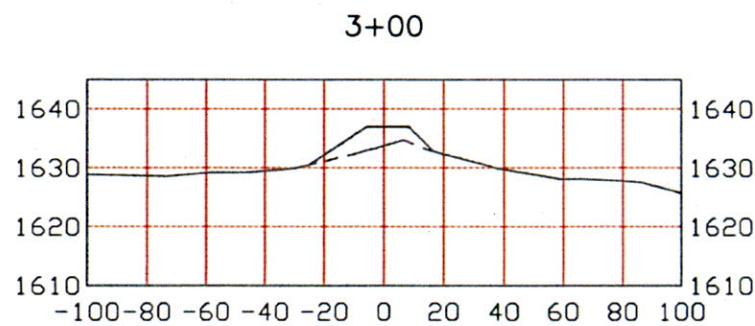
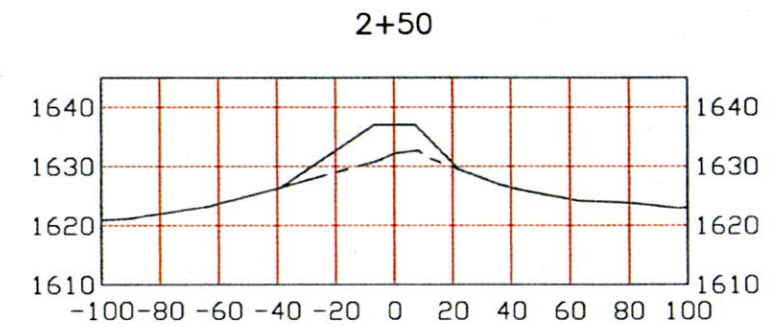
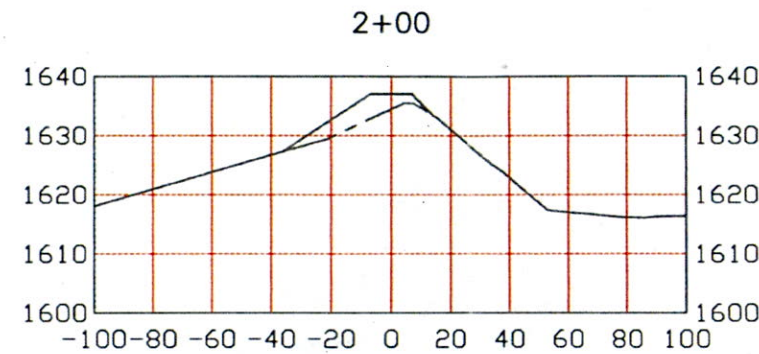
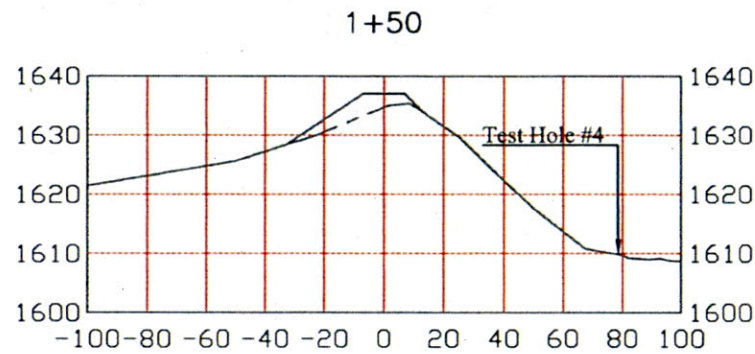
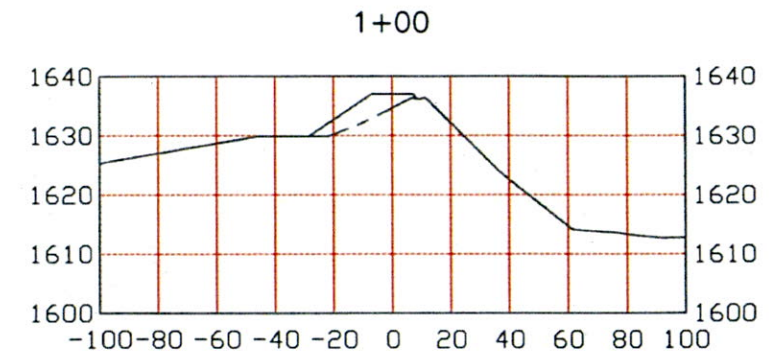
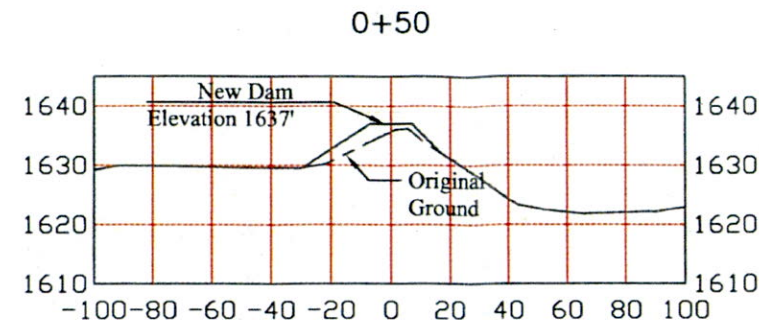
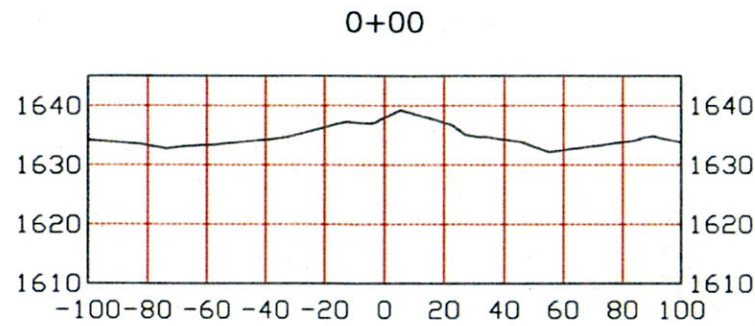
PROFILE
 GRASSED WATERWAY

Designed D. Ostrem 4/27/2015
 Drawn D. Ostrem 4/27/2015
 Checked D. Edwards 5/4/2015
 Approved [Signature] 5/19/15

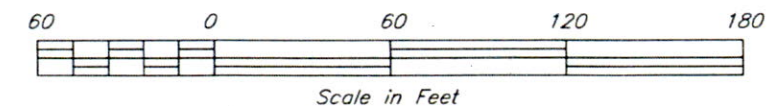
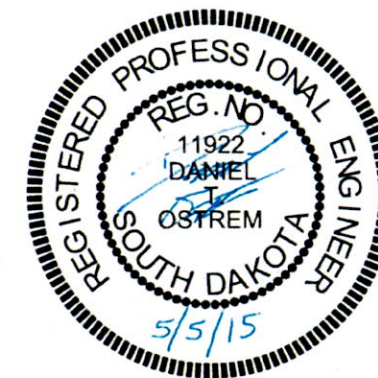
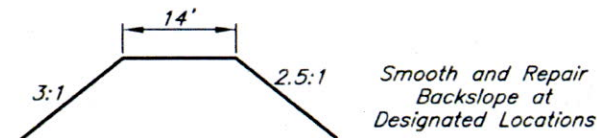
SW 1/4" S10 T105N R68W, Michael Kroupa Brule County, South Dakota

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Dam Cross Sections



--- Original Ground
 --- Design Channel Bottom



Designed	D. Ostrem	Date	4/27/2015
Drawn	D. Ostrem	Date	4/27/2015
Checked	D. Edwards	Date	5/4/2015
Approved	<i>[Signature]</i>	Date	5/18/15

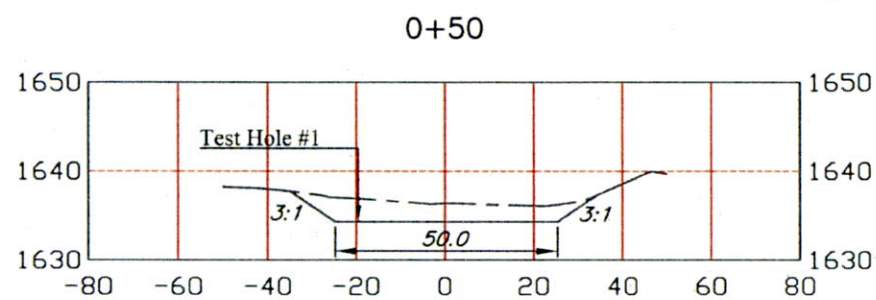
DAM CROSS SECTIONS
 POND (378)

United States
 Department of
 Agriculture
USDA
 Natural Resources
 Conservation Service

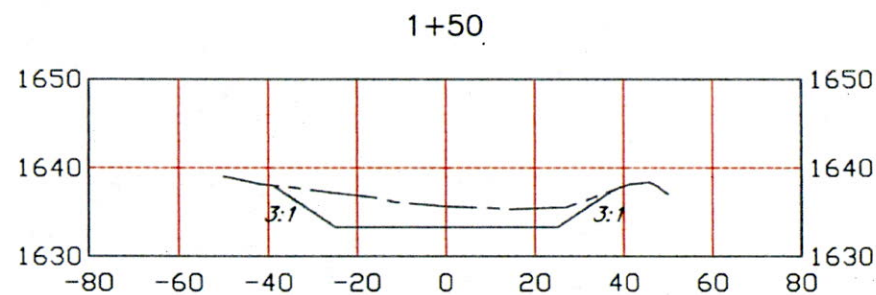
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 Sheet 4 of 5

SW 1/4" S10 T105N R68W, Michael Kroupa Brule County, South Dakota

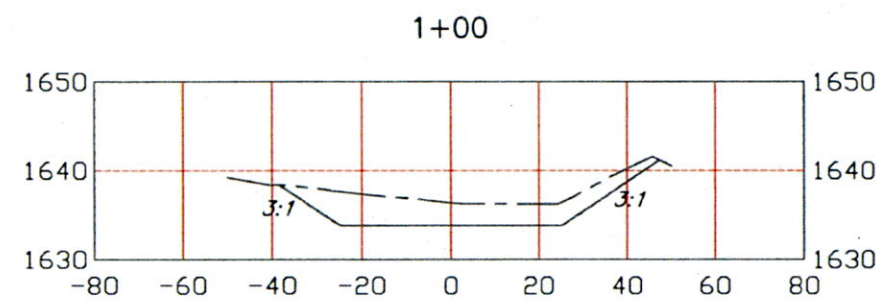
Spillway Cross Sections



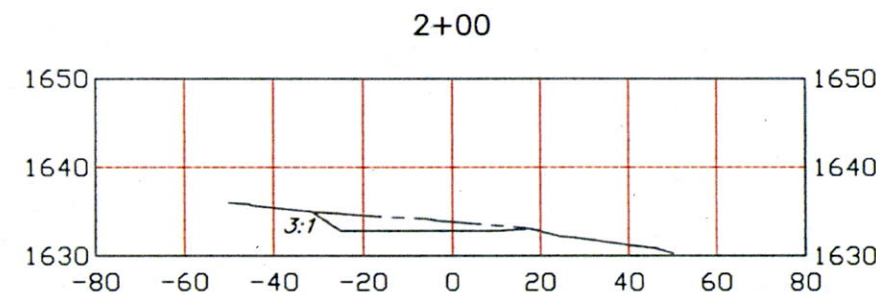
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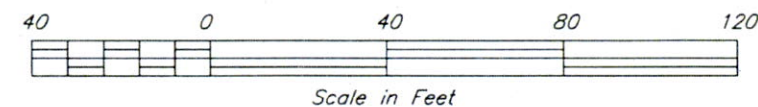
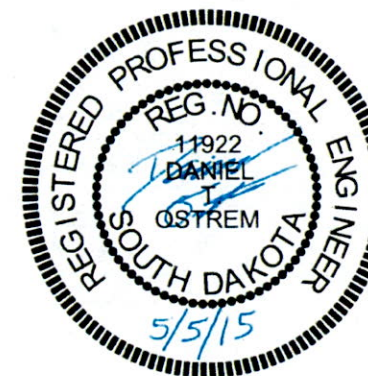


3:1



3:1

----- Original Ground
 _____ Design Channel Bottom



Designed	D. Ostrem	Date	4/27/2015
Drawn	D. Ostrem		4/27/2015
Checked	D. Edwards		5/4/2015
Approved	<i>[Signature]</i>		5/13/15

SPILLWAY CROSS SECTIONS
 POND (378)

United States
 Department of
 Agriculture
 Natural Resources
 Conservation Service

File No.
 Kroupa.dwg

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 051515

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SW 1/4" S10 T105N R68W, Michael Kroupa

Brule County, South Dakota

Water Permit Application No. 816-3
Michael Kroupa

Cat. 3 - Low Hazard Dam

$$\left. \begin{array}{l} \text{Top of Dam Elev.} - 1637 \\ \text{Spillway Elev.} - 1634.4 \\ \text{Dis Emb. Toe Elev.} - 1609.5 \end{array} \right\} \text{Ht.} = 27.5 \text{ ft}$$

$$\begin{array}{l} \text{Normal Storage Capacity} - 48.45 \text{ Ac-Ft.} \\ \text{Max Storage Capacity} - 72.30 \end{array}$$

$$\text{Int. Capacity} \times \text{Eff. Ht.} = 48.45 \times 24.9 = 1206 < 3000 \therefore 25 \text{ yr} \\ \text{Minimum Spillway Design}$$

From USGS WRI 98-4055 "Tech Rep Est Peak Flows in 50th Region B, DA = 412 ac = 0.64 mi² $P_{II} = 0.90$

$$\begin{aligned} Q_{25} &= 148 CA^{.584} P_{II}^{.730} \\ &= 148 (0.64)^{.584} (0.90)^{.730} \\ &= 148 (0.7706) (0.926) \\ &= \underline{106 \text{ cfs}} \end{aligned}$$

$$\begin{aligned} Q_{100} &= 275 CA^{.625} P_{II}^{.742} \\ &= 275 (0.64)^{.625} (0.90)^{.742} \\ &= 275 (0.7566) (0.9248) \\ &= \underline{192 \text{ cfs}} \end{aligned}$$

$$\text{NRCS used } Q_{25} = 189 \text{ cfs} \quad Q_{100} = 331 \text{ cfs}$$

Spillway Capacity

$$\begin{aligned} Q &= CLH^{3/2} \quad C = 2.6 \\ &\quad L = 50 \quad H = 2.4 \\ &= 2.6 (50) (2.4)^{3/2} \\ &= \underline{483 \text{ cfs}} \end{aligned}$$

NRCS Annual Yield

$$DA = 412 \text{ Ac} \quad CN = 69 \quad ISS = 2\frac{1}{2}$$

$$\begin{aligned} 80\% \text{ chance} &= 0.08 \\ 0.08 \times 412^{1/2} &= \underline{2.7 \text{ Ac-Ft.}} \end{aligned}$$

$$\begin{aligned} 50\% \text{ chance} &= 0.27 \\ 0.27 \times 412^{1/2} &= \underline{9.27 \text{ Ac-Ft.}} \end{aligned}$$

$$\begin{aligned} 10\% \text{ chance} &= 1.4 \\ 1.4 \times 412^{1/2} &= \underline{48 \text{ Ac-Ft.}} \end{aligned}$$

Section 74102:08:09

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

Computation Sheet

NRCS-ENG-523A Rev. 6-2002

U.S. Department of Agriculture
Natural Resources Conservation Service

State <i>South Dakota</i>		Project <i>Kroupa Pond</i>		
By <i>D. Ostrom</i>	Date <i>4/23/15</i>	Checked by	Date	Job No.
Subject <i>Earth Work</i>				Sheet <i>1</i> of <i>1</i>

Earthwork Volumes

Dam Earthwork

Volume based from CAD grading *1,289* yards Fill

$$\text{Stripping area} = 8,298 + 900 = 9,198 \text{ ft}^2$$

Top of Dam Wall

$$\begin{aligned} \text{Stripping (6")} &= 171 \text{ yds} \\ \text{Embankment} &= 1,289 \text{ yds} \end{aligned}$$

$$= 1,460 \text{ Tot.}$$

Spillway Earth Work

Volume based from CAD grading *1,092* yards Cut

$$\text{Surface area} = 15,113 \text{ ft}^2$$

$$\begin{aligned} \text{Stripping (6")} &= 280 \text{ yds} \\ \text{Remaining} &= 812 \text{ yds} \end{aligned}$$

Required Borrow with C/E Ratio of 1.3

$$1,289 - 1,092 \times 1.3 = 130.6 \text{ yds left over}$$

$$\begin{aligned} \text{Area Seeding} &= \begin{matrix} 9,198 \text{ ft}^2 & \text{Dam} \\ 15,113 \text{ ft}^2 & \text{Spillway} \end{matrix} \end{aligned}$$

$$= 24,311 \text{ ft}^2 \text{ 0.6 acre or 1 acre}$$

Computation Sheet

NRCS-ENG-523A Rev. 6-2002

U.S. Department of Agriculture
Natural Resources Conservation Service

State <u>South Dakota</u>		Project <u>Kroupa Pond</u>		
By <u>D. Ostrem</u>	Date <u>3/23/15</u>	Checked by	Date	Job No.
Subject <u>Volume Pond Estimate</u>				Sheet <u>1</u> of <u>1</u>

Pond Volume Estimate Post Design

East Drainage

Length, Bottom of Dam to Water Surface = 1037 ft

West Drainage

Length, Bottom of Dam to Water Surface = 963 ft

Elevation Δ Bottom of Dam to Water Surface = 18.8'

Grade East Drainage = $\frac{18.8}{1037} = 1.8\%$

Grade West Drainage = $\frac{18.8}{963} = 2.0\%$

From CAD

<u>Elevation</u>	<u>Area</u>	<u>Volume</u>
1635	438664.3 ft ²	67.53 acre-ft
1632	323532.7 ft ²	
1628	181586.9 ft ²	
1624	88626.4 ft ²	
1620	30838.5 ft ²	
1616	2,275.3 ft ²	
<u>Max depth</u>	<u>1614.2 ft</u>	<u>1634.4 - 1614.2 = 20.2</u>
1637	528156.2 ft ²	72.3 AF
1634.4	413889.6 ft ²	48.45 AF

Computation Sheet

NRCS-ENG-523A Rev. 6-2002

U.S. Department of Agriculture
Natural Resources Conservation Service

State <u>South Dakota</u>		Project <u>Kroupa Pond</u>	
By <u>D. Ostrem</u>	Date <u>3/24/15</u>	Checked by	Date
Subject <u>Need for Principal Spillway</u>		Job No.	
		Sheet <u>1</u> of <u>1</u>	

Erosion resistant soils - Yes - $K = 0.28 < 0.35$
Java-Betts loams

Sediment Yield : Erosion rate Area K with 18.6% Cultivated Land

Annual Sheet & P.I. = .0059 AF/acre

Sediment Delivery Ratio = 32 Figure 2 SD NEH.ch1

$.0059 \times 412.5 \times \frac{32}{100} \times 20 \text{ years} = 15.58 \text{ AF}$ (See attachments)

Storage Volume @ emergency spillway = 4845 AF

$48.45 - 15.58 = 32.87 \text{ AF}$ after Sediment of 20 yrs

2 yr 24hr Storm yield = 11.34 AF 50% = 5.67 AF

$32.87 \neq 5.67 \text{ AF}$

Storage $\times$ effective height = $48.45 \times 24.9 = 1206.4$, $< 2,000$

No Known Springs or Seeps

No Principal Spillway is required.

The dam has performed well without a principal spillway for many years. This helps confirm that no P.S. is needed.

RECEIVED

MAY 18 2015

WATER RIGHTS
PROGRAM

Cooperator: Michael Kroupa
County: Brule
Project: Pond (378)
Computations by: D. Ostrem
Checked by:

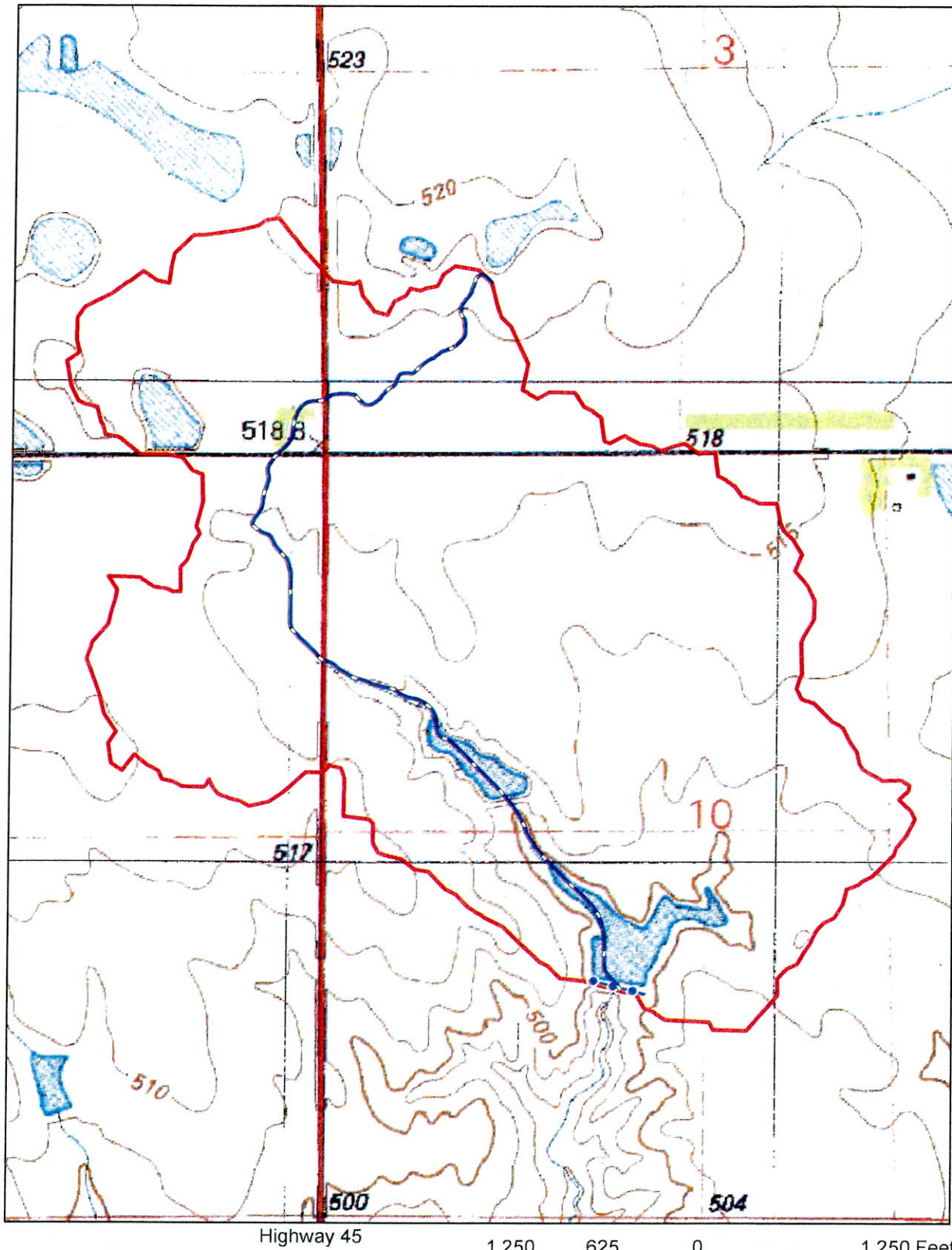
Date:
Date:

U.S. Department of Agriculture
Natural Resources Conservation Service
Conservation District:
02/18/14

Item	Units	Quantity	Unit Cost	Total Cost
Dam Fill	Yd	1,289	3.00	3,867.00
Dam Stripping	Yd	171	3.00	513.00
Spillway Stripping	Yd	280	3.00	840.00
Scraper Mob/Demob	Hrs	4	130.00	520.00
Dozer Mod/Demob	Hrs	4	130.00	520.00
Seeding	Acre	1	35.00	35.00
TOTAL				\$6,295.00
Additional Costs			10%	\$629.50
NEW TOTAL				\$6,924.50

This is an **estimate** of construction costs to implement the above mentioned conservation practice(s),
and **does not** represent the amount or rate of cost share money that may be received.

Hydrology
Land Owner: Michael Kroupa



293rd St.

Prepared By: Ostrem
Average CN - 69
10 Yr - 115 cfs
25 Yr - 189 cfs
50 Yr - 252 cfs

GPS location, 43.910724, -98.979252

SW1/4 S10 T105N R68W

Client: Michael Kroupa
 County: BRULE MSE 2
 Practice: Pond 378
 Calculated By: D. Ostrem
 Checked By: _____

State: SD

Date: 3/17/2015

Date: _____

Drainage Area: 412.5 Acres (provided from RCN Calculator)
 Curve Number: 69 (provided from RCN Calculator)
 Watershed Length: 7140 Feet
 Watershed Slope: 3.4 Percent
 Time of Concentration: 1.90 Hours (calculated value)
 Rainfall Type: II

Storm Number	1	2	3	4	5	6	7
Frequency (yrs)	1	2	5	10	25	50	100
24-Hr rainfall (in)	2.00	2.30	2.90	3.40	4.20	4.80	5.50
Ia/P Ratio	00.45	00.39	00.31	00.26	00.21	00.19	00.16
Used	00.45	00.39	00.31	00.26	00.21	00.19	00.16
Runoff (in)	.22	.33	.62	.89	1.40	1.81	2.33
(ac-ft)	07.56	11.34	21.31	30.59	48.13	62.22	80.09
Unit Peak Discharge (cfs/acre/in)	00.212	00.249	00.294	00.311	00.328	00.337	00.345
Peak Discharge (cfs)	19	34	75	115	189	252	331

DOCUMENTATION FOR HAZARD CLASSIFICATION

Producer: **Michael Kroupa** Name of Site: **Kroupa Pond**
 County: **Brule**
 Field #: Watershed: **Trib. of Smith Crk.**
 Location
 1/4 Section: **SW** Section: **10** Township: **105N** Range: **68W**
 Latitude: **43.911257** Longitude: **-98.979321**

Dam in Series: **Yes**
 Explain: **Smaller dam in the 1/4 section north of the site. About 1/2 the size**

Dam and Reservoir Data

Assumed Job Class	IV
Assumed Hazard Class	A
Centerline Elevation Channel Bottom*	1609.5
Centerline Elevation Flood Plain*	
Centerline Elevation Top of Dam*	1637
Centerline Elevation Auxiliary Spillway Crest*	1634.4
*Elevation is based on Mean Sea Level Datum	

Max. Depth of Water within Reservoir **20.4 Ft.**

Storage

Storage Below Principal Spillway	0 Ac.-Ft.
Storage between Principal Spillway and Auxiliary Spillway	48.45 Ac.-Ft.
Storage between Auxiliary Spillway and Top of Dam	23.85 Ac.-Ft.
Other	Ac.-Ft.
Total Storage to Top of Dam	72.3 Ac.-Ft.

Downstream Conditions

1. Valley Conditions Downstream of Structure	Parallel
Approximate Slope of Channel	
2. Stream Channel Size	
Depth	0.5 Ft.
Bottom Width	2 Ft.
Top Width	6 Ft.
3. Valley Characteristics	
Width	50 Ft.
Roughness Coefficient	0.035
Slope	35%

Downstream valley may be described in breach routing rather than on this form.

Describe Type of Infrastructure, Distance Downstream and Distance Above Floodplain Elevation	Distance Downstream From Dam	Approx. Distance Above Floodplain Elevation	Location in Potential Impact Area?	
			YES	NO
Roads				
Paved Township or Paved County Road, D>2'			☐	☒
Other, Describe:			☐	☒
timber bridge with low girders			☐	☒
Bridges: Describe type and opening size			☐	☒
Railroads:				
Major Railroad, Describe:			☐	☒
Buildings and Utilities:				
Farm Building(s)			☐	☒
Public, Industrial or Commercial Buildings			☐	☒
Rel. Import. Utility serving mult. rural users			☐	☒
Describe:				

Location:

Is Dam located within five miles of urban development?

No

Describe Potential Development:

none

Rational For Determining Hazard Class:

Drainage runs through rangeland and cropland, Flow path almost ends at another downstream embankment.

Method Used for Evaluation of Impact Area

Further Evaluation Needed

Visual Assessment

No

Attached: Breach Routings ☐

Maps ☒

Other supporting documents:

Actual Hazard Class* **A**

Final Job Class **IV**

Hazard Analysis by: D. Ostrem

Date: 5/4/2015

Approved by: _____

Date: _____

*Definition of Hazard Classification in National Engineering Manual 520.21 and SD Amendment 19

Cut/Fill Report

Generated: 2015-04-28 13:12:44
By user: Daniel.Ostrem
Drawing: C:\Users\daniel.ostrem\Documents\Ostrem\Projects\Brule\Michael Kroupa\New folder\C:\Users\daniel.ostrem\Documents\Ostrem\Projects\Brule\Michael Kroupa\New folder\Kroupa3.dwg

Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Top of Dam Storage	full	1.000	1.000	377188.87	0.11	116632.29	116632.17<Fill>
Dam Volume	full	1.000	1.000	14994.84	4.77	1293.54	1288.77<Fill>
Spillway Volume	full	1.000 1.3	1.000	15134.61	1091.67	0.00	1091.67<Cut> 1419.17 For F. il
Dam Storage	full	1.000	1.000	288633.51	0.23	78159.83	78159.61<Fill>

72.30 AF

48.45 AF

Totals

	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Total	695951.83	1096.78	196085.66	194988.87<Fill>

* Value adjusted by cut or fill factor other than 1.0

JBCHAPTER C – APPLICATIONS
PART 520 – SOIL AND WATER RESOURCES DEVELOPMENT
SUBPART C – DAMS

§SD520.21 Definition and classes (continued).

Failure may damage main interstates, federal and state highways. Main highways are mainly paved roads. A gravel road may be considered a main highway if it is the sole access to a community.

Failure may damage minor railroads. A minor railroad is a spur line or a railroad used no more often than once a day. Materials carried are relatively nonperishable, agricultural products, or products if delivery was disrupted would not adversely affect local economy, safety or general well-being of area. Damage may occur when railroad surface acts as weir and flow depth exceeds two feet.

Failure may damage relatively important utilities servicing multiple rural users. Utilities providing power should be considered important. Damage may occur when buried lines are exposed by erosion and when towers, poles, and above ground lines can be damaged by undermining or by debris produced from the floodplain.

- (3) Class (c) dams are dams where failure may cause loss of life or serious damage to homes, industrial, commercial and public buildings, important public utilities, main highways, or railroads.

Potential loss of life should be considered for flood depth greater than one foot in living quarters such as residences, apartments, nursing homes, motels, hotels, and hospitals, and on escape routes from such living quarters. Potential of loss of life should be considered for schools and recreational areas where adequate warning systems are not available.

Serious damage to homes, industrial, commercial, and public buildings may occur at a depth of less than three feet and velocities less than five feet per second. Kind, construction, and content of building must be evaluated.

Important public utilities include interstate and intrastate power and communication lines serving towns, communities, and significant military and commercial facilities in which disruption of power and communication would adversely affect the economy, safety, and general well-being of the area. Serious damage includes interruption of service for more than one day.

Failure may damage main railroads. A main railroad is a railroad used more often than once a day. Disruption would adversely affect local economy, safety, or general well-being of area. Damage may occur when railroad surface acts as weir and flow depth exceeds two feet.

SD520-9(2)

Annual Yield and Sediment Storage

Project: Michael Kroupa

Calculations By: D. Ostrem

Checked By:

*****Annual Surface Yield*****

Input Data

Isogram # = 2 1/2

Curve Number = 69

Contributing Acres = 412.5

% chance = 50

runoff= 0.27 inches

$$\frac{\text{Contributing Acres} * \text{Inches of Runoff}}{12} = 9.3 \text{ ACFT}$$

$$\text{Storage at Principal Spillway} = 48.0 \text{ ACFT}$$

*****Sediment Yield*****

Input Data

Erodibility Area = K

Gross Rate = 0.0059 25%-50% Cultivated

Drainage Area = 412.5

Delivery Rate = 32 Median

Design Life = 20

$$\text{Gross Rate} * \text{Drainage Area} * \text{Delivery Rate} * \text{Years} = 15.6 \text{ ACFT}$$

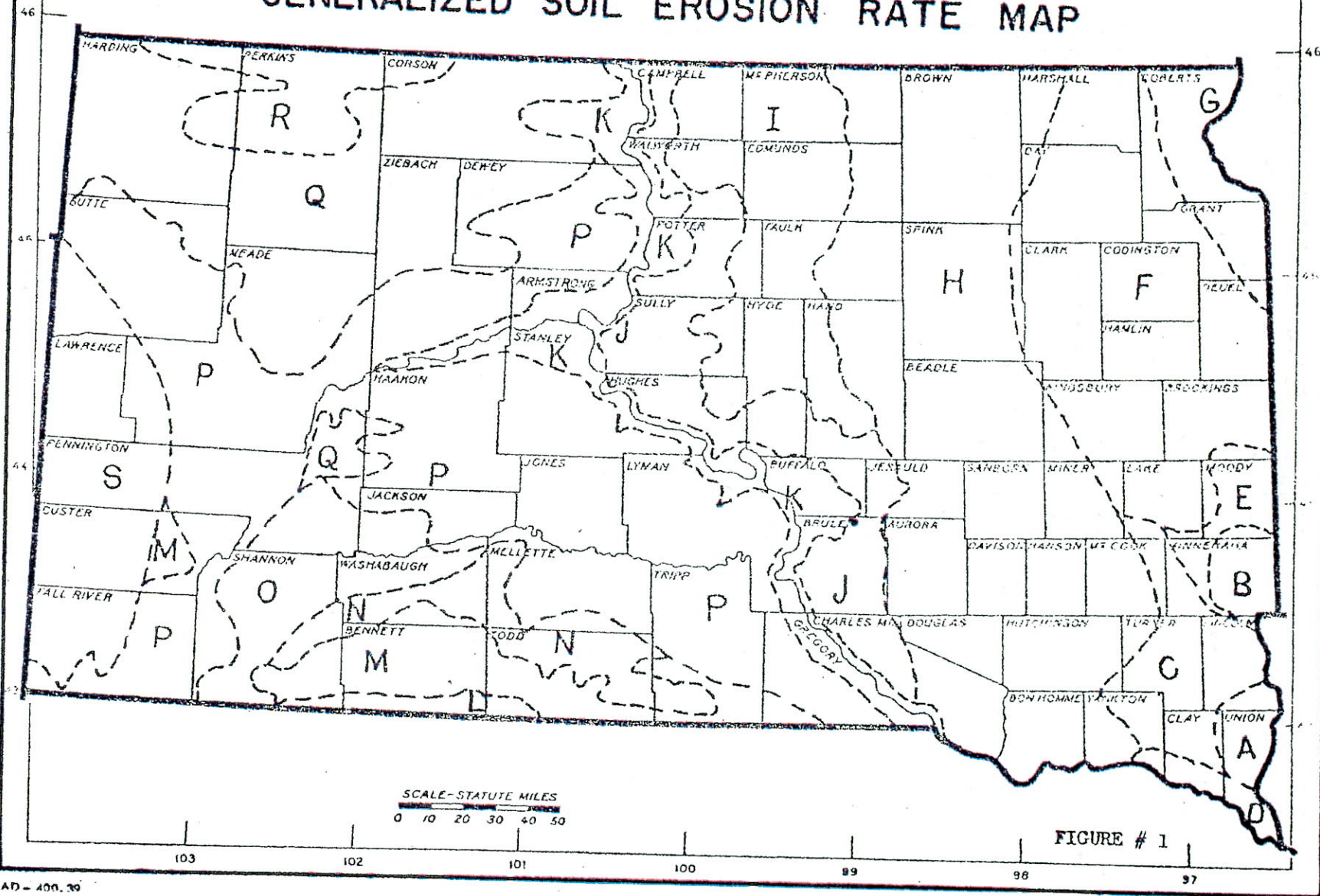
$$\text{Available Sediment Storage} = 61.7 \text{ years}$$

REF:
EFM 2-83 Method A

Prepared By Angela Roman, Pierre FSO
9/21/04

4/29/2015

GENERALIZED SOIL EROSION RATE MAP



(210-V-EFM, Amend. SD15, Sept. 1982)

AD - 400.39

11-66 (SD)

SOIL EROSION RATE MAP

FIGURE NO. 1

 SITES XEQ 04/28/2015 WATER RESOURCE SITE ANALYSIS COMPUTER PROGRAM
 VER 2005.1.6 (USER MANUAL - DATED DECEMBER 2005)
 TIME 13:22:12

***** 80-80 LIST OF INPUT Data *****

SITES 01/01/2005 Kroupa Pond 0.64453125H4
 SAVMOV 0 101
 SAVMOV 101 1 1
 * Michael Kroupa, Pond
 * Raising the top of dam and lowering the emergency spillway.
 * No PS
 STRUCTURE Emergency Spillway - Weir
 1634.4 48.45
 1637 72.30
 ENDTABLE
 WSDATA 5A1 AC 69 412.5 7140 3.4
 PDIRECT 4.80
 POOLDATA ELEV 1634.4 1634.4 1610 NH
 ASDATA 30C025 3 .01 3
 ASCREST ELEV 1634.4
 BTMWIDTH FEET 50
 GRAPHICS I
 GO,DESIGN NLC TYPE2 24 TYPE2378 24 1634.4
 SAVMOV 2 101 1
 ENDJOB

1SITES XEQ 04/28/2015 ----- COMMENT PAGE -----
 VER 2005.1.6 Kroupa Pond WSID =

Michael Kroupa, Pond

Raising the top of dam and lowering the emergency spillway.

No PS

***** 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 04/28/2015 Kroupa Pond WSID=
 VER 2005.1.6 Emergency Spillway - Weir SUBW= A
 TIME 13:22:12 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. - Q-PS,1-DAY	Q-PS,10-DAY	P-SD	P-FB	
0.00	0.00	0.00	4.80	
WSDATA - CN	DA-SM	TC/L	-/H	QRF
69.00	0.64	7140.00	3.40	0.00
SITEDATA- PERM POOL	CREST PS	FP SED	VALLEY FL	378?
1634.40	1634.40	0.00	1610.00	YES
BASEFLOW	INITIAL EL	EXTRA VOL	SITE TYPE	
0.00	0.00	0.00	DESIGN	
PSDATA - NO. COND	COND L	DIA/W	-/H	
0.00	0.00	0.00	0.00	
PS N	KE	WEIR L	TW EL	
0.000	0.00	0.00	0.00	
2ND STG	ORF H	ORF L	START AUX.	
0.00	0.00	0.00	1634.40	
ASCRESTS - AUX.1	AUX.2	AUX.3	AUX.4	AUX.5
1634.40	0.00	0.00	0.00	0.00
AUX.Data - REF.NO.	RETARDANCE	TIE STATION	INLET LENGTH	
30	C	0.00	0	
AUX.Data - INLET N	SIDE SLOPE	EXIT N	EXIT SLOPE	ACTUAL AUX?
0.000	3.00	0.000	0.010	NO
BTM WIDTH - BW1	BW2	BW3	BW4	BW5
ft 50.00	0.00	0.00	0.00	0.00

***** NOTE - THIS IS ONLY A PRELIMINARY AUX. SPILLWAY RATING CURVE OF DISCHARGE/FT OF WIDTH AND DOES NOT INCLUDE SIDESLOPE CORRECTION OR A REVISED RATING USING THE ACTUAL AUX. SPILLWAY CONFIGURATION.

AUX. SPILLWAY ID CODE ...30C025	ELEVATION INCREMENT (FT)= 0.200
DISCHARGES-Q1	Q2
0.010	0.050
Q3	Q4
0.220	0.800
Q5	Q6
1.480	2.270
Q7	Q8
3.250	4.440
Q9	Q10
5.850	7.490
Q11	Q12
9.360	11.500

AUXILIARY SPILLWAY RATING BASED ON PRECOMPUTED SUBCRITICAL FLOW METHOD USING PROFILE NUMBER 30.

1*****	DETAILED LIST OF BASIC Data	*****
WEIR COEF. FOR ORIFICES.....	3.10	RATIO OF Ia TO S (CH.10,NEH4). 0.20
WEIR COEF. FOR DROP INLET.....	3.10	TIME INCS TO PEAK OF UNIT HYD. 10.
DISCHARGE COEF. FOR ORIFICES.....	0.60	NO. POINTS FOR DESIGN HYD. ... 5000

HOOD, WEIR INLET COEF.	0.60	DRAWDOWN TIME LIMIT - DAYS....	10.0
HOOD, PIPE ENTRANCE COEF.	0.60	DRAWDOWN RATIO STORAGE LIMIT..	0.00
HOOD, SLUG FLOW COEF.	0.00	OTHER DRAWDOWN RATIOS APPLY ?.	NO
PS ACCURACY OF FULL FLOW CALC.,FT	0.01	WSP ALLOWABLE FSS VEL. CHANGE.	0.05
FILLET SIZE FOR BOX CONDUITS.....	6.00	WSP FSS CALC. PRECISION, FT..	0.005
GRAVITATIONAL CONSTANT.....	32.16	AUX. SPILLWAY MIN. CAP. COEF.	237.0
MIN. NHCP378 PS PIPE AREA SQFT..	0.545	AUX. SPILLWAY MIN. CAP. EXP.	0.493
MIN. TR60 DEPTH AUX. TO TOP DAM..	3.00	MIN. AUX. BW IN BW SOLUTION,FT	20.0
MIN. NHCP378 DEPTH AUX.TO TOP DAM	2.00	PRECISION OF BW SOLUTION.....	1.0
MIN. NHCP378 DEPTH PS - AUX.CREST	1.00	OLD TR60 CRITERIA USED	NO
MIN. NHCP378 DEPTH DESIGN Q - TOD	1.00	OLD NHCP378 CRITERIA USED	NO

EMBANKMENT TEMPLATE: TOP WIDTH = (calc.), MAX. CROWN = 0.667 ft,

SIDE SLOPE		WAVE BERM	MULTIPLE STABILITY BERMS		SEPARATE STABILITY BERMS				
RATIOS		WIDTH	U&D/S WIDTHS		DELTA H	WIDTHS, ft		HEIGHTS, ft	
U/S	D/S	ft	ft		ft	U/S	D/S	U/S	D/S
2.50	2.50	10.0	0.0		0.00	0.00	0.00	0.00	0.00

DIMENSIONLESS UNIT HYDROGRAPH

STANDARD DIMENSIONLESS UNIT HYDROGRAPH

PEAK FACTOR = 484.0 | TIME INC. = 0.020 | NO. INC. TO PEAK = 10.

VOLUME FACTOR = 48.3429

0.0000	0.0300	0.1000	0.1900	0.3100
0.4700	0.6600	0.8200	0.9300	0.9900
1.0000	0.9900	0.9300	0.8600	0.7800
0.6800	0.5600	0.4600	0.3900	0.3300
0.2800	0.2410	0.2070	0.1740	0.1470
0.1260	0.1070	0.0910	0.0770	0.0660
0.0550	0.0470	0.0400	0.0340	0.0290
0.0250	0.0210	0.0180	0.0150	0.0130
0.0110	0.0090	0.0080	0.0070	0.0060
0.0050	0.0040	0.0030	0.0020	0.0010
0.0000				

1NRCS DESIGN STORM RAINFALL DISTRIBUTION (CHAPTER 21, NEH4 & TR-60).

0.000	0.008	0.016	0.025	0.033
0.043	0.052	0.063	0.074	0.086
0.099	0.112	0.126	0.142	0.160
0.180	0.205	0.255	0.345	0.437
0.530	0.603	0.633	0.660	0.684
0.705	0.724	0.742	0.759	0.775
0.790	0.804	0.818	0.831	0.844
0.856	0.868	0.879	0.890	0.900
0.910	0.920	0.930	0.939	0.948
0.957	0.966	0.975	0.983	0.992
1.000				

24 HOUR TYPE II RAINFALL DISTRIBUTION

IDENTIFICATION NAME IS TYPE2 GIVEN DURATION = 24.0 HRS

0.000	0.001	0.002	0.003	0.004
-------	-------	-------	-------	-------

0.005	0.006	0.007	0.008	0.009
0.010	0.012	0.013	0.014	0.015
0.016	0.017	0.018	0.020	0.021
0.022	0.023	0.024	0.026	0.027
0.028	0.029	0.031	0.032	0.033
0.034	0.036	0.037	0.038	0.040
0.041	0.042	0.044	0.045	0.047
0.048	0.049	0.051	0.052	0.054
0.055	0.057	0.058	0.060	0.061
0.063	0.065	0.066	0.068	0.070
0.071	0.073	0.075	0.076	0.078
0.080	0.082	0.084	0.085	0.087
0.089	0.091	0.093	0.095	0.097
0.099	0.101	0.103	0.105	0.107
0.109	0.111	0.113	0.116	0.118
0.120	0.122	0.125	0.127	0.130
0.132	0.135	0.138	0.141	0.144
0.147	0.150	0.153	0.157	0.160
0.163	0.166	0.170	0.173	0.177
0.181	0.185	0.189	0.194	0.199
0.204	0.209	0.215	0.221	0.228
0.235	0.243	0.251	0.261	0.271
0.283	0.307	0.354	0.431	0.568
0.663	0.682	0.699	0.713	0.725
0.735	0.743	0.751	0.759	0.766
0.772	0.778	0.784	0.789	0.794
0.799	0.804	0.808	0.812	0.816
0.820	0.824	0.827	0.831	0.834
0.838	0.841	0.844	0.847	0.850
0.854	0.856	0.859	0.862	0.865
0.868	0.870	0.873	0.875	0.878
0.880	0.882	0.885	0.887	0.889
0.891	0.893	0.895	0.898	0.900
0.902	0.904	0.906	0.908	0.910
0.912	0.914	0.915	0.917	0.919
0.921	0.923	0.925	0.926	0.928
0.930	0.931	0.933	0.935	0.936
0.938	0.939	0.941	0.942	0.944
0.945	0.947	0.948	0.949	0.951
0.952	0.953	0.955	0.956	0.957
0.958	0.960	0.961	0.962	0.964
0.965	0.966	0.967	0.968	0.970
0.971	0.972	0.973	0.975	0.976
0.977	0.978	0.979	0.981	0.982
0.983	0.984	0.985	0.986	0.988
0.989	0.990	0.991	0.992	0.993
0.994	0.996	0.997	0.998	0.999
1.000				

1SITES -----

XEQ 04/28/2015	Kroupa Pond	WSID=
VER 2005.1.6	Emergency Spillway - Weir	SUBW= A
TIME 13:22:12	SITE = S 1	PASS= 1
		PART= 2

MESSAGE ---- Climatic Index changed from 0.0 to 1.0 for this run.

PERM POOL	1634.40 FT	48.5 ACFT	0.00 AC	0.0 CFS
-----------	------------	-----------	---------	---------

CREST PS	1634.40 FT	48.5 ACFT	0.00 AC	0.0 CFS
SED ACCUM	1634.40 FT	48.5 ACFT	0.00 AC	0.0 CFS
START ELEV	1634.40 FT	48.5 ACFT	0.00 AC	0.0 CFS

RATING TABLE DEVELOPED, SITE = S 1:
WITH PS DEVELOPED BY PROGRAM AND ASRATING FOR AUX.
AUX. RATING FROM ASFILE PROFILE NO. 30.

***** MESSAGE - THE PS RATING CONTAINS NO OR INSIGNIFICANT FLOW VALUES.

RATING TABLE NUMBER 1						
	ELEV.	Q-TOTAL	Q-PS	Q-AUX.	VOLUME	AREA
	FEET	CFS	CFS	CFS	AC-FT	ACRE
1	1634.40	0.00	0.00	0.00	48.45	0.00
2	1637.00	0.00	0.00	0.00	72.30	0.00

1SITES -----
XEQ 04/28/2015 Kroupa Pond WSID=
VER 2005.1.6 Emergency Spillway - Weir SUBW= A
TIME 13:22:12 SITE = S 1 PASS= 1 PART= 3

AUX. CREST	1634.40 FT	48.5 ACFT	0.00 AC	0.0 CFS
------------	------------	-----------	---------	---------

PS STORAGE 0.0 ACFT, BETWEEN AUX. CREST AND SED. ACCUM ELEVATIONS.

START ELEV	1634.40 FT	48.5 ACFT	0.00 AC	0.0 CFS
------------	------------	-----------	---------	---------

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

NRCS-FBH	D= 24.00 HR	P= 4.80 IN	Q= 1.81 IN	DA= 0.64 SM
	TC= 1.90 HR	CN= 69.00	VOL= 62.3 ACFT	

PEAK = 243.6 CFS, AT 13.1 HRS.

***** MESSAGE - AUXILIARY SPILLWAY RATING EXTENDED ABOVE ELEVATION 1636.35.

RATING TABLE DEVELOPED, SITE = S 1:
WITH PS DEVELOPED BY PROGRAM AND ASRATING FOR AUX.
AUX. RATING FROM ASFILE PROFILE NO. 30.

***** MESSAGE - THE PS RATING CONTAINS NO OR INSIGNIFICANT FLOW VALUES.

RATING TABLE NUMBER 2						
	ELEV.	Q-TOTAL	Q-PS	Q-AUX.	VOLUME	AREA
	FEET	CFS	CFS	CFS	AC-FT	ACRE
1	1634.40	0.00	0.00	0.00	48.45	0.00
2	1634.40	0.00	0.00	0.00	48.45	0.00
3	1634.40	0.00	0.00	0.00	48.45	0.00

4	1634.40	0.00	0.00	0.00	48.45	0.00
5	1634.40	0.00	0.00	0.00	48.45	0.00
6	1634.40	0.00	0.00	0.00	48.45	0.00
7	1634.40	0.00	0.00	0.00	48.45	0.00
8	1634.40	0.00	0.00	0.00	48.45	0.00
9	1634.40	0.00	0.00	0.00	48.45	0.00
10	1634.40	0.00	0.00	0.00	48.45	0.00
11	1634.40	0.00	0.00	0.00	48.45	0.00
12	1634.40	0.00	0.00	0.00	48.45	0.00
13	1634.40	0.00	0.00	0.00	48.45	0.00
14	1634.53	0.33	0.00	0.33	49.64	0.00
15	1634.66	1.12	0.00	1.12	50.84	0.00
16	1634.89	6.69	0.00	6.69	52.98	0.00
17	1635.18	38.83	0.00	38.83	55.61	0.00
18	1635.70	148.75	0.00	148.75	60.37	0.00
19	1636.35	395.39	0.00	395.39	66.34	0.00
20	1637.00	788.32	0.00	788.32	72.30	0.00

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	AUX.-HP FT	VOL-AUX. ACFT
NRCS-FBH	50.0	1635.85	61.7	0.0	1.45	13.3

^^^^ NOTE -- ACTUAL Hp OF 1.45 RAISED TO MEET MIN. 378 CRITERIA.

PEAK - CFS	Q-PS	Q-AUX.	Q-TOT.
DISCHARGE =	0.0	204.9	204.9

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-Sc FT/FT	25% OF Q Sc FT/FT
AUXILIARY SPILLWAY ---	0.79	4.94	0.000	0.000

AUXILIARY SPILLWAY DURATION FLOW =	37.8 HOURS
ATTACK, OE/B =	1.2 ACFT/FT

EXIT CHANNEL FLOW SUBCRITICAL: MAX VELOCITY= 3.50 FT/SEC
 AT DEPTH = 1.10 FT
 COMPUTED N = 0.0433
 RETARDANCE = C
 EXIT SLOPE = 0.0100

>>>> NHCP378 RUN - MINIMUM DEPTH, CREST AUX. TO TOP OF DAM IS 2.00 FT.
 NEW TOP OF DAM ELEVATION = 1636.40.

ROUTED RESULTS	BTM WIDTH FT	MAX ELEV FT	VOL-MAX ACFT	AREA-MAX AC	AUX.HP FT	VOL-AUX. ACFT
MINIMUM AUX.	50.0	1636.40	66.8	0.0	2.00	18.3

PEAK - CFS	Q-PS	Q-AUX.	Q-TOT.
DISCHARGES =	0.0	425.6	425.6

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-Sc FT/FT	25% OF Q Sc FT/FT
AUXILIARY SPILLWAY ---	1.28	6.20	0.000	0.000

>>>> NHCP378 RUN - MINIMUM DEPTH, DESIGN FLOW TO TOP OF DAM; 1.00 FT REQUIRED

FOR THIS PASS. NEW TOP OF DAM ELEVATION = 1636.85.

ROUTED RESULTS MINIMUM AUX.	BTM WIDTH FT 50.0	MAX ELEV FT 1636.85	VOL-MAX ACFT 70.9	AREA-MAX AC 0.0	AUX.HP FT 2.45	VOL-AUX. ACFT 22.5
-----------------------------------	-------------------------	---------------------------	-------------------------	-----------------------	----------------------	--------------------------

PEAK - CFS DISCHARGES =	Q-PS 0.0	Q-AUX. 696.4	Q-TOT. 696.4
----------------------------	-------------	-----------------	-----------------

	CRITICAL DEPTH FT	CRITICAL VELOCITY FT/SEC	CRITICAL SLOPE-Sc FT/FT	25% OF Q Sc FT/FT
AUXILIARY SPILLWAY ---	1.76	7.18	0.000	0.000

Inflow Hyd 1 FBH-Peak = 204.89 CFS at 3.48 hrs., Location Point
HYDOUT 1

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

Kroupa Pond

0 SUBWATERSHED(S) ANALYZED.

1 STRUCTURE(S) ANALYZED.

1 HYDROGRAPHS ROUTED AT LOWEST SITE.

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

SITES.....COMPUTATIONS COMPLETE

>>>	SITE ID	SUBWS ID	SUBWS DA (SQ MI)	CURVE NO.	TC (HRS)	TOTAL DA (SQ MI)	TYPE DESIGN	STRUC CLASS	<<<
	S 1	A	0.64	69.	1.90	0.64	378-R	A1	

PASS NO.	DIA./ WIDTH (IN/FT)	AUX.CREST ELEV (FT)	BTM. WIDTH (FT)	MAX. HP (FT)	MAX. ELEV (FT)	EMB. VOL. (CY)	INTEGR.* DIST. (FT)	EXIT* VEL. (FT/SEC)	TYPE HYD
1	0.0	1634.4	50.0	2.5	1636.8	0.	0.	3.5	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 2005.1.6 ,01/01/2005
FILES

INPUT = C:\SITES\Kroupa\KroupaDam\KroupaStorage.D2C
OUTPUT = C:\SITES\Kroupa\KroupaDam\KroupaStorage.OUT
DATED 04/28/2015 13:22:12

GRAPHICS FILES GENERATED

OPTION "L" = C:\SITES\Kroupa\KroupaDam\KroupaStorage.DRG DATED 04/28/2015 13:22:12
OPTION "P" = C:\SITES\Kroupa\KroupaDam\KroupaStorage.DHY DATED 04/28/2015 13:22:12
OPTION "E" = C:\SITES\Kroupa\KroupaDam\KroupaStorage.DEM DATED 04/28/2015 13:22:12



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

June 8, 2015

Michael Kroupa
35680 241st St.
Kimball, SD 57501

Dear Mr. Kroupa:

We have reviewed the plans and specifications for your dam project located in the NE ¼ SW ¼ of Section 10-T105N-68W, in Brule County. The plans and specifications for the reconstruction of the dam 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. 8161-3 is approved.

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

The Kroupa Dam will be classified as a small size Category 3, Low Hazard dam with a dam height of 27.5 feet and a normal storage capacity of 48.45 acre-feet and a maximum storage capacity of 72.30 acre-feet.

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

Sincerely,

Timothy G. Schaal, P.E.
Engineer IV
for Jeanne Goodman, Chief Engineer
Water Rights Program
(605) 773-3352

c: Daniel Ostrem, P.E., NRCS, Mitchell



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8161-3, Michael Kroupa**

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. 8161-3, Michael Kroupa, 35680 241st Street, Kimball SD 57355.

The Chief Engineer is recommending APPROVAL of Application No. 8161-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. Water Permit No. 8161-3 authorizes an impoundment with a storage capacity of 48.45 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.

Jeanne Goodman, Chief Engineer
June 8, 2015

REPORT ON
WATER PERMIT APPLICATION No. 8161-3
Michael Kroupa
May 22, 2015

Water Permit Application No. 8161-3 has been filed by Michael Kroupa to impound 48.45 acre-feet of water from runoff by reconstructing a dam located in the NE ¼ SW ¼ of Section 10-T105N-R68W, in Brule County. The application also requests impoundment of sufficient water to maintain water at the outlet elevation. The water will also be used for fish and wildlife propagation 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 the Natural Resources Conservation Service (NRCS). The plans and specifications have been reviewed and will be approved; however, reconstruction of the dam cannot begin until Water Permit Application No. 8161-3 is approved.

The dam will be 27.5 feet high with a normal storage capacity of 48.45 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 72.3 acre-feet with a reservoir level at the top of dam elevation. A dam of this size and hazard classification is required to have a minimum spillway design capable of passing a 25-year frequency event.

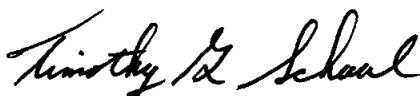
The dam has a drainage area of 412 acres or 0.64 square miles. The dam has a 50 foot wide earthcut spillway with 2.4 feet of available freeboard as the primary spillway. A 25-year frequency event produces a peak runoff of approximately 106 cfs and a 100-year frequency event produces a peak runoff of approximately 192 cfs. The earthcut spillway will have a capacity of approximately 480 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 2.7 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 9.3 acre-feet, and the annual yield with a 10 percent chance of occurrence, or 1 out of 10 years, is expected to be 48 acre-feet.

The Kroupa Dam will be located in the SW ¼ of Section 10-T105N-R68W on an unnamed tributary to Smith Creek, about 1.5 miles upstream of the confluence of the unnamed tributary and Smith Creek, and about 12 miles upstream of the confluence of Smith Creek and Crow Creek. There are no existing Water Rights/Permits filed on the unnamed tributary or Smith Creek between the dam and Crow Creek.

Conclusions:

1. Water Permit Application No. 8161-3 should be approved since unappropriated water is available and approval should not have any adverse effect on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for domestic use should be a qualification on Water Permit Application No. 8161-3.



Timothy G. Schaal, P.E.
Engineer IV

RECEIVED

JUN 19 2015

WATER RIGHTS
PROGRAM

AFFIDAVIT OF PUBLICATION

NOTICE OF
APPLICATION NO.
8161-3
to Appropriate Water

Notice is given that Michael Kroupa, 35680 241st St, Kimball SD 57355 has filed an application for a water permit to impound 48.45 acre-feet of water from runoff by constructing a dam located in the NE 1/4 SW 1/4 Section 10 with water impounded in the NE 1/4 SW 1/4 and the NW 1/4 SE 1/4 Section 10; all in T105N R68W. 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. 8161-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on 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 June 29, 2015.

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. Information concerning this application is available at <http://denr.sd.gov/public>. 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 once at the total approximate cost of \$62.46

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF DAVISON)

Penny Hohbach of said county, being, first duly sworn, on oath, says; that he/she is the publisher or an employee of the publisher of The Daily Republic, a daily newspaper, published in the City of Mitchell, in said County of Davison, and State of South Dakota; that he/she has full and personal knowledge of the facts herein stated; that said newspaper is a legal newspaper as defined in SDCL 17-2-2.1 through 17-2-2.4 inclusive; that said newspaper has been published within the said County of Davison and State of South Dakota, for at least one year next prior to the first publication of the attached public notice, and that the notice, order or advertisement, a printed copy of which, taken from the paper in which the same was published, and which is hereto attached and made a part of this affidavit, was published in said newspaper for 1 issue(s), to wit:

Wednesday, June 17, 2015

That the full amount of the fee charged for the publication of the attached public notice insures to the sole benefit of the publisher or publishers; that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever, that the fees charged for the publication thereof are: \$62.46

Signed: Penny Hohbach

Subscribed and sworn to before me this 17th day of June, 2015.

Deb. Townsend

Notary Public
County of Davison

My Commission Expires: 09-21-18

Prepared by: The Daily Republic, P.O. Box 1288, Mitchell S.D. 57301 605-996-5515

DEB TOWNSEND
Notary Public
SEAL
South Dakota

AFFIDAVIT OF PUBLICATION

RECEIVED

JUN 22 2015

WATER RIGHTS
PROGRAM

State of South Dakota

County of Brule

Debi Ruiz of said county, being, first duly sworn, on oath, says: That she is the publisher of *Central Dakota Times*, a weekly newspaper, published in the City of Chamberlain, in said County of Brule, and State of South Dakota; that she has full and personal knowledge of the facts herein stated; that said newspaper is a legal newspaper as defined in SDCL 17-2.2.1 through 17-2.2.4 inclusive; that said newspaper has been published within the said County of Brule and State of South Dakota, for at least one year next prior to the first publication of the attached public notice, and that the Notice of Application No. 8161-3

To Appropriate Water

a printed copy of which, taken from the paper in which the same was published, and which is hereto attached and made a part of this affidavit, was published in said newspaper for one successive week(s) to wit:

June 17, 2015; _____, 20____;

_____, 20____; _____, 20____;

_____, 20____; _____, 20____;

That the full amount of the fee charged for the publication of the attached public notice inures to the sole benefit of the publisher or publishers; that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever; that the fees charged for the publication thereof are:

\$22.32

Signed: Debi Ruiz

Subscribed and sworn to before me this 18th day of June, 2015.

Janet L. Petrak

Notary Public in and for the County of Brule,
South Dakota

JANET L. PETRAK
Notary Public
SEAL
South Dakota

NOTICE OF APPLICATION NO. 8161-3
TO APPROPRIATE WATER

Notice is given that Michael Kroupa, 35680 241st Street, Kimball, SD 57355, has filed an application for a water permit to impound 48.45 acre-feet of water from runoff by constructing a dam located in the NE 1/4 SW 1/4 Section 10 with water impounded in the NE 1/4 SW 1/4 and the NW 1/4 SE 1/4 Section 10; all in T105N R68W. 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. 8161-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the chief engineer will act on 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 the 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 East Capitol, Pierre, SD 57501 (605-773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by June 29, 2015.

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. Information concerning this application is available at <http://denr.sd.gov/public>. 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 one week, June 17, 2015, at a total approximate cost of \$22.32.)

(June 17)

Instruction to Newspaper - Publish the Notice on June 17, 2015. 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. 8161-3 to Appropriate Water

Notice is given that Michael Kroupa, 35680 241st St, Kimball SD 57355 has filed an application for a water permit to impound 48.45 acre-feet of water from runoff by constructing a dam located in the NE 1/4 SW 1/4 Section 10 with water impounded in the NE 1/4 SW 1/4 and the NW 1/4 SE 1/4 Section 10; all in T105N-R68W. 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. 8161-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest. In accordance with SDCL 46-2A-23, the Chief Engineer will act on 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.

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Published once at the total approximate cost of _____.



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

June 8, 2015

Central Dakota Times
PO Box 125
Chamberlain SD 57325

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 8161-3 to Appropriate Water. Please publish the notice once on June 17, 2015. 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 and arrange for payment. **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Michael Kroupa, 35680 241st St, Kimball SD 57355 (Ph # 605-778-6303).

Please send the Water Rights Program an affidavit or the enclosed Proof of Publication form immediately.

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



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

June 8, 2015

Daily Republic
PO Box 1288
Mitchell SD 57301

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Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

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

June 8, 2015

Michael Kroupa
35680 241st St
Kimball SD 57355

Dear Mr. Kroupa:

Water Permit Application No. 8161-3 for fish & wildlife propagation and livestock watering use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Central Dakota Times printed at Chamberlain SD (Ph # 605-234-0266) and the Daily Republic printed at Mitchell SD (Ph # 605-996-5514). You will need to contact the newspaper(s) and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and 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(s) to authorize publication of your Notice and to arrange for payment. Early contact with the paper(s) can eliminate delays. Upon receiving authorization from you, the publisher has been instructed to publish your notice. 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

c: Steve Spawn, USFWS, 38672 219th St, Lake Andes SD 57356

enclosures

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



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

AUG 04 2015

Michael Kroupa
35680 241st St
Kimball SD 57355

Dear Mr. Kroupa:

Enclosed is Water Permit No. 8161-3 authorizing construction of the 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,

Jeanne Goodman, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

8161-3

RECEIVED

DEC - 7 2015

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

MAIL TO: PMB 2020

DENR - Water Rights Program
523 E Capitol Ave
Pierre, SD 57501-3182

ph. (605) 773-3352

Date 12-3-2015

FROM:

Michael Kroupa

(name)

35680 241st St.

(address)

Kimball

(city)

SD

(state)

57355

(zip)

(605) 680-1083

(phone)

I have completed the construction of the water use system and I have put the water to beneficial use to the maximum extent it is going to be used.

Water Permit No. 8161-3 states that the water use system is to be constructed by6-29-2020

(date)

, and water is to be put to beneficial use by

6-29-2024

(date)

The water use system was completed on

11-4-2015

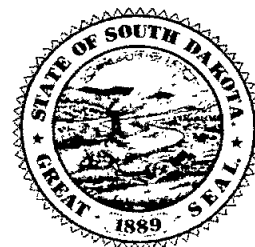
(date)

Applying the water to beneficial use was completed on

11-4-2015

(date)

You may schedule an investigation so that the water license may be issued.





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3182
<http://denr.sd.gov>

December 28, 2015

8161-3

Michael Kroupa
35680 241st St
Kimball SD 57355

Dear Mr. Kroupa:

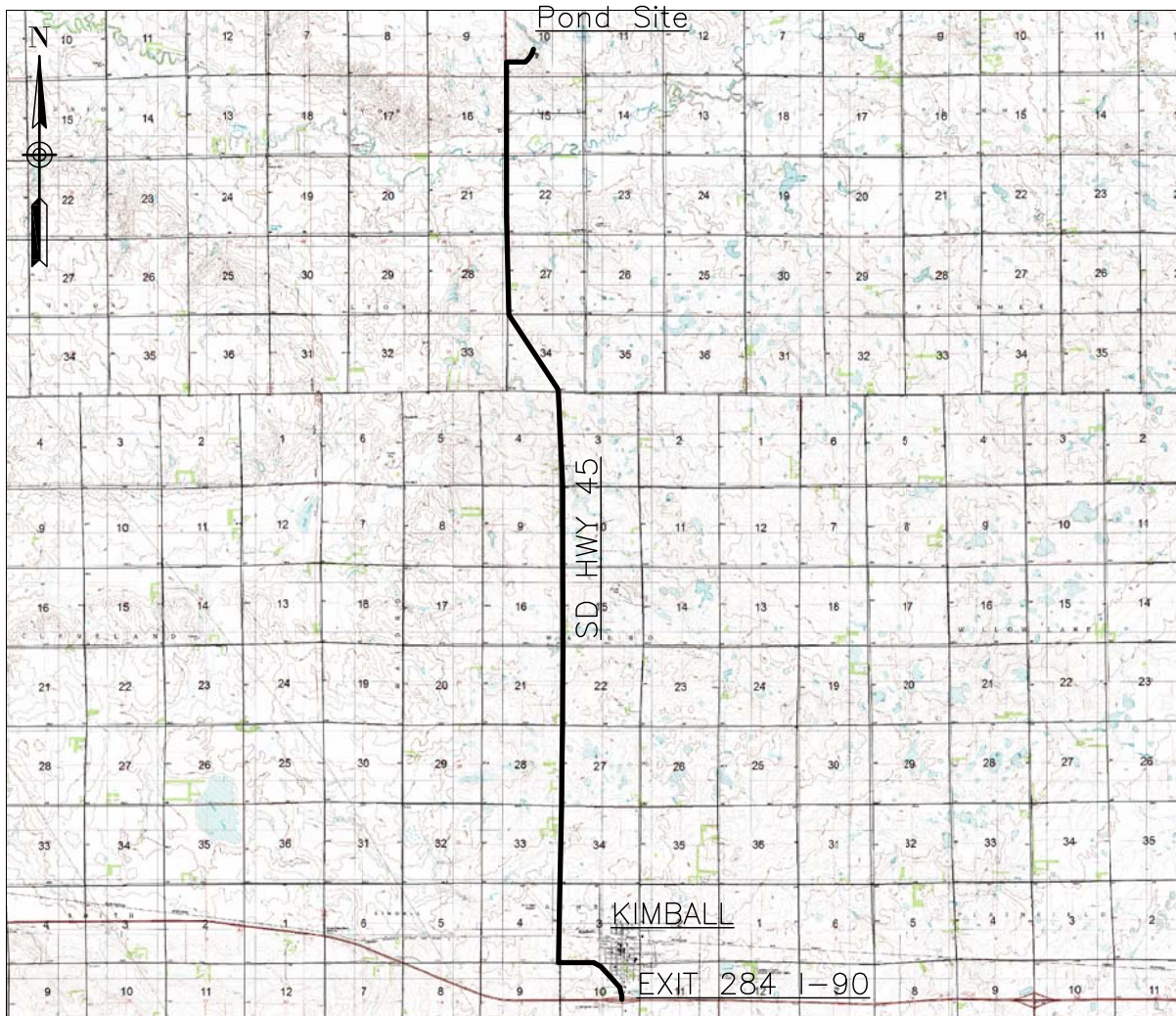
I am writing to acknowledge receipt of the "Notice of Completion of Works" form that you sent in to let us know that you are completed with your water use system.

The system is now ready for inspection. Inspections are done on a county-by-county basis as staff time permits. You have done everything you need to do and the intervening time between the completion of your project and the staff inspection has no bearing on your water permit.

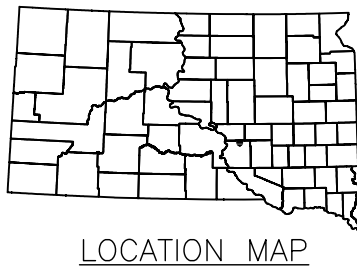
Someone from our office will contact you prior to the inspection to set up a time that is convenient for you. If you have any questions, please contact me.

Sincerely,

Genny McMath
Water Rights Program
(605) 773-3352
email: genny.mcmath@state.sd.us



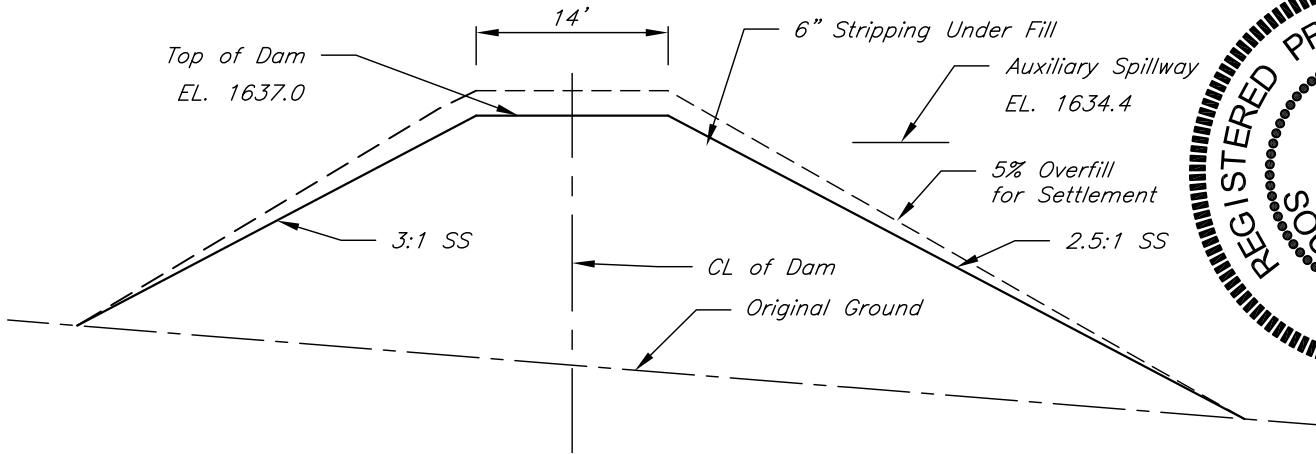
SKETCH PLAN OF DAM AND RESERVOIR AREA
Scale: 1 Inch = 12,500 Feet



PLANS FOR THE CONSTRUCTION OF A
POND (378) for
MICHAEL KROUPA in
BRULE COUNTY,
SOUTH DAKOTA
PREPARED BY
U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

TABLE OF QUANTITIES			
ITEM	UNIT	QUANTITY	AS-BUILTS
Earthfill Class S – Embankment	Cu. Yd.	1289	1702
Earthfill Class S – Stripping	Cu. Yd.	171	171
Total Earthfill	Cu. Yd.	1460	1873
Topsoil Auxiliary Spillway	Cu. Yd.	280	292
Spillway Excavation below Stripping	Cu. Yd.	812	871
Seeding (Earthfill and Auxiliary Spillway)	Acre	1	1.4

TOTAL EARTHWORK MEASURED From Survey – CUT 1950 FILL 1912



TYPICAL CROSS SECTION OF DAM



CONSTRUCTION NOTES

- If cultural resources are discovered during construction, discontinue construction and notify the local Natural Resources Conservation Service office.
- The landowner is responsible for complying with all federal, state, and local laws.
- Clear and grub the entire area within the work limits.
- Any shale, gravel, or sand that is exposed during borrow operations shall be immediately backfilled with 2 feet of clay material.
- All fill material must not contain frozen material, sod, roots, or other perishable material, or rock larger than eight inches in diameter as described in SD Construction Specification SD-7S.
- Six inches topsoil will be incorporated into the earthfill to meet the neat lines shown on the typical section.
- All areas top-dressed with topsoil and disturbed during construction will be seeded according to SD Construction Specification SD-28.

HYDRAULIC DATA

HYDRAULIC DATA		
Drainage Area	412	Acres
Annual Runoff Yield	9.3	Ac. Ft.
Time of Concentration	1.9	Hours
Runoff Curve Number	69	
Auxiliary Spillway, 50 Year – 24 Hour Rainfall	4.8	Inches
Peak Runoff 50 Year – 24 Hour Rainfall	252	CFS
Auxiliary Spillway Discharge	205	CFS
Auxiliary Spillway Flow Depth	1.45	Feet

SD CONSTRUCTION AND MATERIAL SPECIFICATIONS

SD-4 Stripping
SD-5 Excavation
SD-7S Earthfill – Class S
SD-10 Salvaging And Spreading Topsoil
SD-28 Seeding
For A Full Text Version See
http://www.sd.usda.gov/technical/SD_Engineering.html

NRCS HAZARD CLASS A
NRCS JOB CLASS IV

STATEMENT OF COMPLIANCE

Construction (was) (was not) completed in accordance with approved construction plans and specifications.

Dana Edwards 1/11/2016

JAA Date

POND WITHOUT PRINCIPAL SPILLWAY PIPE

SEDIMENT YIELD					
Erodibility Area	Gross Rate (A.F./Ac./Yr.)	Drainage Area (Acres)	Delivery Rate (%)	Design Period (Years)	Req. Sed. Volume (Ac.-Ft.)
K	0.0059	412.5	32	20	15.580

STRUCTURE DATA		
Length of Top of Dam	313	Feet
Water Depth to Crest of Auxiliary Spillway	20.4	Feet
Height of Downstream Toe to Top of Dam	27.5	Feet
Effective Height	24.9	Feet
Product of Storage X Effective Height	1206.4	Ac.-Ft ²

POOL DATA			
	ELEV.	AREA	STORAGE
Crest of Auxiliary Spillway	1634.4	9.50 Ac.	48.45 Ac.-Ft
Top of Dam	1637	12.13 Ac.	72.30 Ac.-Ft

NO EXCAVATOR MAY BEGIN ANY EXCAVATION WITHOUT FIRST NOTIFYING THE ONE-CALL NOTIFICATION CENTER OF THE PROPOSED EXCAVATION AT 1-800-781-7474.

Date	Designed	Drawn	Checked	Approved
4/27/2015	D. Ostrem	D. Ostrem	D. Edwards	"AB" D. Ostrem

COVER
POND (378)

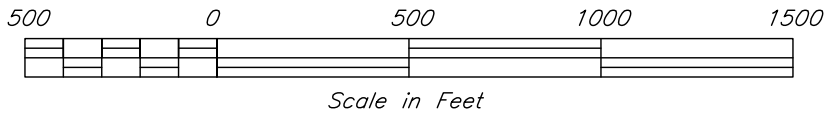
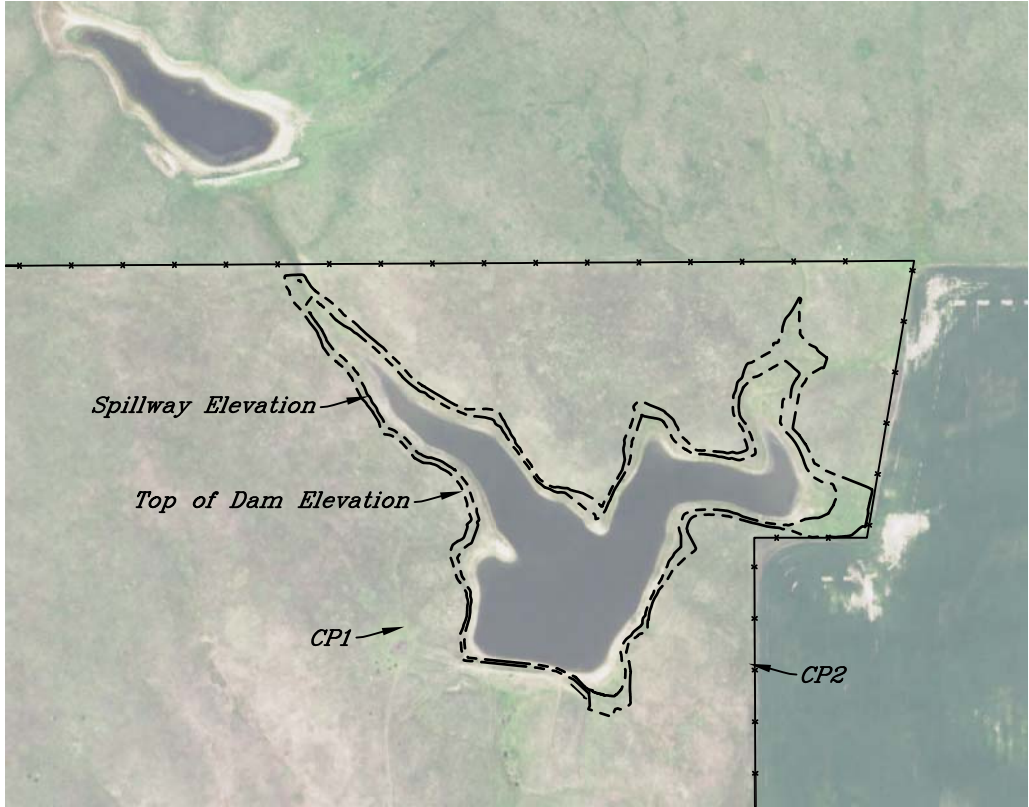
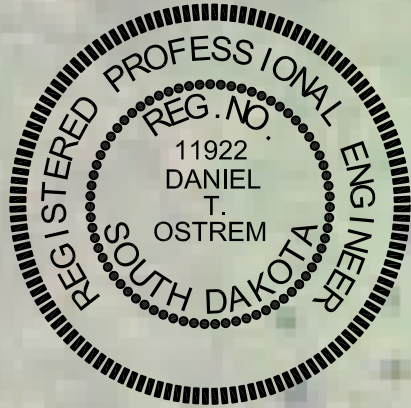
United States Department of Agriculture
Natural Resources Conservation Service

File No.
KroupaASBUILT.dwg

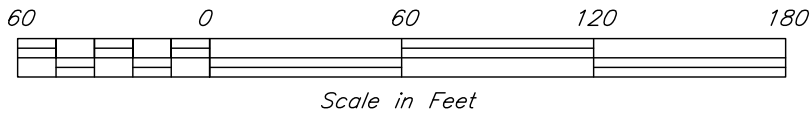
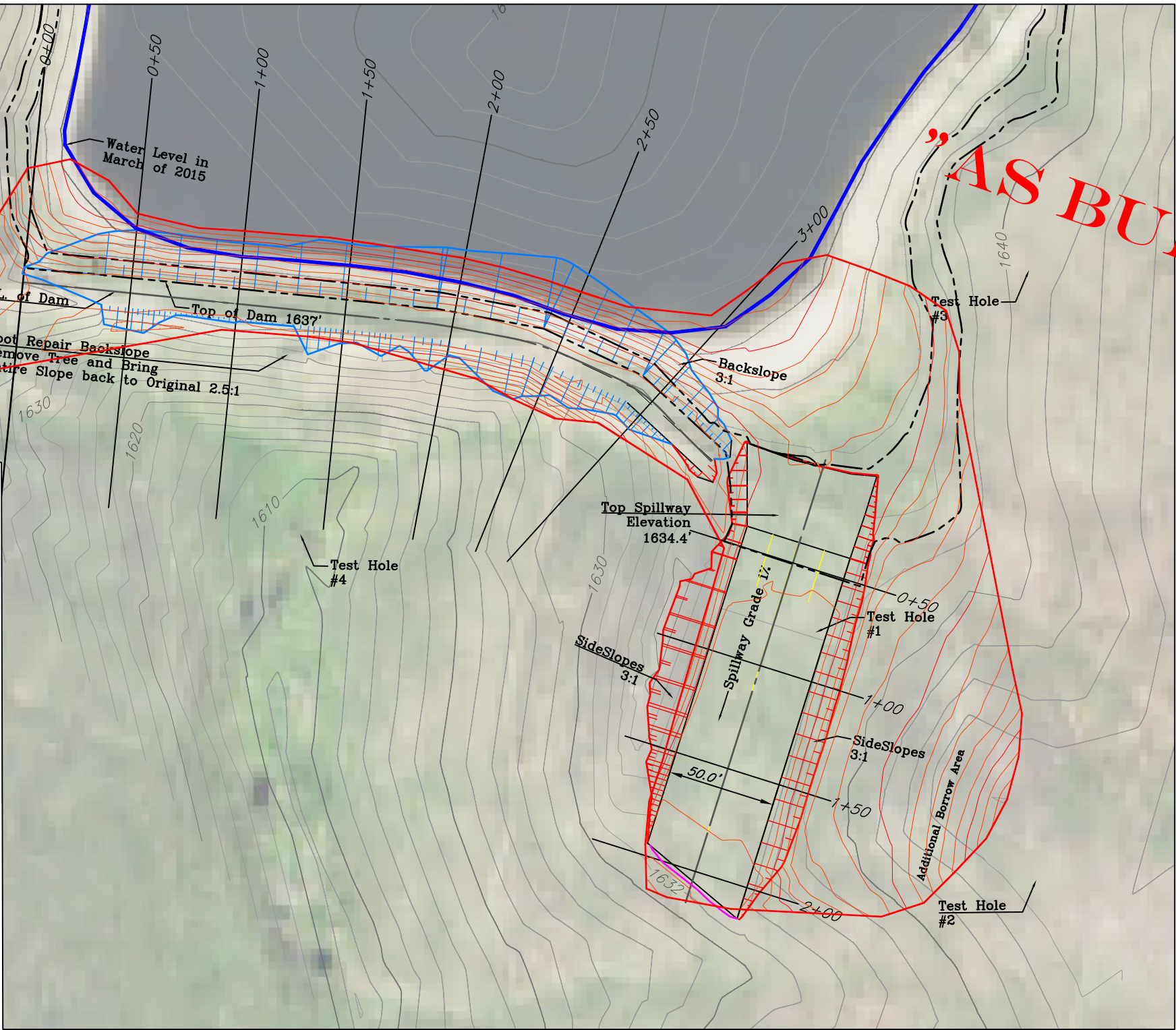
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12/9/15 10:01 AM

Sheet 1 of 5



BENCH MARKS				
NO.	Northing	Easting	Elevation	Description
Control Point (CP) Base 1	15951422.76	1645484.11	1659.28	Just North of Parking Area on West Side of Dam
Control Point (CP) 2	15951324.51	1646378.16	1658.27	Near Fence East of Dam



Stage Storage From SITES		
Elevation (ft)	Outflow (cfs)	Storage (AF)
1634.4	0	48.45
1634.66	1.12	50.84
1635.18	38.83	55.61
1636.35	395.39	66.34
1637	788.32	72.30

AS BUILT

United States
Department of
Agriculture

Natural Resources
Conservation Service

File No.
KroupaASBUILT.dwg

Drawing No.
051515

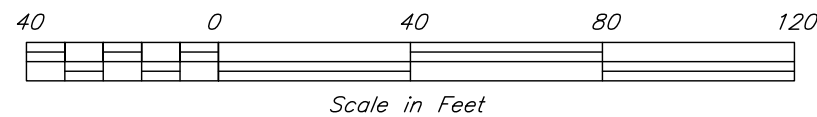
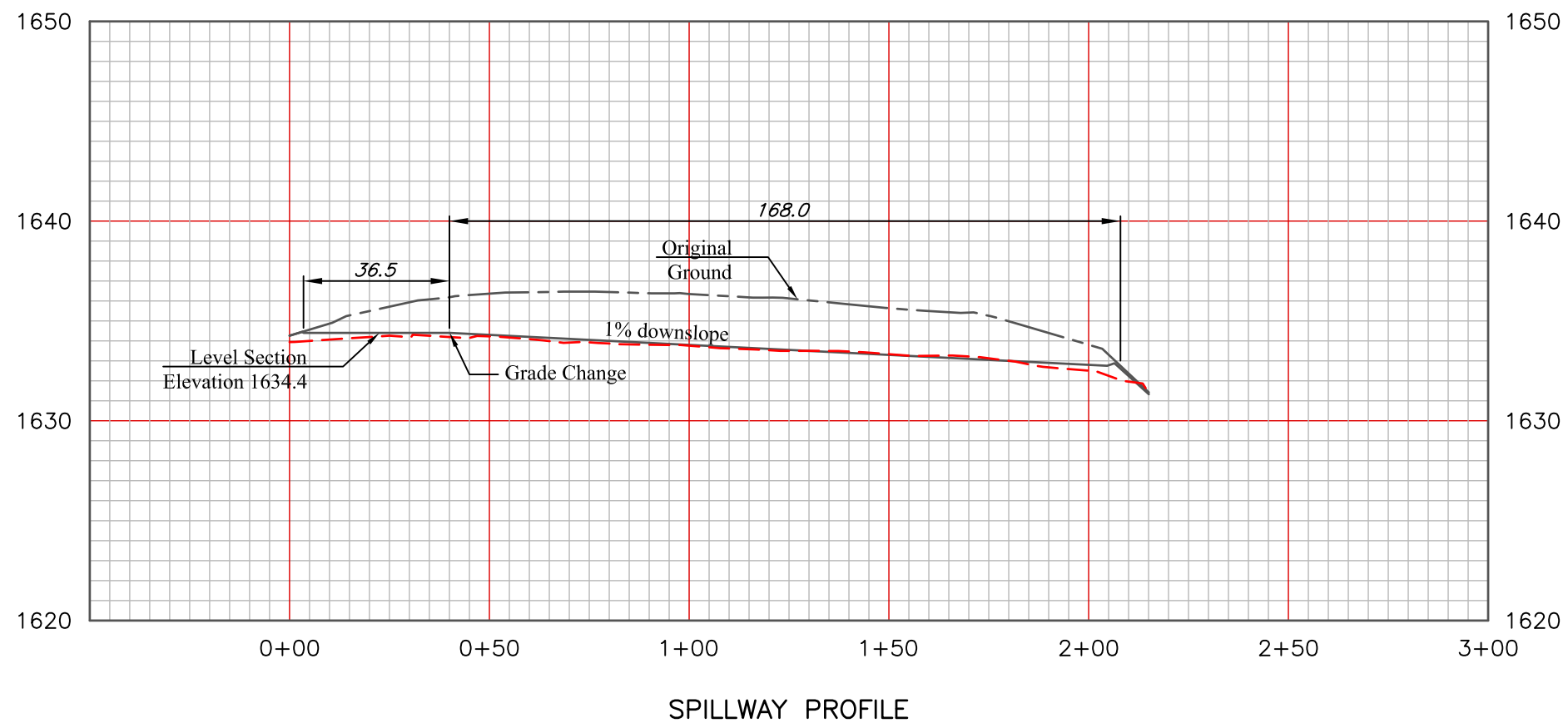
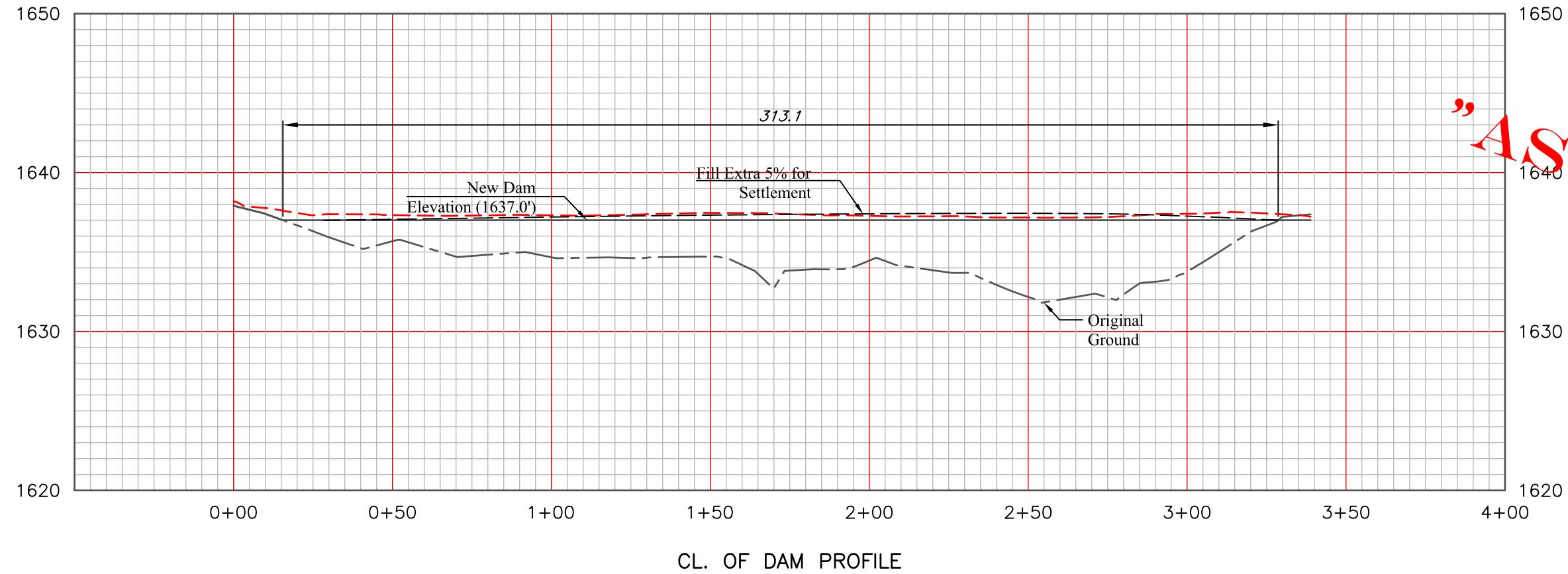
12/9/15 10:01 AM
Sheet 2 of 5

PLAN VIEW
POND (378)

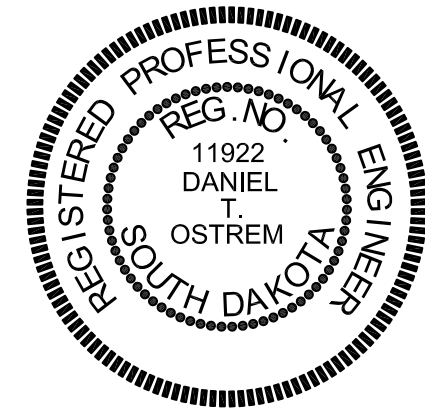
SW 1/4" S10 T105N R68W, Michael Kroupa

Designed D. Ostrem 4/27/2015
Drawn D. Ostrem 4/27/2015
Checked D. Edwards 5/4/2015
Approved "AB" D. Ostrem 12/9/2015

Brule County, South Dakota



----- Original Ground
———— Design Channel Bottom

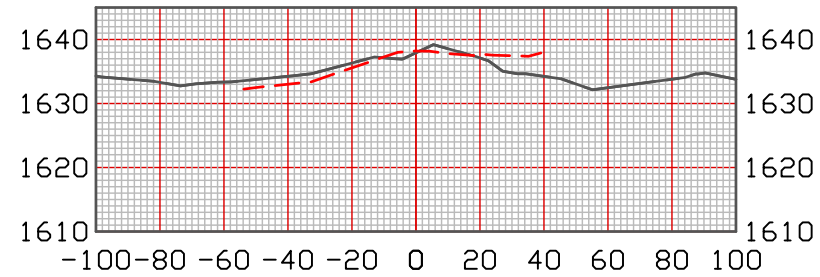


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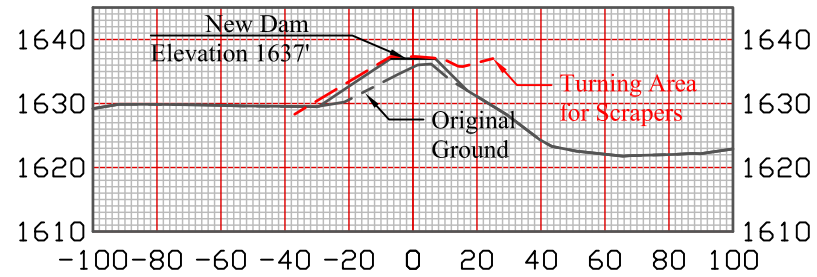
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DRAWING NO. 051515		DATE 12/9/15 10:01 AM		SHEET 3 OF 5	
DESIGNED D. Ostrem		CHECKED D. Edwards		APPROVED "AB" D. Ostrem	
DATE 4/27/2015		DATE 5/4/2015		DATE 12/9/2015	
DRAWN D. Ostrem		PROJECT Brule County, South Dakota		PROJECT SW 1/4" S10 T105N R68W, Michael Kroupa	
PROJECT PROFILE POND(378)		PROJECT Brule County, South Dakota		PROJECT SW 1/4" S10 T105N R68W, Michael Kroupa	

Dam Cross Sections

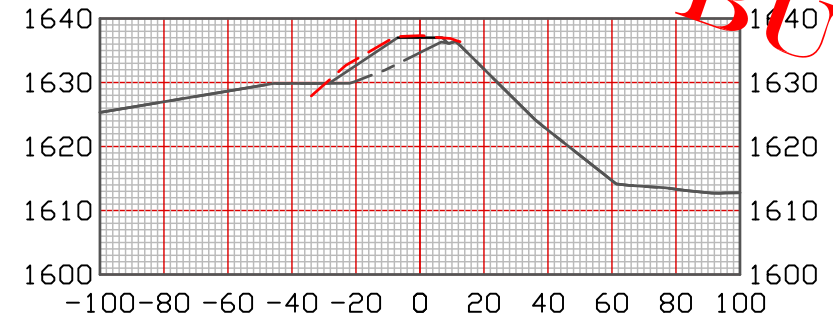
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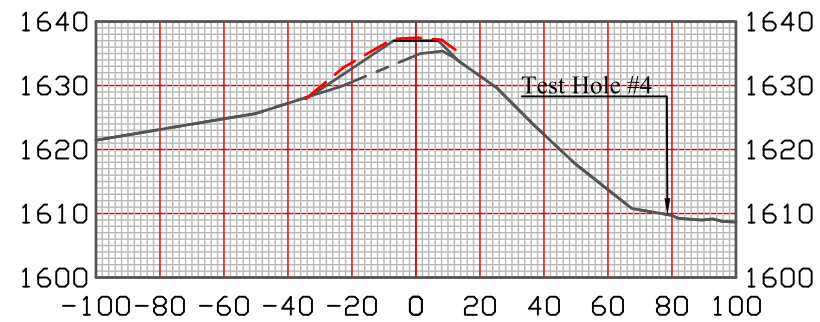
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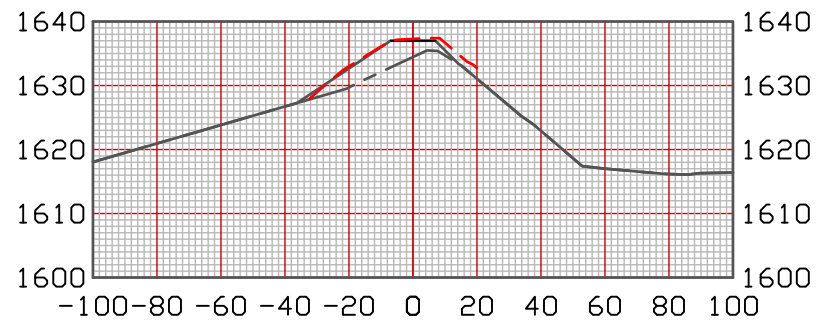
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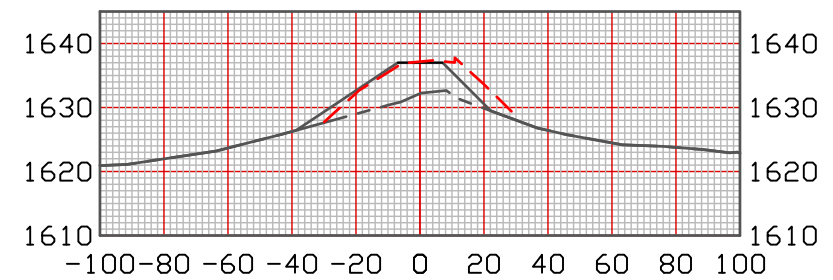
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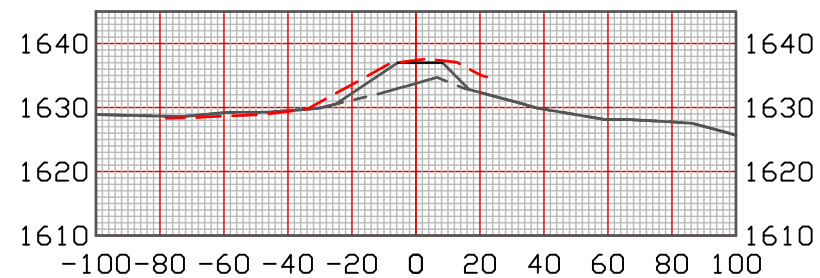
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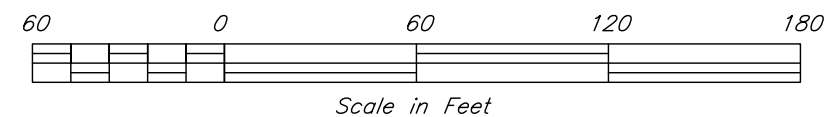
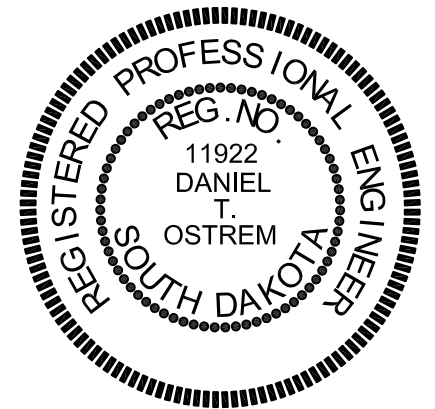
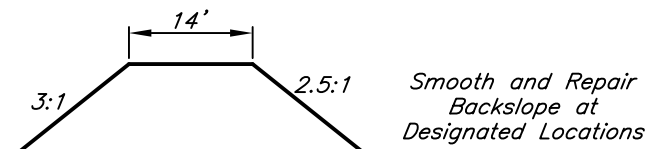
2+50



3+00



--- Original Ground
— Design Channel Bottom



"AS BUILT"

DAM CROSS SECTIONS
POND (378)

Designed	D. Ostrem	Date	4/27/2015
Drawn	D. Ostrem		4/27/2015
Checked	D. Edwards		5/4/2015
Approved	"AB" D. Ostrem		12/9/2015

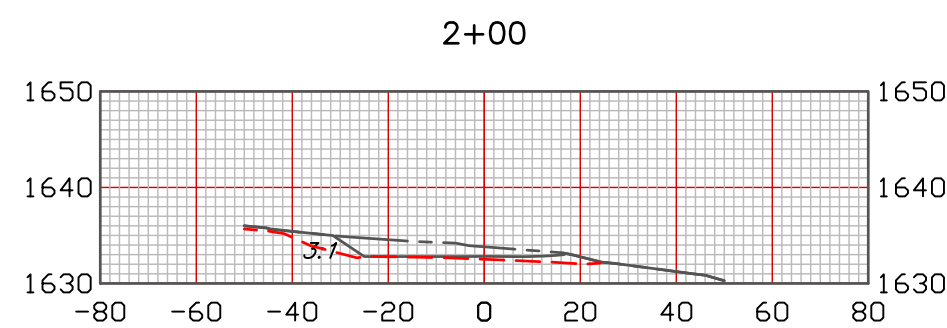
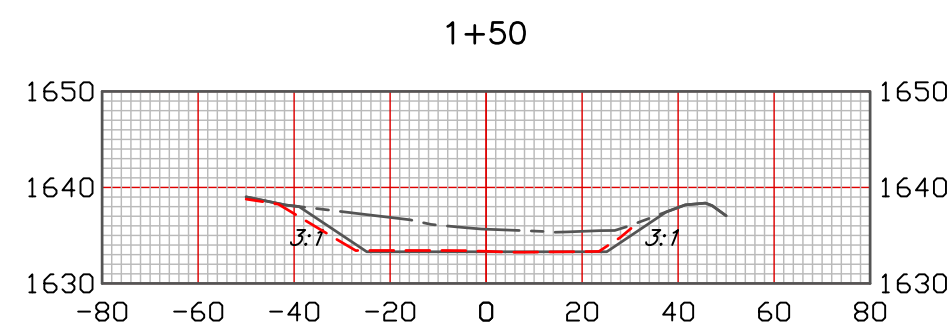
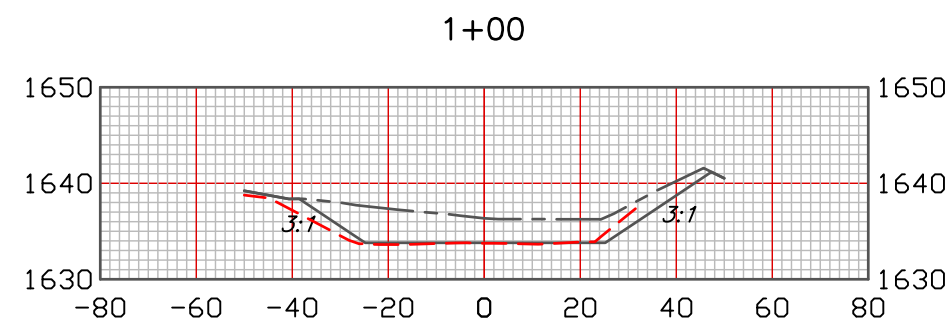
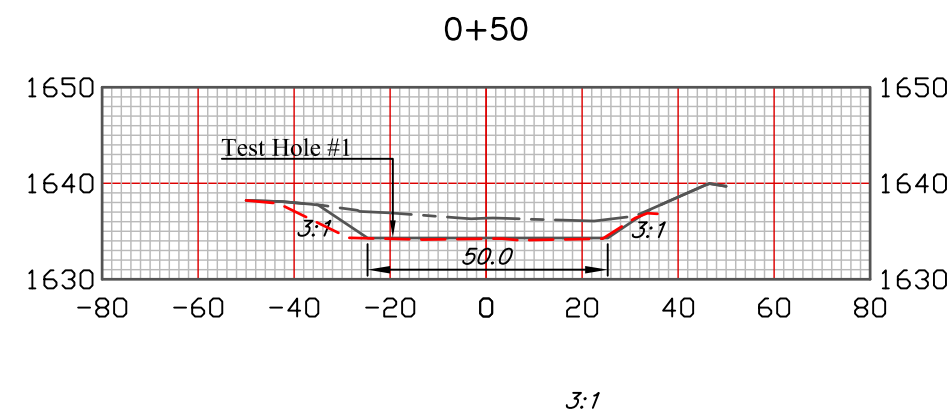


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Sheet 4 of 5

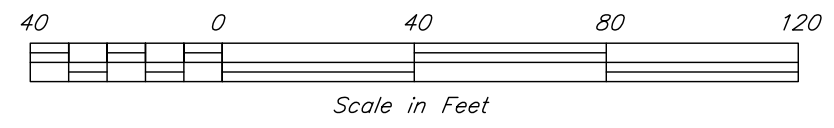
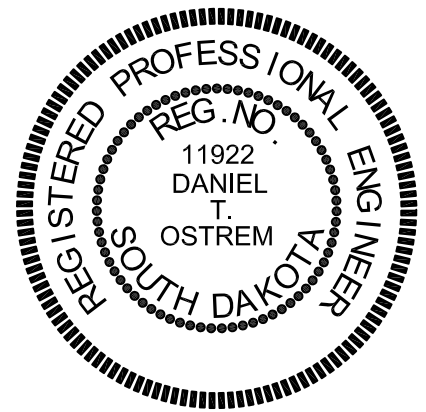
SW 1/4" S10 T105N R68W, Michael Kroupa Brule County, South Dakota

Spillway Cross Sections

"AS BUILT"



----- Original Ground
———— Design Channel Bottom



SPILLWAY CROSS SECTIONS POND (378)	Designed	D. Ostrem	Date	4/27/2015
	Drawn	D. Ostrem		4/27/2015
	Checked	D. Edwards		5/4/2015
	Approved	"AB" D. Ostrem		12/9/2015
United States Department of Agriculture Natural Resources Conservation Service		SW 1/4" S10 T105N R68W, Michael Kroupa		
File No. KroupaASBUILT.dwg		Brule County, South Dakota		
Drawing No. 051515				
12/9/15 10:01 AM				
Sheet 5 of 5				

Report of Examination of Works and/or Application of Water to Beneficial Use For Permit No. 8161-3

I have this day, August 15, 2025, made a thorough examination of the water use system constructed by Michael Kroupa, 35680 241st St, Kimbal, SD 57355 of Permit No. 8161-3, bearing the priority of May 18, 2015 authorizing the storage of 48.5 acre-feet of waters for fish & wildlife propagation and livestock water purposes, in Brule County.

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by Y
- 2) Exceptions to compliance are: None

E. Condition and Location:

1. The system is in excellent condition with the point(s) of diversion located as follows: PRIMARY (SURFACE) SPILLWAY LOCATION From the SW corner Sec 10 T105N R68W, 1575 ft N & 2130 ft E, Lat 43.91068 Long -98.97896 NE 1/4 SW 1/4.
2. The works are capable of storing 48.5 acre-feet of water which is to be used for fish and wildlife propagation and livestock water.

The license should be issued for 48.5 acre-feet of storage.

3. All structures, wells and lands on map Y

F. Comments or other permit(s) associated with the project:

Used FSA maps and ArcGIS to construct the site map.

The dam structure is in excellent condition with no evidence of any erosion issues and good grass cover.

The structure appears to have been constructed in accordance with the given NRCS design specifications that can be found on Page 4 of the Permit Application materials.

Talked to Mr. Michael Kroupa on the phone during the field inspection.

The mailing address and phone number in the Permit Application materials are current.



Darrell DeBoer
Water Rights Inspector
DENR, Water Rights Program

Date report completed: August 23, 2025



PIC 1. Looking east along the center line of the dam.



PIC #2. Looking west along the center line of the dam.



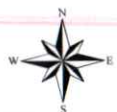
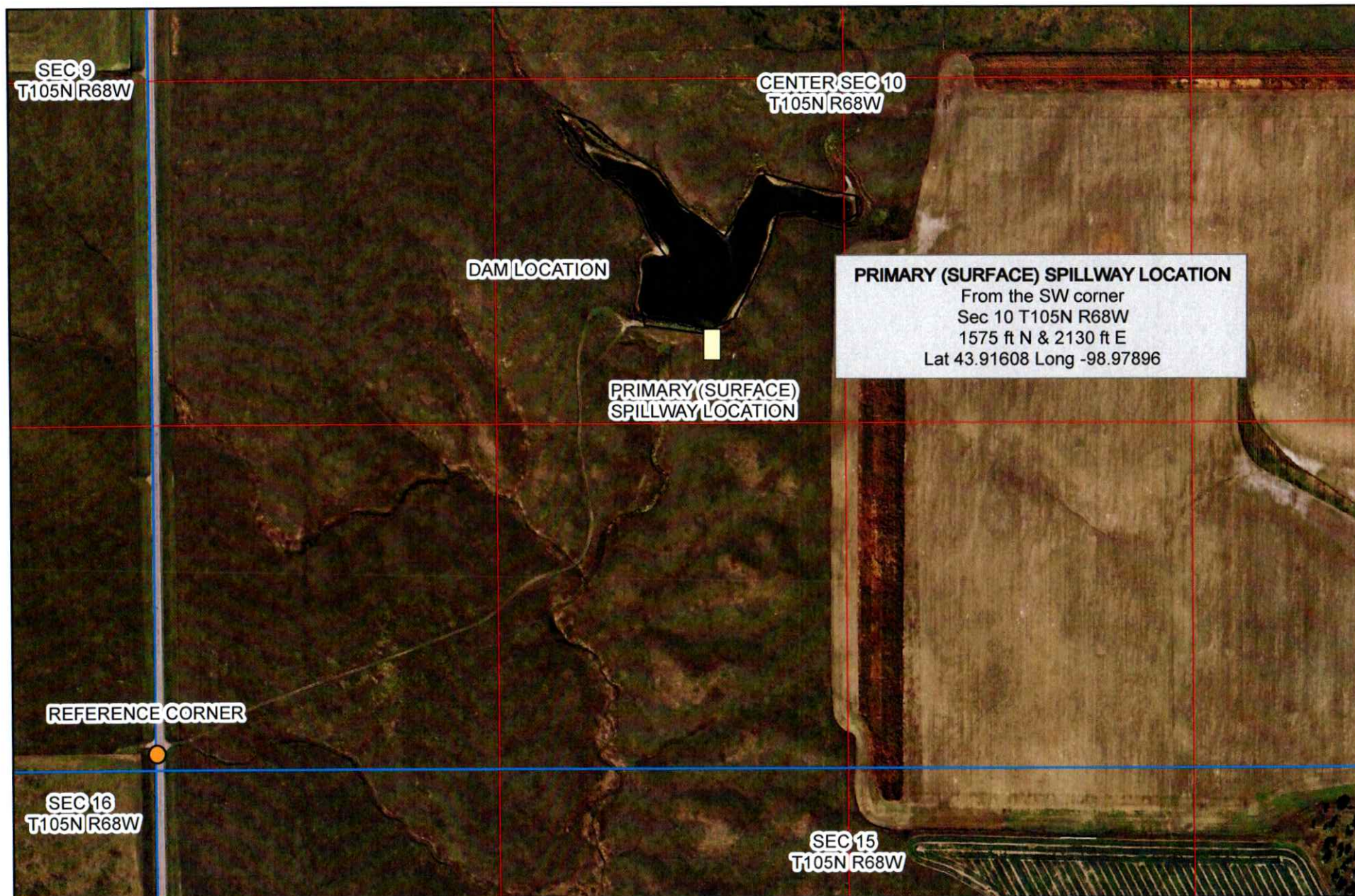
PIC #3. Looking north from the dam at the west edge of the primary spillway.



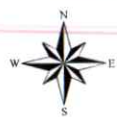
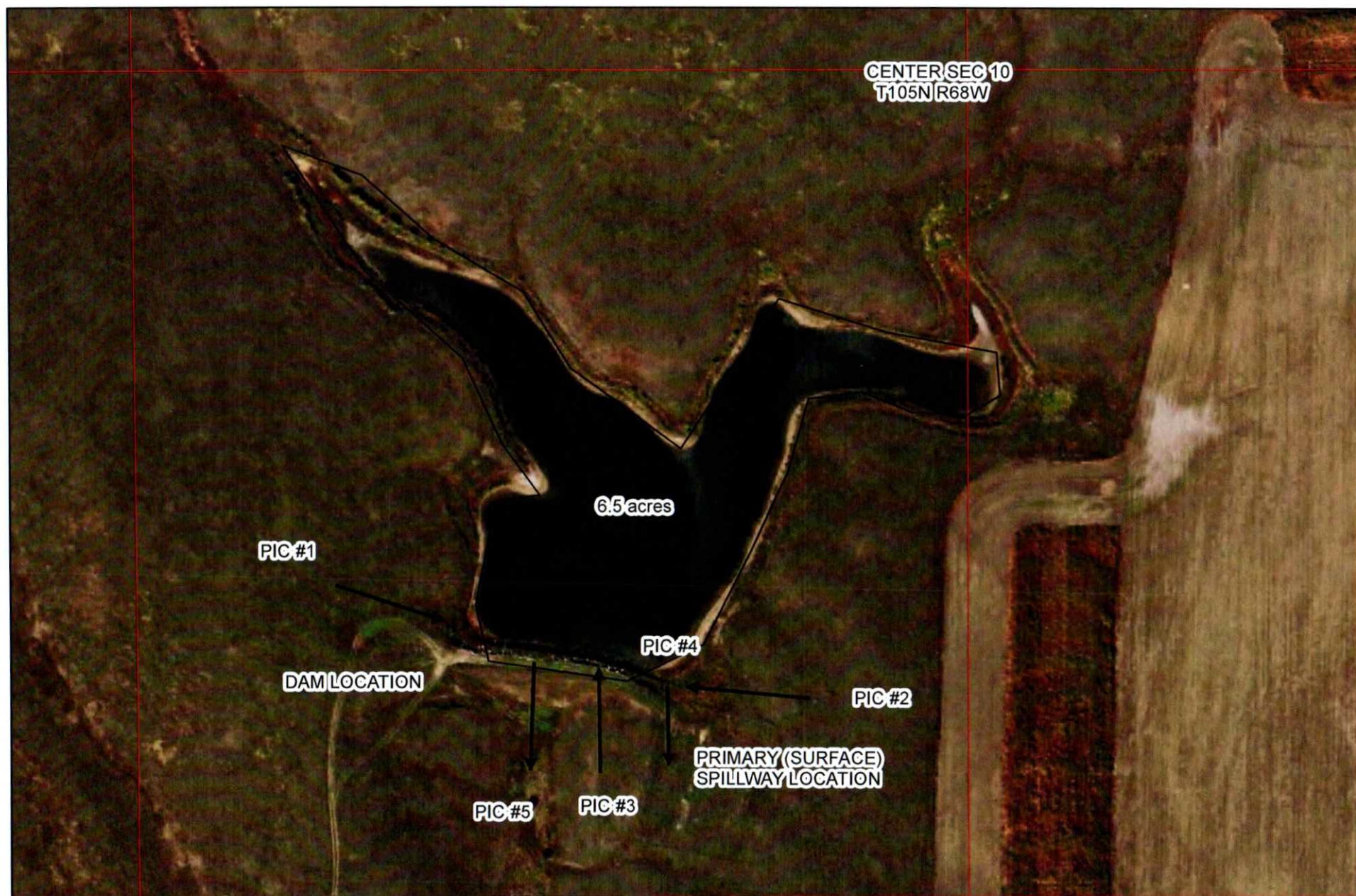
PIC 4. Looking south down the grassed primary (surface) outlet with excellent cover.
Estimated to be about 35 feet wide at the outlet bottom.



PIC 5. Looking south downstream from the dam.



0 425 850 1,700 2,550 3,400 Feet



0 175 350 700 1,050 1,400 Feet



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

APR 09 2026

Michael Kroupa
35680 241st St
Kimball, SD 57335

8161-3

Dear Mr. Kroupa:

Enclosed is Water License No. 8161-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

So 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. If you have any questions, please contact Amanda Dewell, Permitting Administrator (605) 773-3352.

Sincerely,

Adam Mathiowetz, PE
Acting Chief Engineer
(605) 773-3352

enclosures

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 8161-3

(1) Michael Kroupa, 35680 241st St, Kimball, SD 57355, made Application No. 8161-3, May 18, 2015, for a water permit to authorizing impoundment of 48.45 acre-feet of water from runoff into a dam, Brule County, South Dakota, for fish & wildlife propagation and livestock watering purposes. Permit No. 8161-3, with a priority date of May 18, 2015, was approved on June 29, 2015, and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before June 29, 2020, and for the application to beneficial use of water on or before June 29, 2024.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to impound 48.45 acre-feet of water in the dam for beneficial use. The location of the diversion point is:

- Primary Spillway: 1,575 ft N & 2,130 ft E of the SW corner Section 10-T105N-R68W (NE $\frac{1}{4}$ SW $\frac{1}{4}$) (Latitude 43.91068 & Longitude -98.97896)

(3) The water is to be used during the following described annual period: January 1 – December 31.

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

(5) Pursuant to South Dakota Water Law 46-5-30.1, Michael Kroupa, the holder and/or owner of Water Right No. 8161-3, is issued a license to appropriate water, the right to impound 48.45 acre-feet of water in a single dam, with a priority date of May 18, 2015, for fish & wildlife propagation and livestock watering purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No 8161-3 and subject to the following qualifications:

1. Water Permit no. 8161-3 authorizes an impoundment with a storage capacity of 48.45-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.



Adam Mathiowetz, PE
Acting Chief Engineer
Department of Agriculture and Natural Resources

APR 09 2026

date

