

WATER PERMIT NO. 2711-2

Name of Applicant: Clay & Jim Kaiser

Address: 31427 296th St, Millboro SD 57580

Phone: 605 557-3366

Amount of Water Claimed: 3.91 cfs

Total Acres: 272.73 274

Source of Water Supply: runoff into a storage dam – 242 AF storage

Water to be used for: irrigation

County: Tripp

Type of Waste Disposal System:

Location: 18 miles south of Winner

resubmitted application 12-9-13

PRIORITY

Date Received: 3-22-13

Application/License Fee: \$ 1250

Corrected Application Received:

Period of Annual Use: April 1 – October 31

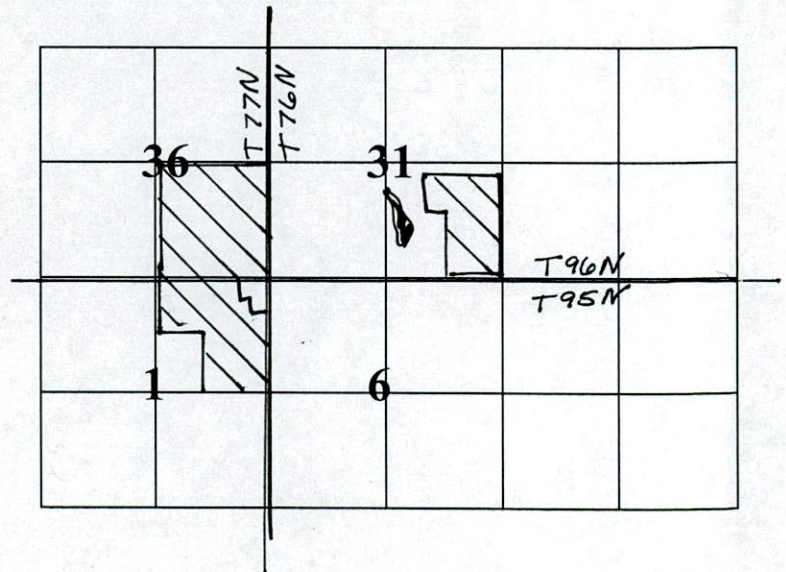
Remarks: Storage dam is authorized by Location Notice No. 247-2

Storage Dam: W 1/2 SE 1/4 Sec 31-T96N-R76W

Land to be Irrigated: NE 1/4 Sec 1-T95N-R77W,

SE 1/4 Sec 36 T96N-R77W and SE 1/4 Sec 31-

T96N-R76W



Depth of Well: NA

Well Driller:

Remarks:

Type of Map: aerial

Prepared by:

Amended on: 12-9-13

Reviewed and the Number Assigned on: 3-25-13

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

FORM 2: Application for irrigation in South Dakota
(type or print)

see resubmitted appl dated 12/9/13

Mail to:
PMB 2020
DENR - Water Rights
523 E Capitol Ave
Pierre, SD 57501-3182
ph. (605) 773-3352(office use only)
No. _____ Hydrologic Unit _____
Basin _____
Newspaper _____

RECEIVED

MAR 22 2013

WATER RIGHTS
PROGRAM

Application For Permit To Appropriate Water For Irrigation

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. _____
(Use predates Mar 2, 1955)Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

_____1. Name to Appear on Irrigation Permit Clay & Jim Kaiser(check one) ☐ Owner ☐ Tenant/lessee ☐ Owner's Legal Agent

(name and complete address if different than above name)

Mailing Address 31427 296th St Millboro SD 57580
(Address) (City) (State) (Zip Code)Home Phone (605) 557-3366 Cell _____ Email renae.dawn@hotmail.com2. Amount of water claimed 3.91*CFS or 1760 **GPM 22.4 ***AF Total Acreage 272.73
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)3. Source of water supply runoff4. Location of point of diversion Dam, W 1/2, SE 1/4, Sec 31 T96N R76W
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)County Tripp5. County or counties where water will be used Tripp6. Annual period during which water is to be used April to October7. List below each forty acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.
(Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
NE 1/4 Sec 1 T95N R77W	109.2		
SE 1/4 36 T96N R77W	103.78		
SE 1/4 Sec 31 T96N R76W	59.75		

8. Give a description of the project. (Attach sheet if more space is needed)

This is a new irrigation project, which will consist of three separate center pivot irrigation systems. The water will be pumped from an existing dam.

I, Clay Kaiser, Jim Kaiser, the applicant, certify that I have read this application, have examined the attached map, and that the matters stated are true.

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:

b) Freeboard 18'

c) Crest Width 15'

Crest Length 300'

d) Height 70'

e) Primary Outlet Capacity ____

If pipe, diameter 18"

f) Secondary Spillway Capacity 70' ?

Spillway Width 60'

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

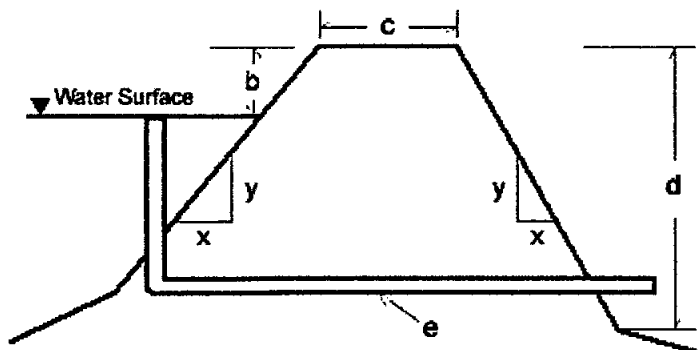
Upstream 3:1

Downstream 3:1

h) Surface Area of Impoundment 7

i) Storage 22.4 Acre Feet

j) Drainage Area Above Dam ? Acres



Water Rights Division -DENR
Conversation or File Documentation

NAME OF PERSON OR FILE: Clay & Jim Kaiser

ADDRESS: 31427 296th St., Millboro, SD 57580 COUNTY: Tripp

DATE: March 28, 2013 TELEPHONE: 557-3366

RE: size of existing dam associated with Application No. 2711-2

I called today and talked to Clay Kaiser regarding Water Permit Application No. 2711-2 and the dam information provided on form 2A of the application, particularly the 18 feet of freeboard and a dam height of 70 feet being provided. It sounded like the Kaiser's measured the slope distance rather than the vertical height.

I also questioned him on the amount of irrigated acres listed for only 22 acre-feet of storage. He responded that they were actually thinking about either making the existing dam bigger or moving downstream a short distance and constructing a larger dam. They were planning to meet next week with the NRCS to discuss this. I told him if that was the case, Water Permit Application No. 2711-2 may be a little premature, since a new or larger dam would take a new application for the storage and we would also require review and approval of plans and specifications from a registered engineer. I told him we would hold off on processing Water Permit Application No. 2711-2 until after they discussed a new or larger dam with the NRCS.



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

Water Rights Division -DENR
Conversation or File Documentation

NAME OF PERSON OR FILE: Clay & Jim Kaiser

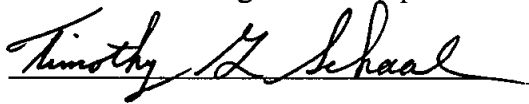
ADDRESS: 31427 296th St., Millboro, SD 57580 COUNTY: Tripp

DATE: March 28, 2013 TELEPHONE: 557-3366

RE: size of existing dam associated with Application No. 2711-2

I talked to Clay Kaiser again today regarding Water Permit Application No. 2711-2. He said Roy Boschee from the NRCS in Rapid City was out and looked at their dam and told them a larger dam or new dam large enough to irrigate their proposed 272 acres would be too large for the NRCS to design. I told Mr. Kaiser they may want to consider the number of irrigated acres if they talk to someone else about designing a new dam or enlarging their existing dam. I gave him the phone numbers for Dave Konechne from Konechne Engineering and Terry Aaker from SPN & Associates. I also told him we could send him a list of other Professional Engineers that would be capable of designing a new dam for them.

I told him we would still put Application No. 2711-2 on hold until we heard back from him or we would check again in a couple of weeks.

A handwritten signature in black ink, reading "Timothy G. Schaal". The signature is written in a cursive style with a horizontal line underneath.

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

Water Rights Division -DENR
Conversation or File Documentation

NAME OF PERSON OR FILE: Clay & Jim Kaiser

ADDRESS: 31427 296th St., Millboro, SD 57580 COUNTY: Tripp

DATE: May 20, 2013 TELEPHONE: 557-3366

RE: size of existing dam associated with Application No. 2711-2

I talked to Clay Kaiser again today regarding Water Permit Application No. 2711-2. He is waiting to hear back from Brosz Engineering on some preliminary dam design information. Clay would still like to modify his existing dam to accommodate the proposed 272 acres of irrigation listed on Water Permit Application No. 2711-3.

I told him we would still put Application No. 2711-2 on hold until we heard back from him or we would check again in a couple of weeks.

A handwritten signature in black ink, reading "Timothy G. Schaal", written over a horizontal line.

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



PLSS: 36_96_77 **Tripp County**
Farm: 5685

2010 Ortho-Photography - Not to Scale



United States Department of Agriculture
Farm Service Agency

PLSS: 1_95_77
Farm: 5685

Tripp County
1:8,004

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MAR 22 2013

**WATER RICH
PROGRAM**



April 25, 2011

Wetland Determination Identifiers

- Restricted Use
- ▽ Limited Restrictions
- Exempt from Conservation Compliance Provisions

Common Land Units

//// Non Cropland

Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact wetland boundaries and determinations, or contact NRCS.

2010 Ortho-Photography - Not to Scale

Re-Submitted

Mail to: PMB 2020 DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>2711-2</u> (office use only)	Hydrologic Unit <u>10150006</u>
	Basin <u>Niswara Tributary</u>	<u>605-842-1481</u>
	Newspaper <u>Winner Advocate</u>	<u>125 W 3rd St. 57580</u>
	<u>Capital Journal, Box 878 57501-224-7301</u>	

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DEC - 9 2013

WATER RIGHTS
PROGRAM

Application For Permit To Appropriate Water For Irrigation

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. _____

(Use predates Mar 2, 1955)

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

1. Name to Appear on Irrigation Permit Clay Kaiser, Jim Kaiser
 (check one) ☒ Owner ☐ Tenant/lessee ☐ Owner's Legal Agent _____
 (name and complete address if different than above name)

Mailing Address 31427 296th St Millboro SD 57580
 (Address) (City) (State) (Zip Code)

Home Phone (605) 557-3366 Cell 840-4948 Email renae.dawn@hotmail.com

2. Amount of water claimed 3.91*CFS or 242**GPM 274***AF Total Acreage 274
 (*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable

3. Source of water supply run off

4. Location of point of diversion Dam, SW 1/4 SE 1/4 31-96-76
 (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)

County Tripp

5. County or counties where water will be used Tripp

6. Annual period during which water is to be used April to October, year round Stock Water

7. List below each forty acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.
 (Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
NW 1/4 SE 1/4 sec 36-96-77	104	NW 1/4 NE 1/4 1-95-77	
SW 1/4 SE 1/4 sec 36-96-77		SW 1/4 NE 1/4 1-95-77	110
SE 1/4 SE 1/4 sec 36-96-77		SE 1/4 NE 1/4 1-95-77	
NE 1/4 SE 1/4 sec 36-96-77		NE 1/4 NE 1/4 1-95-77	

8. Give a description of the project. (Attach sheet if more space is needed) SE 1/4 Sec 31-796N-R76W
60

I, Jim Kaiser, Clay Kaiser, the applicant, certify that I have read this application, have examined the attached map, and that the matters stated are true.

SOUTH DAKOTA
WATER PERMIT NO. 2711-2

Date of first receipt of application March 22, 2013.

Date of return to applicant for corrections, amendments or changes March 28, 2013.

Date of receipt of corrected application December 9, 2013.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2711-2 to Clay and Jim Kaiser, 31427 296th St, Millboro SD 57580 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 2711-2 authorizes impoundment of 242 acre-feet of water from runoff by constructing a dam located in the SW 1/4 SE 1/4 Section 31 with water impounded in portions of the SE 1/4 Section 31; all in T96N-R76W. This permit authorizes impoundment of sufficient water to maintain water to the outlet elevation. The permit holder is authorized to appropriate 3.91 cubic feet of water per second (cfs) from the storage dam for irrigation of 274 acres located in the NE 1/4 Section 1-T95N-R77W, SE 1/4 Section 36-T96N-R77W and the SE 1/4 Section 31-T96N-R76W. The water will also be used for livestock water purposes.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: April 1 – October 31 (irrigation) and January 1 – December 31 (storage dam for livestock watering).
3. The date from which applicant may claim right is December 9, 2013.
4. The date of approval of Permit No. 2711-2 is March 31, 2014.
5. One-fifth of the construction is to be completed on or before September 30, 2016.
6. All construction is to be completed on or before March 31, 2019.
7. Water is to be put to beneficial use on or before March 31, 2023.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. Low flows as needed for downstream domestic use, including livestock watering, and prior water rights must be bypassed. This permit does not authorize the diversion of water from contributing tributaries when flow from the Keya Paha River at the USGS gaging station located at Wewela is 15 cfs or less, unless written authorization is received from the Chief Engineer. Diversion under this permit shall be in accordance with any written orders issued by the Chief Engineer.

Irrigation from stored water in the dam may take place when the Keya Paha River low flow criteria is in effect as follows:

- When there is no inflow to the dam.
 - When inflow is occurring, and equal amount of water is being bypassed through the dam using a low flow outlet mechanism.
2. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

By: 
Jeanne Goodman, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

APR 25 2014

date



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:

b) Freeboard 8 ft

c) Crest Width 15 ft

Crest Length 560 ft

d) Height 48 ft

e) Primary Outlet Capacity 170 CFS
242 Acre ft

If pipe, diameter 36 CMP

f) Secondary Spillway Capacity 1748.2 CFS

Spillway Width 80 ft

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

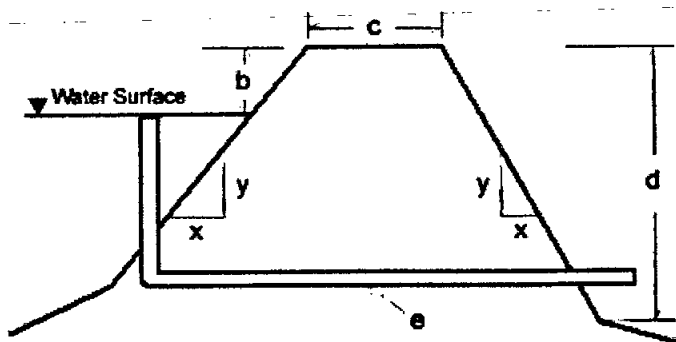
Upstream 2:1

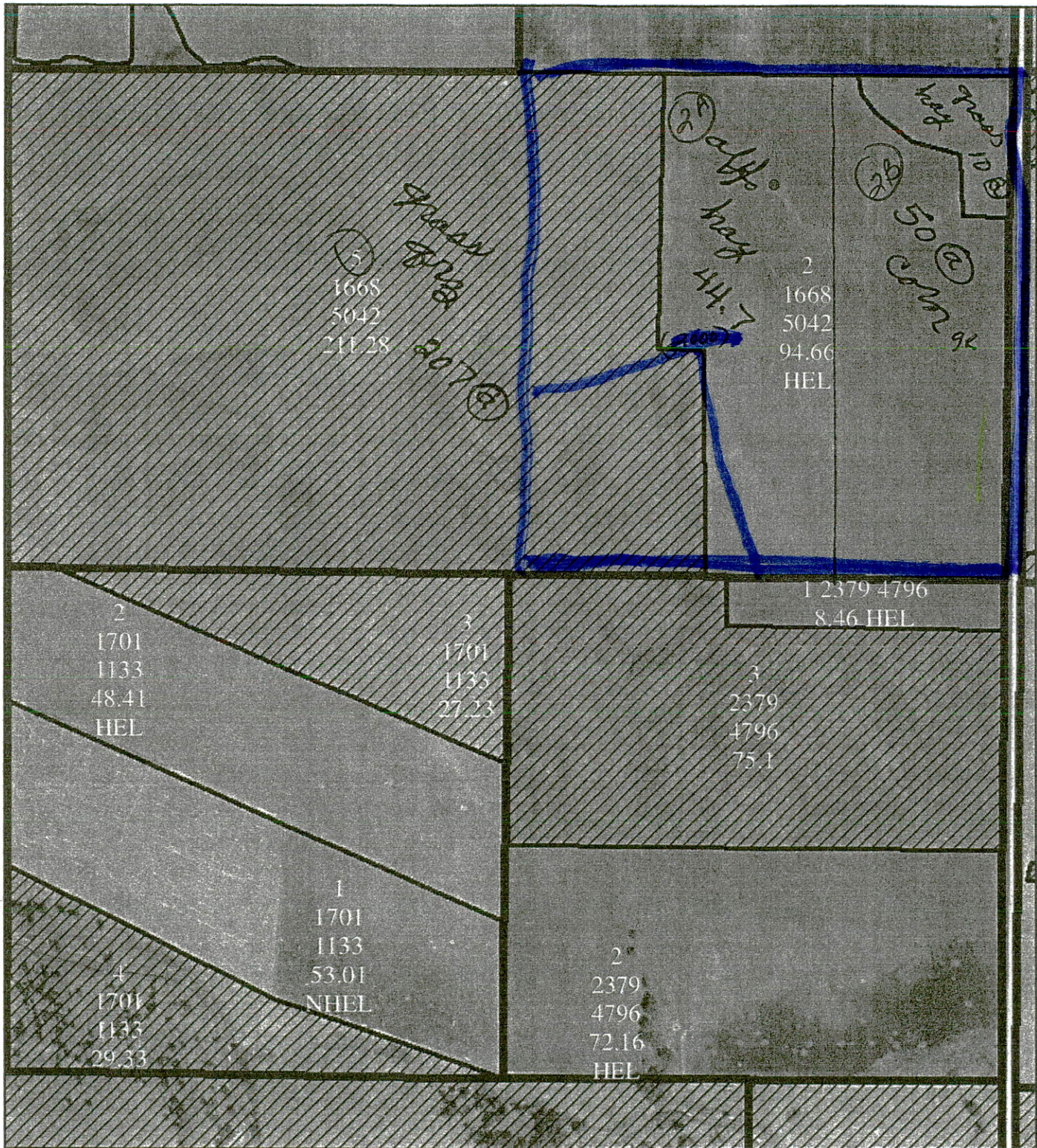
Downstream 2:1

h) Surface Area of Impoundment ____

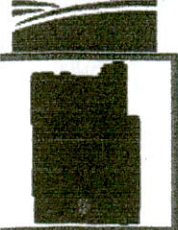
i) Storage 242 Acre Feet

j) Drainage Area Above Dam 6700 Acres





USDA - Farm Service Agency May 12, 2008



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WATER RIGHTS
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Tripp County, SD

1-95N-77W

Legend

1:8,631

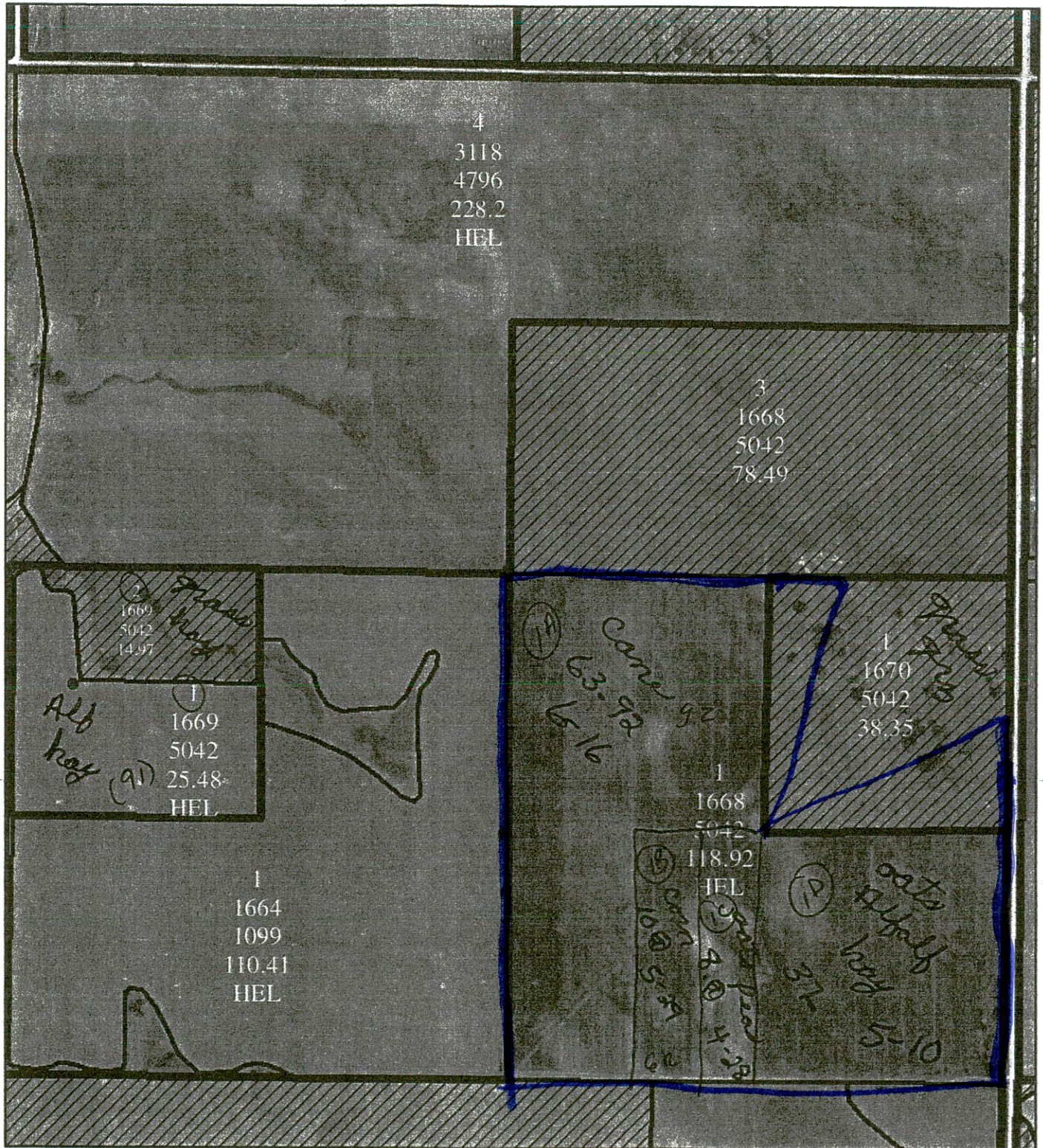
- Tract Boundaries
- Easements
- CRP
- Common Land Units
- Rangeland

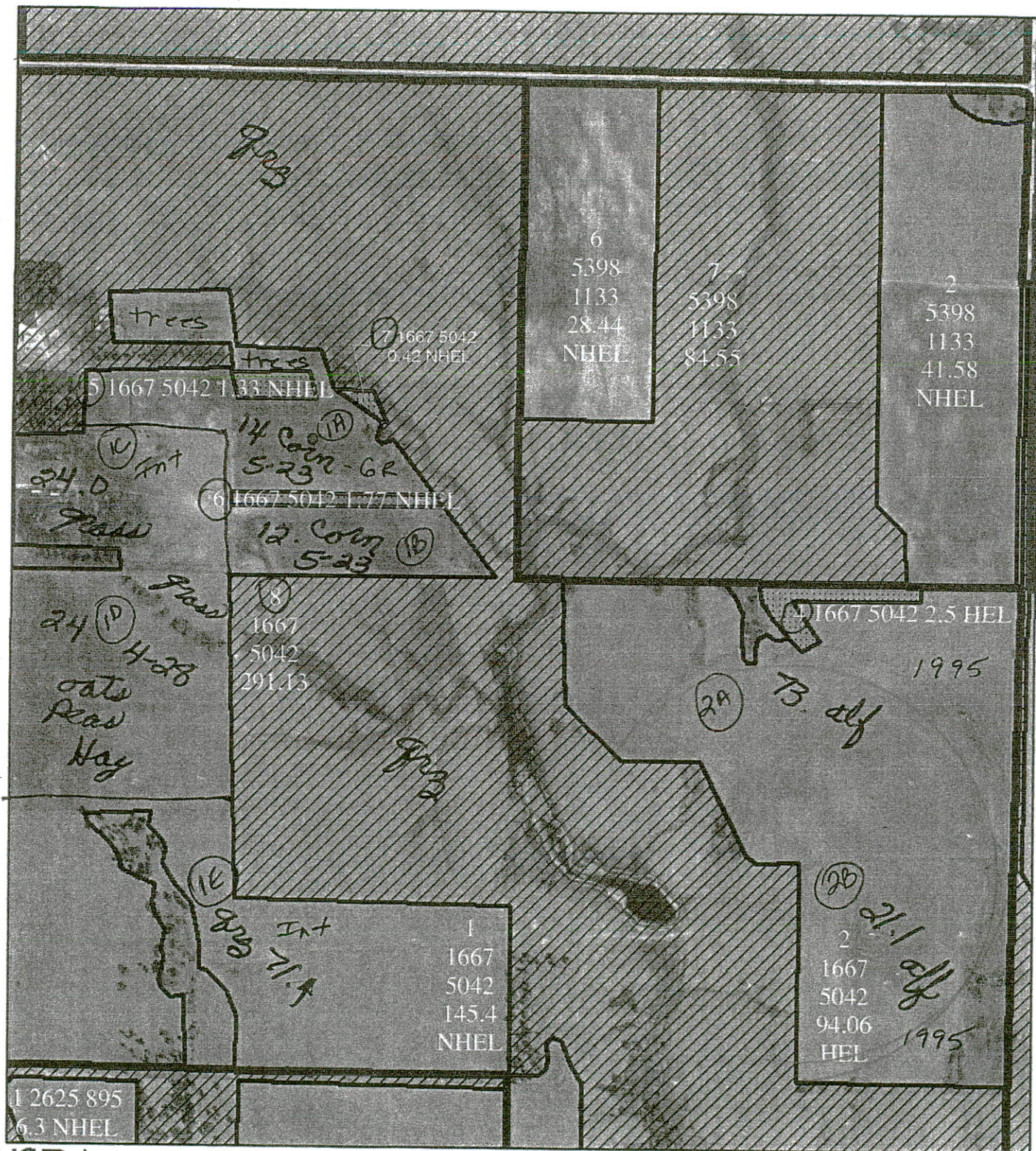
Wetland Determination Identifiers

- Restricted Use
- Limited Restrictions



USDA FSA maps are for FSA Program administration only. There is no guarantee or representation to the user as to the accuracy, currency, suitability or reliability. SA MAPS DO NOT REPRESENT A LEGAL SURVEY. The user accepts the data 'as is' and assumes all risks associated with its use. Wetland points reflect records available with NRCS and may or may not constitute a full inventory of the property. The USDA Farm Service Agency assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data. Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and





USDA - Farm Service Agency May 12, 2008

Tripp County, SD

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WATER RIGHTS PROGRAM

31-96N-76W

Legend

1:8,616

- Tract Boundaries
- Easements
- CRP
- Common Land Units
- Rangeland

Wetland Determination Identifiers

- Restricted Use
- Limited Restrictions



USDA FSA maps are for FSA Program administration only. There is no guarantee or representation to the user as to the accuracy, currency, suitability or reliability. FSA MAPS DO NOT REPRESENT A LEGAL SURVEY. The user accepts the data 'as is' and assumes all risks associated with its use. Wetland points reflect records available with NRCS and may or may not constitute a full inventory of the property. The USDA Farm Service Agency assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data. Disclaimer: Wetland identifiers do not represent the size, shape or specific determination of the area. Refer to your original determination (CPA-026 and

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date 3/25, 20 13

RECEIVED OF Clay Kaiser 31427 296th St Millsboro SD 57580

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

Fee for Application for Permit No. <u>2711-2</u> to Appropriate Water, to construct and to put water to beneficial use	1050	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>2711-2</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	1250 00

No. 06259

By Stanley Erbe
Chief Engineer

Water Rights Program - File Documentation

NAME: Clay Kaiser

ADDRESS: Millboro SD 57580

DATE: 12-9-13 **COUNTY:** Tripp **TELEPHONE:** 605 557-3366

RE: Pending application

COMMENTS:

Hahn Engineering dropped off the resubmitted application along with plans and specifications for a new larger dam.

I spoke with Clay Kaiser who indicated the resubmitted application should include irrigation of 274 acres in SE 1/4 Section 36-T96N-R77W, NE 1/4 Section 1-T95N-R77W and SE 1/4 Section 31-T96N-R76 as originally applied for on March 22, 2013.

I told Mr. Kaiser we would be returning the location notice form and filing fee submitted because they are not necessary since the dam will be included on the water permit.



Karen Schlaak
Water Rights Program

12/9/2013



HAHN ENGINEERING, Inc.
Civil / Structural / Construction Engineering Firm

Tim Schaal
SD DENR – Water Rights Program
523 E. Capitol Ave.
Pierre, SD 57501-3182

RECEIVED

DEC - 9 2013

**WATER RIGHTS
PROGRAM**

2860 Kingsway Rd
Pierre, SD 57501
Phone (605) 776-0292
Email: hahneng@mncomm.com
Skype: hahn.engineering

RE: Application for Water Rights for Irrigation and Location Notice for Dam/Dugout.
Jim & Clay Kaiser, 31427 296th St., Millboro, SD 57580, NW SE 31-96-76.

HE No. 1311-01

Dear Mr. Schaal:

Enclosed are the applications for Water Rights for irrigation and the Dam Location Notice. Included with the application are construction plans prepared for the dam identified in the Notice.

Please advise our office on any additional information required for the application process.

If you have any questions or comments, please contact our office at 605-776-0292 or 605-280-6123.

Sincerely,

Richard A. Hahn, PE
Hahn Engineering

Enclosures (Applications for Water Rights & Dam Location Notice and Const. Plans)

CC: File (1311-01)
Clay Kasier

Schaal, Tim

From: Schaal, Tim
Sent: Thursday, December 12, 2013 3:59 PM
To: Hahn, Rick (hahneng@mncomm.com)
Subject: P&S for Kaiser Dam Ap. 2711-2
Attachments: Elevation Capacity.pdf; temp. easement.pdf

Rick—I looked over the plans and besides needing the Sites model printout I mentioned the other day, I have the following questions/comments.

- Sheet C0 (etc.) you have the wrong storage capacity in the signature block, you have 280 ac-ft. (should be 242)
- Sheet C1.1, you should show the property line if possible, with full pool limits. We want this to know if there is a need for either permanent or temporary flood easements. I have attached a copy of a temp. easement we got with a GF&P dam. (Looks like we may need a temp). Any notes needed for the old dam, such as breaching it or lowering it, etc. Were there any soil borings taken or planned ?? We need Intermediate (2nd spillway elevation) and Maximum (top of dam) storage capacities. (copy also attached).
- Sheet C2.1, CN value (85) seems high, that is OK, who will end up with a little higher peak flow and Annual yields
- Sheet C4.1, low flow bypass in riser ?? may need one if application is contested. 2 to 1 slopes, any slope analysis, soil borings to justify them besides cost ??, GF&P has used a concrete collar at CMP elbow joints.
- Sheet C4.2, Sec. View A-A riser floor elevation should be 2151, not 2130
- Sheet C4.3, difference between CMP invert and ground elevation only 2 feet.

Please let me know if you have any questions.

Thanks

Tim Schaal
SD DENR
773-3352

Schaal, Tim

From: Schaal, Tim
Sent: Monday, December 16, 2013 3:04 PM
To: 'HahnEng@midconetwork.com'
Subject: RE: P&S for Kaiser Dam Ap. 2711-2
Attachments: Waterman gate.pdf; SD00921_P&S.pdf

OK thanks Rick—attached is some info on Waterman gates. Konechne used them on several dams and they seem to work well. I'm not saying one is needed yet, but something to think about. Also some GF&P plans on a dam where they used concrete collars (a little info anyway). On sheet C4.3 I was just saying the drop looked like more than 2 feet, maybe need some elevations there. We usually get the easements with the application and should probably have those before we make our recommendation.

Let me know if you have any questions.

Tim

From: Hahn Engineering [<mailto:HahnEng@mncomm.com>]
Sent: Friday, December 13, 2013 5:46 AM
To: Schaal, Tim
Subject: RE: P&S for Kaiser Dam Ap. 2711-2

Thanks will get right on the corrections.

At north end Possible Easement at 2166 permanent pool last time checked approximately 5 acres. Temporary pool at auxiliary and Top of dam definitely. Spoke with Clay Kaiser on this previously, Neighbor did not appear to have problem with granting an easement.

No Boring conducted or planned unless required.

CN recommended by Dave K. as starting point lowered to 75 and 80 on previous runs then must have reverted back. Pasture land with good grass cover see attached photo. Pic 021 is the new dam and spillway location.

2:1 slopes cost only. Need to change soil to type from CL to SC.

Do you have examples of a preferred low flow bypass? I was considering thrust blocks on elbows, Examples of Concrete collars?

Too many changes did catch the drop invert elevation. Will review for additional corrections and return with other information.

Recommended elevation difference between discharge and ground?

If you have any questions or comments please contact our office.

Sincerely

Richard A. Hahn, PE
Hahn Engineering, Inc.
office: 605-776-0292
Mobile: 605-280-6123
Skype: Hahn.Engineering

From: Schaal, Tim [<mailto:Tim.Schaal@state.sd.us>]
Sent: Thursday, December 12, 2013 3:59 PM
To: Hahn, Rick (hahneng@mncomm.com)
Subject: P&S for Kaiser Dam Ap. 2711-2

Rick—I looked over the plans and besides needing the Sites model printout I mentioned the other day, I have the following questions/comments.

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- Sheet C4.2, Sec. View A-A riser floor elevation should be 2151, not 2130
- Sheet C4.3, difference between CMP invert and ground elevation only 2 feet.

Please let me know if you have any questions.

Thanks

Tim Schaal
SD DENR

Schaal, Tim

From: Hahn Engineering <HahnEng@mncomm.com>
Sent: Saturday, January 18, 2014 11:05 AM
To: Schaal, Tim
Subject: RE: P&S for Kaiser Dam Ap. 2711-2
Attachments: SITES Storage Volume 20131204.pdf; SITES REPORT 20131204.pdf

Thanks to the comments, we have attached the Storage Volume Elevation Graph and the output report from Sites Program for your review and suggested changes/corrections.

Sheet C0 has been corrected – thanks

Property Lines have been added – Easements have been requested from the dam Owner in an email text as follows:

Clay Kaiser

Attached is an example easement provided by the SDDENR for permanent and temporary pool easements. Recommend contacting your neighbor to discuss the easement and an attorney to prepare the easement.

Information for the easement is as follows

NE 31-96-76

Recommend Permanent Pool Easement containing approximately 0.2 acres which will be permanently flooded to the elevation of 2166.0 Mean Sea Level. The elevation 2166.0 is the Primary Spillway elevation of the Kaiser Dam.

Permanent Easement containing Approximately 0.2 Acres follows the channel and is located in the Westerly 147 ft of the southerly 290 ft of the NE 31-96-76.

Recommended Temporary Pool Easement containing approximately 3.65 Acres which will be Temporarily flooded to the approximate elevation of 2174.0 Mean Sea Level during extreme rainfall events. The elevation 2174.0 Mean Sea Level is the approximate elevation of the top of the Kaiser Dam.

The easement follows the channel and is located in the westerly 1240 ft of the southerly 700 feet of the NE 31-96-76.

NW 31-96-76

Recommended Temporary Pool Easement containing approximately 0.2 Acres which will be Temporarily flooded to the approximate elevation of 2174.0 Mean Sea Level during extreme rainfall events. The elevation 2174.0 Mean Sea Level is the approximate elevation of the top of the Kaiser Dam.

The easement follows a branch of the main channel and is located in the easterly 200 ft of the southerly 215 feet of the NE 31-96-76.

Planning to use the existing dam structure as a temporary holding dam as the new dam is constructed then breach – will add notes accordingly. No Geotechnical Exploration was performed, basis for 2:1 slopes for budget savings only.

Drawings corrected - as commented, however, requesting preferred by-pass details and preferred elevation difference of outfall above channel bottom.

If you have any questions or comments please contact our office.

Sincerely

Richard A. Hahn, PE
Hahn Engineering, Inc.
office: 605-776-0292
Mobile: 605-280-6123
Skype: Hahn.Engineering

From: Schaal, Tim [<mailto:Tim.Schaal@state.sd.us>]

Sent: Thursday, December 12, 2013 3:59 PM

To: Hahn, Rick (hahneng@mncomm.com)

Subject: P&S for Kaiser Dam Ap. 2711-2

Rick—I looked over the plans and besides needing the Sites model printout I mentioned the other day, I have the following questions/comments.

- Sheet C0 (etc.) you have the wrong storage capacity in the signature block, you have 280 ac-ft. (should be 242)
- Sheet C1.1, you should show the property line if possible, with full pool limits. We want this to know if there is a need for either permanent or temporary flood easements. I have attached a copy of a temp. easement we got with a GF&P dam. (Looks like we may need a temp). Any notes needed for the old dam, such as breaching it or lowering it, etc. Were there any soil borings taken or planned ?? We need Intermediate (2nd spillway elevation) and Maximum (top of dam) storage capacities. (copy also attached).
- Sheet C2.1, CN value (85) seems high, that is OK, who will end up with a little higher peak flow and Annual yields
- Sheet C4.1, low flow bypass in riser ?? may need one if application is contested. 2 to 1 slopes, any slope analysis, soil borings to justify them besides cost ??, GF&P has used a concrete collar at CMP elbow joints.
- Sheet C4.2, Sec. View A-A riser floor elevation should be 2151, not 2130
- Sheet C4.3, difference between CMP invert and ground elevation only 2 feet.

Please let me know if you have any questions.

Thanks

Tim Schaal
SD DENR
773-3352

Water Permit Application No. 2711-2
Clay & Jim Kaiser

Top of Dam Elev. - 2174
2nd Spillway Elev. - 2168
P. Spillway Elev. - 2166
Dis Emb. Toe Elev. - 2126

Cat. 3 - Low Hazard Dam

Ht = 48 ft

Normal Storage Capacity - 242 Ac-Ft
Int. Storage Capacity - 281
Max. Storage Capacity - 441

Int. Size Low Hazard Dam - 100 yr Minimum Spillway Design

From USGS WRI 94-4055 "Tech for Est Peak Flows ... in SD"
Regim E DA = 6700 Ac = 10.46 mi²

$$Q_{100} = 336 C A^{.769}$$

$$= 336 (10.46)^{.769}$$

$$= \underline{\underline{2050 \text{ cfs}}}$$

Secondary Spillway Capacity

$$Q = C L H^{3/2}$$

$$C = 2.6$$

$$L = 80$$

$$H = 6$$

$$= 2.6 (80)(6)^{1.5}$$

$$= \underline{\underline{3050 \text{ cfs}}}$$

NRCS Annual Yield

$$DA = 6700 \quad CN = 85 \quad ISO = 2\frac{1}{2}$$

$$80\% \text{ chance} = 0.66$$

$$0.66 \times 6700^{1/2} = \underline{\underline{369 \text{ Ac-Ft}}}$$

$$50\% \text{ chance} = 1.4$$

$$1.4 \times 6700^{1/2} = \underline{\underline{780 \text{ Ac-Ft}}}$$

$$10\% \text{ chance} = 4.4$$

$$4.4 \times 6700^{1/2} = \underline{\underline{2450 \text{ Ac-Ft}}}$$

Section 74:02:08:09

- OK 2/26/14 TGS
- ? x 1. Topo Map
 - 2. Dam Axis Profile - OK
 - 3. Dam Max. X-Sec. - OK
 - ? x 4. Area - Capacity
 - 5. Outlet Details - OK
 - ? x 6. Spillway Rating -
 - 7. Spillway Details - OK
 - 8. Specs - Std NRCS - OK
 - 9. EPP - Cat 3 N/A - OK

RECEIVED

JAN 21 2014

WATER RIGHTS
PROGRAM

SITES XEQ 12/04/2013 WATER RESOURCE SITE ANALYSIS COMPUTER PROGRAM
VER 2005.1.6 (USER MANUAL - DATED DECEMBER 2005)
TIME 06:52:36

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

SITES	01/01/2005KD	Kaiser Dam	10.59375	B2
SAVMOV	0 101			
SAVMOV	101 1			2
* Total Watershed for Comparison				
WSDATA	5 F 1 AC 85	57	0.19	
PDIRECT	0.95		2.80	3.40 4.0
GO, DESIGN		TYPE2 24		
SAVMOV	2 101 2		F	
SAVMOV	0 101			
SAVMOV	101 1			2
WSDATA	5 E 1 AC 85	297	0.54	
PDIRECT			2.80	3.40
GO, DESIGN		TYPE2 24		
SAVMOV	2 101 3		E	
SAVMOV	0 101			
SAVMOV	101 1			2
WSDATA	5 D 1 AC 85	298	0.40	
PDIRECT			2.80	3.40
GO, DESIGN		TYPE2 24		
SAVMOV	2 101 5		D	
SAVMOV	0 101			
SAVMOV	101 1			2
* Center Drainage over Reach				
WSDATA	5 C 1 AC 80	2112	1.63	
PDIRECT			2.80	3.40
GO, DESIGN		TYPE2 24		
SAVMOV	2 101 6		C	
SAVMOV	0 101			
SAVMOV	101 1			2
* Northwest				
WSDATA	5 A 1 AC 75	2482	1.45	

PDIRECT					2.80	3.40	
GO, DESIGN		TYPE2	24				
SAVMOV	2	101 8		A			
SAVMOV	0	101					
SAVMOV	101	1					2
*		Northeast					
WSDATA	5	B 1 AC 80	1468	1.28			
PDIRECT				2.80	3.40		
GO, DESIGN		TYPE2	24				
SAVMOV	2	101 9		B			
ADDMOV							
SAVMOV	101	2					3
*		Draining a&B					
XSECTN	7	30	5				
		2170	0	0	0	0.005	
		2180	7656.68	750	150	0.005	
		2190	49536	3150	330	0.005	
		2200	153272	9000	840	0.005	
ENDTABLE							
GO, REACH	1	MR1 7	15660	15660			
SAVMOV	2	101 7		R1			
ADDMOV							
ADDMOV	4		J1				4
SAVMOV	0	101					
SAVMOV	101	1					2
WSDATA	5	G 1 AC 85	47	0.17			
PDIRECT				2.80	3.40		
GO, DESIGN		TYPE2	24				
SAVMOV	2	101 10		G			
ADDMOV							
ADDMOV							
ADDMOV							
SAVMOV	101	1					1
STRUCTURE	S1	Dam					
		2134	0.8				
		2149	5.88				
		2159	11.37				
		2166	18.85				

			2168	20.69				
			2172	27.73				
			2176	34.96				
ENDTABLE								
WSDATA	5A2S1	AC	85	19	1.29			
PDIRECT					2.80	4.00	4.0	
POOLDATA	ELEV		2166	2166	0	2126	2126	SC
PSINLET			0.4	12.56				
PSDATA	1		136	36		0.025	2128	
ASDATA	41	25			4		0.03	1
ASCREST	ELEV		2168					
ASINSURF	41			0.03	0.1	1		
ASINLET	41		0.0	0.0	50	0.0		3
			650	24	850	48		
ENDTABLE								
ASEXSURF	41			0.1	0.1			
				0.5	0.5			
				1	1			
				1.0	0			
				0.01				
ENDTABLE								
ASEXIT	41	N		1.0				
BTMWIDTH	FEET		80					
ASMATERIAL1			1					
	1		20	0.01	60	90	0.16	
ENDTABLE								
ASCOORD	1	Existing	N					
	0	2168	850	2120				
ENDTABLE								
GRAPHICS	I							
GO,DESIGN	LCPIOTB	TYPE2	24					
SAVMOV	2	101	1		S1			
ENDJOB								

Total Watershed for Comparison

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

1SITES -----
XEQ 12/04/2013 Kaiser Dam WSID= KD
VER 2005.1.6 SUBW= F
TIME 06:52:36 PASS= 1 PART= 1

***** BASIC Data *****
CLIMATE AREA - NOT DEFINED DESIGN CLASS *** NOT DEFINED

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	2.80	3.40

WSDATA -	CN	DA-SM	TC/L	-/H	QRF
	85.00	0.09	0.19	0.00	0.00

SITEDATA - BASEFLOW	INITIAL EL	EXTRA VOL	SITE TYPE
0.00	0.00	0.00	NULL

NRCS-SDH	D= 24.00 HR	P= 2.80 IN	Q= 1.42 IN	DA= 0.09 SM
	TC= 0.19 HR	CN= 85.00	VOL= 6.8 ACFT	

PEAK = 109.2 CFS, AT 12.0 HRS.

NRCS-FBH	D= 24.00 HR	P= 3.40 IN	Q= 1.93 IN	DA= 0.09 SM
	TC= 0.19 HR	CN= 85.00	VOL= 9.2 ACFT	

PEAK = 147.8 CFS, AT 12.0 HRS.

Inflow Hyd 1 SDH-Peak = 109.19 CFS at 12.01 hrs., Location Point
Inflow Hyd 1 FBH-Peak = 147.81 CFS at 12.00 hrs., Location Point
HYDOUT 2 F

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

1SITES -----
XEQ 12/04/2013 Kaiser Dam WSID= KD
VER 2005.1.6 SUBW= E
TIME 06:52:36 PASS= 1 PART= 2

***** BASIC Data *****
CLIMATE AREA - NOT DEFINED DESIGN CLASS *** NOT DEFINED

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	2.80	3.40

WSDATA - CN	DA-SM	TC/L	-/H	QRF
85.00	0.46	0.54	0.00	0.00

SITEDATA - BASEFLOW	INITIAL EL	EXTRA VOL	SITE TYPE
0.00	0.00	0.00	NULL

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

NRCS-SDH	D= 24.00 HR	P= 2.80 IN	Q= 1.42 IN	DA= 0.46 SM
	TC= 0.54 HR	CN= 85.00	VOL= 35.2 ACFT	

PEAK = 355.8 CFS, AT 12.2 HRS.

NRCS-FBH	D= 24.00 HR	P= 3.40 IN	Q= 1.93 IN	DA= 0.46 SM
----------	-------------	------------	------------	-------------

TC= 0.54 HR CN= 85.00 VOL= 47.8 ACFT

PEAK = 485.0 CFS, AT 12.2 HRS.

Inflow Hyd 1 SDH-Peak = 355.76 CFS at 12.20 hrs., Location Point

Inflow Hyd 1 FBH-Peak = 484.95 CFS at 12.20 hrs., Location Point
HYDOUT 3 E

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

1SITES -----
XEQ 12/04/2013 Kaiser Dam WSID= KD
VER 2005.1.6 SUBW= D
TIME 06:52:36 PASS= 1 PART= 3

***** BASIC Data *****
CLIMATE AREA - NOT DEFINED DESIGN CLASS *** NOT DEFINED

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	2.80	3.40

WSDATA - CN	DA-SM	TC/L	-/H	QRF
85.00	0.47	0.40	0.00	0.00

SITEDATA - BASEFLOW	INITIAL EL	EXTRA VOL	SITE TYPE
0.00	0.00	0.00	NULL

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

NRCS-SDH	D= 24.00 HR	P= 2.80 IN	Q= 1.42 IN	DA= 0.47 SM
	TC= 0.40 HR	CN= 85.00	VOL= 35.3 ACFT	

PEAK = 426.6 CFS, AT 12.1 HRS.

NRCS-FBH D= 24.00 HR P= 3.40 IN Q= 1.93 IN DA= 0.47 SM
TC= 0.40 HR CN= 85.00 VOL= 47.9 ACFT

PEAK = 579.4 CFS, AT 12.1 HRS.

Inflow Hyd 1 SDH-Peak = 426.57 CFS at 12.13 hrs., Location Point

Inflow Hyd 1 FBH-Peak = 579.35 CFS at 12.11 hrs., Location Point
HYDOUT 5 D

1SITES XEQ 12/04/2013 ----- COMMENT PAGE -----
VER 2005.1.6 Kaiser Dam WSID = KD

Center Drainage over Reach

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

1SITES -----
XEQ 12/04/2013 Kaiser Dam WSID= KD
VER 2005.1.6 SUBW= C
TIME 06:52:36 PASS= 1 PART= 4

***** BASIC Data *****
CLIMATE AREA - NOT DEFINED DESIGN CLASS *** NOT DEFINED

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	2.80	3.40	
WSDATA - CN	DA-SM	TC/L	-/H	QRF
80.00	3.30	1.63	0.00	0.00

SITEDATA - BASEFLOW INITIAL EL EXTRA VOL SITE TYPE
 0.00 0.00 0.00 NULL

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

NRCS-SDH D= 24.00 HR P= 2.80 IN Q= 1.10 IN DA= 3.30 SM
 TC= 1.63 HR CN= 80.00 VOL= 194.0 ACFT

PEAK = 859.1 CFS, AT 12.9 HRS.

NRCS-FBH D= 24.00 HR P= 3.40 IN Q= 1.56 IN DA= 3.30 SM
 TC= 1.63 HR CN= 80.00 VOL= 274.1 ACFT

PEAK = 1244.3 CFS, AT 12.9 HRS.

Inflow Hyd 1 SDH-Peak = 859.11 CFS at 12.93 hrs., Location Point

Inflow Hyd 1 FBH-Peak = 1244.27 CFS at 12.92 hrs., Location Point
HYDOUT 6 C

1SITES XEQ 12/04/2013 ----- COMMENT PAGE -----
 VER 2005.1.6 Kaiser Dam WSID = KD

Northwest

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

1SITES -----
XEQ 12/04/2013 Kaiser Dam WSID= KD
VER 2005.1.6 SUBW= A
TIME 06:52:36 PASS= 1 PART= 5

***** BASIC Data *****

CLIMATE AREA - NOT DEFINED

DESIGN CLASS *** NOT DEFINED

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	2.80	3.40

WSDATA - CN	DA-SM	TC/L	-/H	QRF
75.00	3.88	1.45	0.00	0.00

SITEDATA - BASEFLOW	INITIAL EL	EXTRA VOL	SITE TYPE
0.00	0.00	0.00	NULL

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

NRCS-SDH	D= 24.00 HR	P= 2.80 IN	Q= 0.83 IN	DA= 3.88 SM
	TC= 1.45 HR	CN= 75.00	VOL= 172.2 ACFT	

PEAK = 776.8 CFS, AT 12.9 HRS.

NRCS-FBH	D= 24.00 HR	P= 3.40 IN	Q= 1.23 IN	DA= 3.88 SM
	TC= 1.45 HR	CN= 75.00	VOL= 254.7 ACFT	

PEAK = 1208.2 CFS, AT 12.8 HRS.

Inflow Hyd 1 SDH-Peak = 776.75 CFS at 12.88 hrs., Location Point

Inflow Hyd 1 FBH-Peak = 1208.15 CFS at 12.82 hrs., Location Point
HYDOUT 8 A

1SITES XEQ 12/04/2013 ----- COMMENT PAGE -----
VER 2005.1.6 Kaiser Dam WSID = KD

Northeast

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

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1SITES -----
XEQ 12/04/2013           Kaiser Dam           WSID= KD
VER 2005.1.6              SUBW= B
TIME 06:52:36             PASS=    1          PART=    6

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***** BASIC Data *****
CLIMATE AREA - NOT DEFINED      DESIGN CLASS *** NOT DEFINED

```

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        2.80    3.40

```

```

WSDATA -      CN      DA-SM      TC/L      -/H      QRF
              80.00    2.29      1.28      0.00     0.00

```

```

SITEDATA - BASEFLOW    INITIAL EL    EXTRA VOL    SITE TYPE
              0.00        0.00        0.00        NULL

```

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

```

```

NRCS-SDH      D= 24.00 HR    P= 2.80 IN    Q= 1.10 IN    DA= 2.29 SM
              TC= 1.28 HR    CN= 80.00    VOL= 134.8 ACFT

```

PEAK = 715.8 CFS, AT 12.7 HRS.

```

NRCS-FBH      D= 24.00 HR    P= 3.40 IN    Q= 1.56 IN    DA= 2.29 SM
              TC= 1.28 HR    CN= 80.00    VOL= 190.5 ACFT

```

PEAK = 1033.7 CFS, AT 12.7 HRS.

Inflow Hyd 1 SDH-Peak = 715.78 CFS at 12.69 hrs., Location Point

Inflow Hyd 1 FBH-Peak = 1033.70 CFS at 12.73 hrs., Location Point
HYDOUT 9 B

SDH-Hydrograph No. 1, Peak = 776.75 cfs at 12.88 hours. DA = 3.88
Hydrograph No. 2, Peak = 715.78 cfs at 12.69 hours. DA = 2.29

SDH Add Hydrograph Results, Peak = 1475.22 cfs at 12.85 hours. DA = 6.17

FBH-Hydrograph No. 1, Peak = 1208.15 cfs at 12.82 hours. DA = 3.88
Hydrograph No. 2, Peak = 1033.70 cfs at 12.73 hours. DA = 2.29

FBH Add Hydrograph Results, Peak = 2219.38 cfs at 12.81 hours. DA = 6.17

1SITES XEQ 12/04/2013 ----- COMMENT PAGE -----
VER 2005.1.6 Kaiser Dam WSID = KD

Draining a&B

Inflow Hyd 1 SDH-Peak = 1461.74 CFS at 12.04 hrs., Location Point

Inflow Hyd 1 FBH-Peak = 2197.05 CFS at 12.00 hrs., Location Point
HYDOUT 7 R1

SDH-Hydrograph No. 1, Peak = 859.11 cfs at 12.93 hours. DA = 3.30
Hydrograph No. 2, Peak = 1461.74 cfs at 12.04 hours. DA = 6.17

SDH Add Hydrograph Results, Peak = 2294.04 cfs at 13.18 hours. DA = 9.47

FBH-Hydrograph No. 1, Peak = 1244.27 cfs at 12.92 hours. DA = 3.30
Hydrograph No. 2, Peak = 2197.05 cfs at 12.00 hours. DA = 6.17

FBH Add Hydrograph Results, Peak = 3413.05 cfs at 13.13 hours. DA = 9.47

SDH-Hydrograph No. 1, Peak = 426.57 cfs at 12.13 hours. DA = 0.47

Hydrograph No. 2, Peak = 2294.04 cfs at 13.18 hours. DA = 9.47

SDH Add Hydrograph Results, Peak = 2340.89 cfs at 13.11 hours. DA = 9.94

FBH-Hydrograph No. 1, Peak = 579.35 cfs at 12.11 hours. DA = 0.47

Hydrograph No. 2, Peak = 3413.05 cfs at 13.13 hours. DA = 9.47

FBH Add Hydrograph Results, Peak = 3472.01 cfs at 13.06 hours. DA = 9.94

HYDOUT 4 J1

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

1SITES -----
XEQ 12/04/2013 Kaiser Dam WSID= KD
VER 2005.1.6 SUBW= G
TIME 06:52:36 PASS= 1 PART= 7

***** BASIC Data *****
CLIMATE AREA - NOT DEFINED DESIGN CLASS *** NOT DEFINED

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	2.80	3.40

WSDATA - CN	DA-SM	TC/L	-/H	QRF
85.00	0.07	0.17	0.00	0.00

SITEDATA - BASEFLOW	INITIAL EL	EXTRA VOL	SITE TYPE
0.00	0.00	0.00	NULL

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

NRCS-SDH D= 24.00 HR P= 2.80 IN Q= 1.42 IN DA= 0.07 SM
 TC= 0.17 HR CN= 85.00 VOL= 5.6 ACFT

PEAK = 91.9 CFS, AT 12.0 HRS.

NRCS-FBH D= 24.00 HR P= 3.40 IN Q= 1.93 IN DA= 0.07 SM
 TC= 0.17 HR CN= 85.00 VOL= 7.6 ACFT

PEAK = 124.3 CFS, AT 12.0 HRS.

Inflow Hyd 1 SDH-Peak = 91.86 CFS at 12.00 hrs., Location Point

Inflow Hyd 1 FBH-Peak = 124.29 CFS at 11.99 hrs., Location Point
HYDOUT 10 G

SDH-Hydrograph No. 1, Peak = 2340.89 cfs at 13.11 hours. DA = 9.94
Hydrograph No. 2, Peak = 91.86 cfs at 12.00 hours. DA = 0.07

SDH Add Hydrograph Results, Peak = 2347.27 cfs at 13.09 hours. DA = 10.01

FBH-Hydrograph No. 1, Peak = 3472.01 cfs at 13.06 hours. DA = 9.94
Hydrograph No. 2, Peak = 124.29 cfs at 11.99 hours. DA = 0.07

FBH Add Hydrograph Results, Peak = 3480.56 cfs at 13.06 hours. DA = 10.01

SDH-Hydrograph No. 1, Peak = 355.76 cfs at 12.20 hours. DA = 0.46
Hydrograph No. 2, Peak = 2347.27 cfs at 13.09 hours. DA = 10.01

SDH Add Hydrograph Results, Peak = 2409.72 cfs at 13.04 hours. DA = 10.48

FBH-Hydrograph No. 1, Peak = 484.95 cfs at 12.20 hours. DA = 0.46
Hydrograph No. 2, Peak = 3480.56 cfs at 13.06 hours. DA = 10.01

FBH Add Hydrograph Results, Peak = 3561.80 cfs at 13.05 hours. DA = 10.48

SDH-Hydrograph No. 1, Peak = 109.19 cfs at 12.01 hours. DA = 0.09
 Hydrograph No. 2, Peak = 2409.72 cfs at 13.04 hours. DA = 10.48

SDH Add Hydrograph Results, Peak = 2417.85 cfs at 13.04 hours. DA = 10.56

FBH-Hydrograph No. 1, Peak = 147.81 cfs at 12.00 hours. DA = 0.09
 Hydrograph No. 2, Peak = 3561.80 cfs at 13.05 hours. DA = 10.48

FBH Add Hydrograph Results, Peak = 3572.36 cfs at 13.05 hours. DA = 10.56

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

***** MESSAGE - ASEXSURF ENTRY 4: ZERO ROOTING DEPTH IS DEFAULTED TO 0.5 FT.

1SITES -----
 XEQ 12/04/2013 Kaiser Dam WSID= KD
 VER 2005.1.6 Dam SUBW= S1
 TIME 06:52:36 SITE = S1 PASS= 1 PART= 8

***** MATERIAL PROPERTIES *****						
MATERIAL	PI	DRY		PERCENT CLAY	DETACH. RATE (Ft/H)/(lb/SqFt)	REP. DIAMETER inches
		DENSITY lbs/CuFt	Kh			
Existing	20.	90.	0.16	60.0	--	0.01000
TS_FILL	20.	90.	0.16	60.0	--	0.01000
GEN_FILL	20.	90.	0.16	60.0	--	0.01000

***** BASIC Data *****
 CLIMATE AREA - NOT DEFINED DESIGN CLASS A2 = 3000- 30000

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	2.80	4.00	
WSDATA - CN	DA-SM	TC/L	-/H	QRF
85.00	0.03	1.29	0.00	0.00
SITEDATA- PERM POOL	CREST PS	FP SED	VALLEY FL	378?
2166.00	2166.00	0.00	2126.00	NO
BASEFLOW	INITIAL EL	EXTRA VOL	SITE TYPE	
0.00	0.00	0.00	DESIGN	
PSDATA - NO. COND	COND L	DIA/W	-/H	
1.00	136.00	36.00	0.00	
PS N	KE	WEIR L	TW EL	
0.025	0.40	12.56	2128.00	
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
2168.00	0.00	0.00	0.00	0.00
AUX.Data - REF.NO.	RETARD. Ci	TIE STATION	INLET LENGTH	
41	0.00	25.00	0	
AUX.Data - INLET N	SIDE SLOPE	EXIT N	EXIT SLOPE	ACTUAL AUX?
0.030	4.00	0.100	0.030	NO
BTM WIDTH - BW1	BW2	BW3	BW4	BW5
ft 80.00	0.00	0.00	0.00	0.00

AUXILIARY SPILLWAY RATING DEVELOPED USING WSPVRT.

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..	0.15
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	1.00	PRECISION OF BW SOLUTION.....	1.0
MIN. NHCP378 DEPTH PS - AUX. CREST	0.50	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 RATIOS		WAVE BERM WIDTH	MULTIPLE STABILITY BERMS U&D/S WIDTHS		DELTA H	SEPARATE STABILITY BERMS WIDTHS, ft		HEIGHTS, ft	
U/S	D/S	ft	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	0.00

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				

EXISTING NATURAL SURFACE AT AUXILIARY SPILLWAY SITE - X,Y COORDINATES:

0.	2168.00
744.	2126.00

INRCS 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 12/04/2013 Kaiser Dam WSID= KD
VER 2005.1.6 Dam SUBW= S1
TIME 06:52:36 SITE = S1 PASS= 1 PART= 9

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

PERM POOL	2166.00 FT	242.1 ACFT	18.85 AC	104.5 CFS
CREST PS	2166.00 FT	242.1 ACFT	18.85 AC	104.5 CFS
SED ACCUM	2166.00 FT	242.1 ACFT	18.85 AC	104.5 CFS
START ELEV	2166.00 FT	242.1 ACFT	18.85 AC	0.0 CFS

UNCONTROLLED AREA HYDROGRAPH - SDH PEAK = 12.37 CFS
TIME TO PEAK = 12.71 HRS, SITE S1
VOLUME = 2.25 ACFT

ADDHYD RESULTS STAB. DESIGN HYD. - PEAK = 2427.88 CFS
TIME TO PEAK = 13.04 HRS, SITE S1
VOLUME = 586.02 ACFT

7 READHD 8	3					KD	
7 READHD 9		8.26	0.0110	10.59		S1	2
8		0.00	0.00	0.00	0.00	0.00 AI D	3
8		0.00	0.00	0.00	0.01	0.01 AI D	4
8		0.01	0.02	0.02	0.03	0.04 AI D	5
8		0.05	0.06	0.07	0.08	0.09 AI D	6
8		0.11	0.12	0.14	0.16	0.18 AI D	7
8		0.20	0.22	0.24	0.27	0.29 AI D	8
8		0.32	0.35	0.38	0.41	0.44 AI D	9
8		0.47	0.51	0.54	0.58	0.62 AI D	10
8		0.66	0.70	0.74	0.78	0.82 AI D	11
8		0.86	0.91	0.95	1.00	1.04 AI D	12
8		1.09	1.14	1.19	1.24	1.29 AI D	13

8	1.34	1.39	1.45	1.50	1.55	AI	D	14
8	1.61	1.66	1.72	1.78	1.83	AI	D	15
8	1.89	1.95	2.01	2.07	2.13	AI	D	16
8	2.19	2.25	2.32	2.38	2.44	AI	D	17
8	2.51	2.57	2.64	2.70	2.77	AI	D	18
8	2.83	2.90	2.96	3.03	3.09	AI	D	19
8	3.16	3.23	3.29	3.36	3.42	AI	D	20
8	3.49	3.56	3.62	3.69	3.76	AI	D	21
8	3.82	3.89	3.95	4.02	4.08	AI	D	22
8	4.15	4.22	4.28	4.35	4.41	AI	D	23
8	4.48	4.54	4.61	4.67	4.74	AI	D	24
8	4.80	4.86	4.93	4.99	5.06	AI	D	25
8	5.12	5.19	5.25	5.32	5.38	AI	D	26
8	5.45	5.51	5.58	5.65	5.71	AI	D	27
8	5.78	5.85	5.92	5.99	6.07	AI	D	28
8	6.14	6.21	6.29	6.36	6.44	AI	D	29
8	6.52	6.60	6.68	6.77	6.85	AI	D	30
8	6.94	7.02	7.11	7.20	7.29	AI	D	31
8	7.38	7.47	7.57	7.67	7.76	AI	D	32
8	7.86	7.96	8.06	8.16	8.27	AI	D	33
8	8.37	8.48	8.58	8.69	8.80	AI	D	34
8	8.91	9.03	9.14	9.26	9.37	AI	D	35
8	9.49	9.61	9.73	9.86	9.98	AI	D	36
8	10.11	10.24	10.37	10.50	10.64	AI	D	37
8	10.78	10.92	11.06	11.21	11.35	AI	D	38
8	11.50	11.65	11.80	11.96	12.12	AI	D	39
8	12.28	12.45	12.62	12.78	12.95	AI	D	40
8	13.13	13.31	13.50	13.68	13.87	AI	D	41
8	14.06	14.25	14.45	14.65	14.85	AI	D	42
8	15.06	15.27	15.49	15.70	15.92	AI	D	43
8	16.14	16.37	16.60	16.84	17.08	AI	D	44
8	17.32	17.57	17.82	18.08	18.35	AI	D	45
8	18.62	18.89	19.16	19.44	19.74	AI	D	46
8	20.04	20.35	20.67	20.98	21.31	AI	D	47
8	21.63	21.98	22.32	22.68	23.05	AI	D	48
8	23.43	23.80	24.18	24.57	24.96	AI	D	49
8	25.38	25.80	26.22	26.65	27.09	AI	D	50
8	27.52	27.98	28.60	29.22	29.85	AI	D	51

* INTEGRITY DIST. AND EXIT VEL. VALUES ARE BASED ON THE ROUTED
HYDROGRAPH SHOWN UNDER TYPE HYD.

SITES.....SUMMARY TABLE 1 COMPLETED.

NRCS SITES VERSION 2005.1.6 ,01/01/2005
KD FILES

INPUT = X:\1311 Clay Kaiser\1311-01 Kaiser Dam\131101Sites\sites02.D2C
OUTPUT = X:\1311 Clay Kaiser\1311-01 Kaiser Dam\131101Sites\sites02.OUT
DATED 12/04/2013 06:52:36

FILE GEN. = X:\1311 Clay Kaiser\1311-01 Kaiser Dam\131101Sites\sites02.DEC DATED 12/04/2013
06:52:36

ASSPRFL TBL = X:\1311 Clay Kaiser\1311-01 Ka DATED 12/04/2013 06:52:36

GRAPHICS FILES GENERATED

OPTION "L" = X:\1311 Clay Kaiser\1311-01 Kaiser Dam\131101Sites\sites02.DRG DATED 12/04/2013 06:52:36

OPTION "P" = X:\1311 Clay Kaiser\1311-01 Kaiser Dam\131101Sites\sites02.DHY DATED 12/04/2013 06:52:36

OPTION "E" = X:\1311 Clay Kaiser\1311-01 Kaiser Dam\131101Sites\sites02.DEM DATED 12/04/2013 06:52:36

AUX.GRAPHICS = X:\1311 Clay Kaiser\1311-01 Kaiser Dam\131101Sites\sites02.DG* DATED 12/04/2013
06:52:36

KD Kaiser Dam

7 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

SUMMARY TABLE 1

SITES VERSION 2005.1.6

DATED 01/01/2005

WATERSHED ID			RUN DATE				RUN TIME		
-----			-----				-----		
KD			12/04/2013				06:52:36		
>>>	SITE ID	SUBWS ID	SUBWS DA (SQ MI)	CURVE NO.	TC (HRS)	TOTAL DA (SQ MI)	TYPE DESIGN	STRUC CLASS	<<<
	-----	-----	-----	-----	-----	-----	-----	-----	
	S1	S1	0.03	85.	1.29	10.59	TR60	A2	
PASS	DIA./	AUX.CREST	BTM.	MAX.	MAX.	EMB.	INTEGR.*	EXIT*	TYPE
NO.	WIDTH	ELEV	WIDTH	HP	ELEV	VOL.	DIST.	VEL.	HYD
	(IN/FT)	(FT)	(FT)	(FT)	(FT)	(CY)	(FT)	(FT/SEC)	
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	36.0	2168.0	80.0	5.2	2173.2	0.	769.	6.3	NRCS-FBH

Tim Schaaf,

Here are the pool easements
that you required. We would like
to start the published Advertisements
as soon as possible.

Thanks,

Clay Kauer

RECEIVED

FEB 19 2014

WATER RIGHTS
PROGRAM

557-3366

cell 840-4948

RECEIVED

FEB 19 2014

WATER RIGHTS
PROGRAM

Document Prepared By:

Jake Fischer
Swier Law Firm, Prof. LLC
142 E. 3rd Street
Winner, SD 57580
(605) 842-3373

AGREEMENT AND GRANT OF EASEMENT

This AGREEMENT AND GRANT OF EASEMENT, dated this 14th day of February, 2014, is made by and between **Ruby Carlson, 814 Spruce Street, Winner, South Dakota 57580** ("Grantor"), and **James E. Kaiser, 29726 314th Avenue, Winner, South Dakota 57580** ("Grantee").

WHEREAS, Grantor is the owner in fee of real property (the "Property") of:

**The Northeast Quarter (NE ¼) of Section 31 in Township 96 North,
Range 76, West of the 5th P.M., Tripp County, South Dakota.**

WHEREAS, Grantee wishes to expand his existing dam ("Kaiser Dam") with which to irrigate certain portions of his property, and requires an easement on Grantor's property to do so;

WHEREAS, Grantors have agreed to allow temporary flooding onto their property to facilitate Grantee's goals; NOW THEREFORE,

For One Dollar (\$1.00) and other valuable consideration, the parties agree as follows:

Grantor grants to Grantee the right to permanently and temporarily flood certain portions of Grantor's Property as described above in perpetuity.

Specifically, Grantors grant to Grantee a permanent pool easement which follows the existing water channel on the Property located in the west 147 feet of the south 290 feet of the Property. This permanent pool easement contains 0.2 acres, more or less, and will be permanently flooded to an elevation of 2166.0 feet mean sea level. The elevation 2166.0 is the Primary Spillway elevation of the Kaiser Dam.

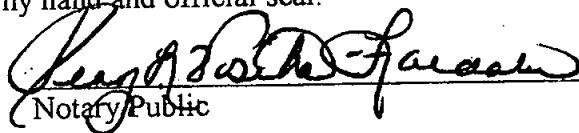
Grantor further grants to Grantee the right to temporarily flood certain parts of the Property during rare and extreme rainfall and runoff events. Such temporary flooding will follow the existing water channel located in the west 1240 feet of the south 700 feet of the Property. This temporary pool easement contains 3.65 acres, more or less, and will be temporarily flooded to an elevation of 2174.0 feet mean sea level during extreme rainfall

STATE OF SOUTH DAKOTA)
 :SS
COUNTY OF TRIPP)

On this the 14th day of Feb., 2014, before me, the undersigned officer, personally appeared **James E. Kaiser, a single person**, known to me or satisfactorily proven to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

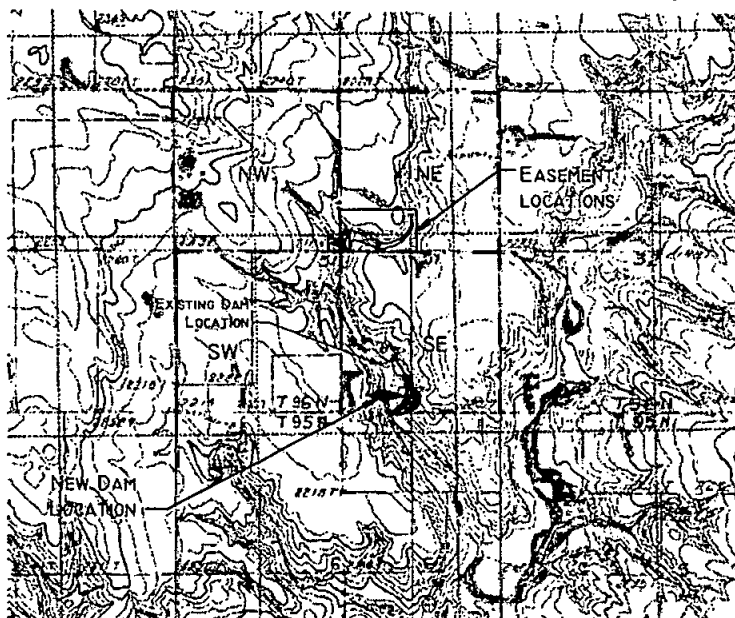
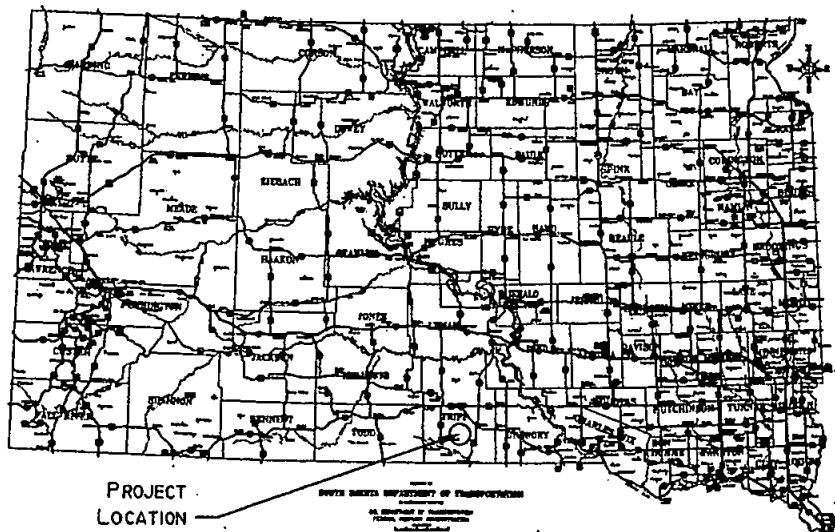
In witness whereof, I hereunto set my hand and official seal.

11-12-2016
My Commission Expires.


Notary Public

(SEAL)

Exh. A



VICINITY MAP
1" = 1000 FT

KAISER DAM

SECTION 31 T96N R76W

DAM CONSTRUCTION PLAN SET

LATITUDE: 43° 04' 59" N

LONGITUDE: 99° 52' 36" W

C0	COVER SHEET
C1.1	NEW DAM OVERVIEW
C2.1	GENERAL NOTES AND INFORMATION
C3.1 THRU C3.2	DAM & SPILLWAY PLAN & PROFILE SHEETS
C4.1 THRU C4.4	TYPICAL SECTIONS & DETAILS
C5.1	DAM CROSS SECTION SHEETS
C6.1	SPILLWAY CROSS SECTION SHEETS

OWNER:

CLAY & JIM KAISER
31427 296TH ST
MILBORO, SD 57580
(605) 557-3366

DESIGN ENGINEER:

HAHN ENGINEERING
2860 KINGSWAY RD
PIERRE, SOUTH DAKOTA 57501
(605) 776-0292

REDUCTION SCALE



Project No.:	13H-01
Drawn By:	RJH
Original Date:	12-08-10



**HAHN
ENGINEERING**
Incorporated

CIVIL
STRUCTURAL
CONSTRUCTION
ENGINEERING FIRM

2860 KINGSWAY RD
PIERRE, SOUTH DAKOTA 57501

PH: 605-776-0292

F: 605-280-4123

HahnEng@comcast.net

ENGINEER'S SEAL:

Kaiser Dam
242 Ac-Ft
SE 1/4 Sec. 31-96-76
Tripp Co., SD

Title Sheet

REVISIONS

SHEET NO:

C0.

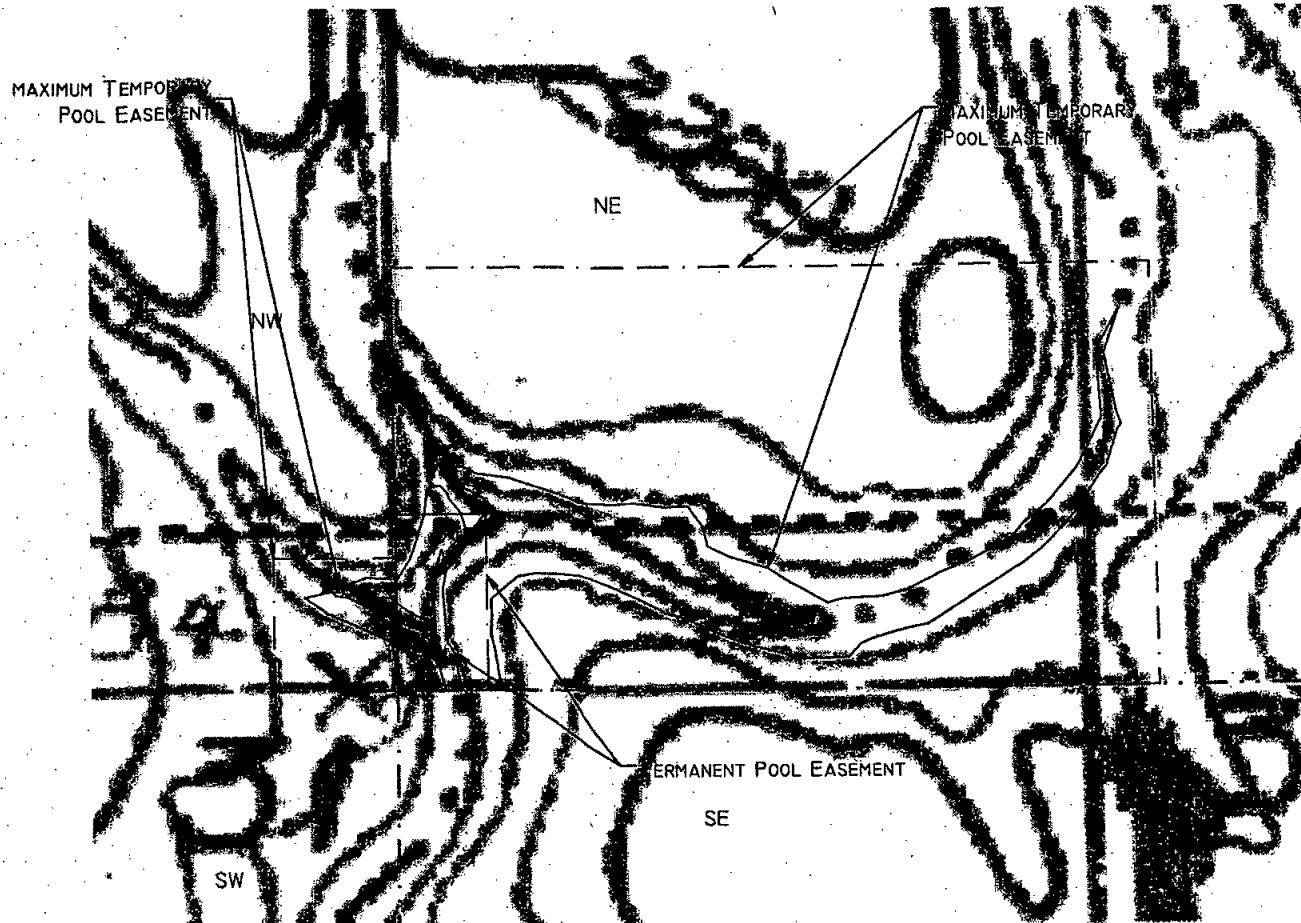
SEQUENCE 1 OF 1

KAISER DAM

SECTION 31 T96N R76W

DAM CONSTRUCTION PLAN SET

LATITUDE: 43° 04' 59" N
LONGITUDE: 99° 52' 36" W



EASEMENT MAP
1" = 100 FT

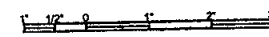
OWNER:

CLAY & JIM KAISER
31427 296TH ST
MILBORO, SD 57580
(605) 557-3366

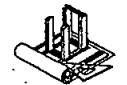
DESIGN ENGINEER:

HAHN ENGINEERING
2860 KINGSWAY RD
PIERRE, SOUTH DAKOTA 57501
(605) 776-0292

REDUCTION SCALE



Project No.: 1311-01
Drawn By: RH
Original Date: 12-08-15



**HAHN
ENGINEERING**
Incorporated

CIVIL
STRUCTURAL
CONSTRUCTION
ENGINEERING FIRM

2860 KINGSWAY RD
PIERRE, SOUTH DAKOTA 57501

PH: 605-776-0292
M: 605-286-6123

HahnEng@bmc.com

ENGINEER'S SEAL:

Kaiser Dam
242 Ac-Ft
SE 1/4 Sec. 31-96-76
Tripp Co., SD

Easements

REVISIONS

SHEET NO:

A

SEQUENCE 1 OF 1

Schaal, Tim

From: Schaal, Tim
Sent: Thursday, February 20, 2014 8:16 AM
To: 'Renae Kaiser'
Subject: RE: P&S for Kaiser Dam Ap. 2711-2

OK-- thank You

Tim Schaal
SD DENR

From: Renae Kaiser [mailto:renae.dawn@hotmail.com]
Sent: Wednesday, February 19, 2014 7:01 PM
To: Schaal, Tim
Subject: RE: P&S for Kaiser Dam Ap. 2711-2

Tim-the NW 1/4 sec 31-T96-R76 is owned by Jim Kaiser, who also owns the SW 1/4 and the SE 1/4 of sec 31. The SE 1/4 is where the proposed dam is located. Therefore a temporary easement is not needed.

From: Tim.Schaal@state.sd.us
To: HahnEng@midconetwork.com
CC: renae.dawn@hotmail.com
Subject: RE: P&S for Kaiser Dam Ap. 2711-2
Date: Wed, 19 Feb 2014 18:01:33 +0000

Clay—as we discussed on the phone today. We should have some conformation from you that a temporary easement is not needed for the NW ¼ of Sec. 31-T96-R76 since that quarter is already owned by you and/or Jim Kaiser. If you have any questions, please let me know.

Tim Schaal
SD DENR

From: Hahn Engineering [mailto:HahnEng@mncomm.com]
Sent: Saturday, January 18, 2014 11:05 AM
To: Schaal, Tim
Subject: RE: P&S for Kaiser Dam Ap. 2711-2

Thanks to the comments, we have attached the Storage Volume Elevation Graph and the output report from Sites Program for your review and suggested changes/corrections.

Sheet C0 has been corrected – thanks

Property Lines have been added – Easements have been requested from the dam Owner in an email text as follows:

Clay Kaiser

Attached is an example easement provided by the SDDENR for permanent and temporary pool easements. Recommend contacting your neighbor to discuss the easement and an attorney to prepare the easement.

Information for the easement is as follows

NE 31-96-76

Recommend Permanent Pool Easement containing approximately 0.2 acres which will be permanently flooded to the elevation of 2166.0 Mean Sea Level. The elevation 2166.0 is the Primary Spillway elevation of the Kaiser Dam.

Permanent Easement containing Approximately 0.2 Acres follows the channel and is located in the Westerly 147 ft of the southerly 290 ft of the NE 31-96-76.

Recommended Temporary Pool Easement containing approximately 3.65 Acres which will be Temporarily flooded to the approximate elevation of 2174.0 Mean Sea Level during extreme rainfall events. The elevation 2174.0 Mean Sea Level is the approximate elevation of the top of the Kaiser Dam.

The easement follows the channel and is located in the westerly 1240 ft of the southerly 700 feet of the NE 31-96-76.

NW 31-96-76

Recommended Temporary Pool Easement containing approximately 0.2 Acres which will be Temporarily flooded to the approximate elevation of 2174.0 Mean Sea Level during extreme rainfall events. The elevation 2174.0 Mean Sea Level is the approximate elevation of the top of the Kaiser Dam.

The easement follows a branch of the main channel and is located in the easterly 200 ft of the southerly 215 feet of the NE 31-96-76.

Planning to use the existing dam structure as a temporary holding dam as the new dam is constructed then breach – will add notes accordingly. No Geotechnical Exploration was performed, basis for 2:1 slopes for budget savings only.

Drawings corrected - as commented, however, requesting preferred by-pass details and preferred elevation difference of outfall above channel bottom.

If you have any questions or comments please contact our office.

Sincerely

Richard A. Hahn, PE
Hahn Engineering, Inc.
office: 605-776-0292
Mobile: 605-280-6123
Skype: Hahn.Engineering

From: Schaal, Tim [<mailto:Tim.Schaal@state.sd.us>]
Sent: Thursday, December 12, 2013 3:59 PM
To: Hahn, Rick (hahneng@mncomm.com)
Subject: P&S for Kaiser Dam Ap. 2711-2

Rick—I looked over the plans and besides needing the Sites model printout I mentioned the other day, I have the following questions/comments.

- Sheet C0 (etc.) you have the wrong storage capacity in the signature block, you have 280 ac-ft. (should be 242)
- Sheet C1.1, you should show the property line if possible, with full pool limits. We want this to know if there is a need for either permanent or temporary flood easements. I have attached a copy of a temp. easement we got with a GF&P dam. (Looks like we may need a temp). Any notes needed for the old dam, such as breaching it or lowering it, etc. Were there any soil borings taken or planned ?? We need Intermediate (2nd spillway elevation) and Maximum (top of dam) storage capacities. (copy also attached).
- Sheet C2.1, CN value (85) seems high, that is OK, who will end up with a little higher peak flow and Annual yields
- Sheet C4.1, low flow bypass in riser ?? may need one if application is contested. 2 to 1 slopes, any slope analysis, soil borings to justify them besides cost ??, GF&P has used a concrete collar at CMP elbow joints.
- Sheet C4.2, Sec. View A-A riser floor elevation should be 2151, not 2130
- Sheet C4.3, difference between CMP invert and ground elevation only 2 feet.

Please let me know if you have any questions.

Thanks

Tim Schaal
SD DENR
773-3352

2/25/2014



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Civil / Structural / Construction Engineering Firm

2860 Kingsway Rd

Pierre, SD 57501

Phone (605) 776-0292

Email: hahneng@mncomm.com

Skype: hahn.engineering

Tim Schaal
SD DENR – Water Rights Program
523 E. Capitol Ave.
Pierre, SD 57501-3182

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FEB 26 2014

**WATER RIGHTS
PROGRAM**

RE: Construction Plans and Calculations for the Dam in the SW 31-96-76 owned by
Jim & Clay Kaiser, 31427 296th St., Millboro, SD 57580,.

HE No. 1311-01

Dear Mr. Schaal:

Enclosed are Three (3) copies of the construction plans (Dated 02/25/14) and calculations using
the Sites Program for the dam referenced above.

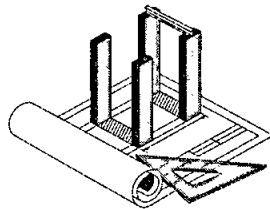
If you have any questions or comments, please contact our office at 605-776-0292 or 605-280-
6123.

Sincerely,

Richard A. Hahn, PE
Hahn Engineering

Enclosures (Construction Plans and Calculations)

CC: File (1311-01)
Clay Kasier



HAHN ENGINEERING, Inc.

Civil / Structural / Construction Engineering Firm

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Pierre, SD 57501

Phone (605) 776-0292

Email: hahneng@mncomm.com

Skype: hahn.engineering

INFORMATION AND CALCULATIONS

FOR THE

KAISER DAM

SECTION 31 T96N R76W

LATITUDE: 43° 04' 59" N

LONGITUDE: 99° 52' 36" W

SECTION 31 T96N R76W

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FEB 26 2014

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PROGRAM

DAM OWNERS:

CLAY & JIM KAISER
31427 296TH ST
MILBORO, SD 57580
(605) 557-3366

OWNER'S PROPERTY IN THE VICINITY: NW, SW & SE SEC. 31-96-76 AND N2 SEC. 16-95-76

EXISTING DAM DETAILS:

EXISTING DAM LOCATION:

LATITUDE: 43° 05' 04" N

LONGITUDE: 99° 52' 36" W

FULL POOL WATER ELEV = 2151.00

CURRENT WATER ELEV 2153.00

TOP OF DAM = 2155.00

WATER STORAGE = 40 ACRE FT

DAM HEIGHT AT OUTLET = 20 FT

DAM ORIGINAL CONSTRUCTION 1955.

ESTIMATED DRAINAGE AREA 5,800 ACRES

WATER CONTROL STRUCTURE

24" DIAMETER CORRUGATED METAL PIPE.

EMERGENCY OVERFLOW CHANNEL ON WEST SIDE OF DAM.

NEW DAM DETAILS:

NEW DAM LOCATION:

LATITUDE = 43° 04' 59" N

LONGITUDE = 99° 52' 36" W

NEW DAM TOP ELEV: 2174.00

WATER LEVEL: 2166.00

WATER STORAGE: 242 ACRE FT

DAM CONSTRUCTION: 50,499 CY

DAM LENGTH: 587 FT

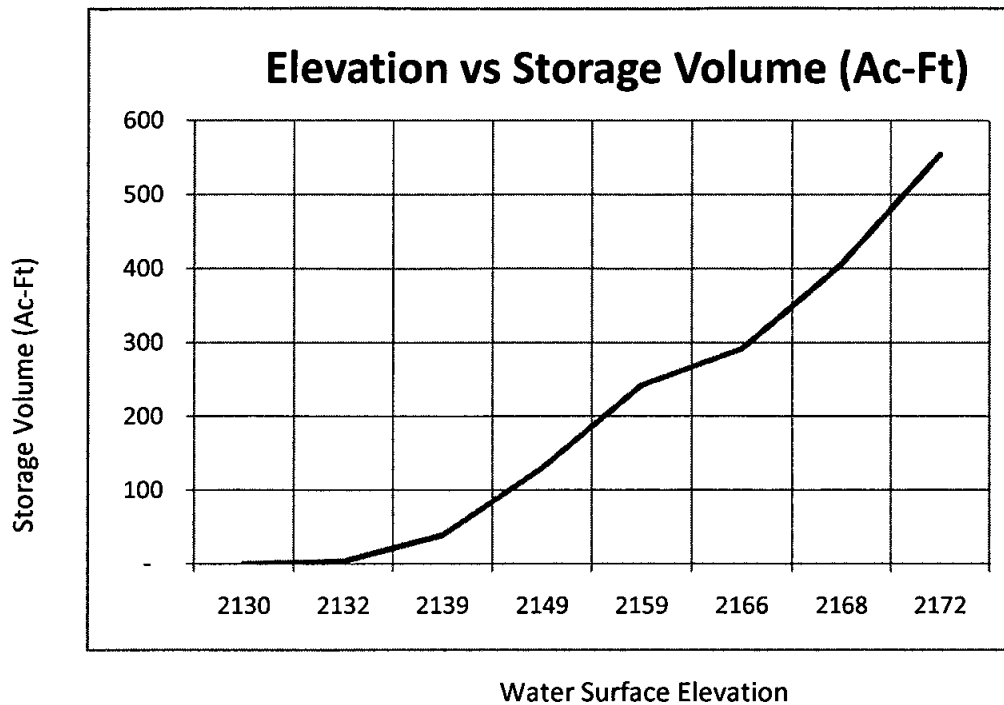
DAM HEIGHT: 48 FT

SPILLWAY LENGTH: 750 FT

SPILLWAY EXCAVATION: 55,241 CY

WATER CONTROL STRUCTURE: 48"%%C CCMP RISER
WITH 36"%%C X 130 FT CCM DISCHARGE PIPE.

ESTIMATED DRAINAGE AREA 6,700 ACRES.



General Program Information

*This graph is Not Correct.
Use graph we received
on June 12/2014*

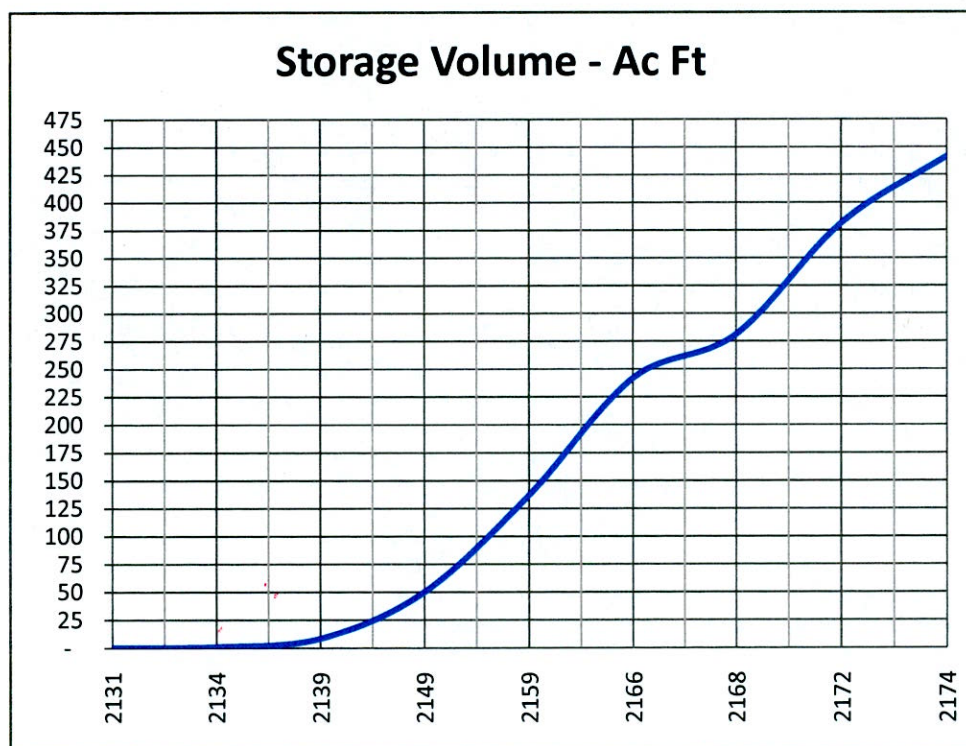
T65

	sites02
Site Identification	S1
Watershed Runoff Curve Number	65.
Total Watershed Drainage Area (Sq.Miles)	10.59
Watershed Time of Concentration (Hours)	1.29
SDH Rainfall Total (Inches)	2.80
SDH Rainfall Duration (Hours)	24.0
FBH or Storm Rainfall Total (Inches)	4.00
FBH or Storm Rainfall Duration (Hours)	24.0
SDH Inflow Peak (CFS)	2427.9
FBH or Storm Inflow Peak (CFS)	3589.5
Initial Reservoir Elevation (Feet)	2166.00
Maximum WS SDH (Feet)	2171.97
Maximum WS FBH or Storm (Feet)	2173.24
Storage at Max. WS FBH or Storm (Acre-Ft)	415.1
Top Dam (Feet)	2173.24
Storage, Top Dam (Acre-Ft)	414.0
Emb. Yardage (CY)	N/A
PSH Drawdown (Days)	N/A
378 Drawdown (Days)	N/A
PS Crest (Feet)	2166.00
PS Number of Conduits	1
PS Conduit Diameter (Inches)	36.0
PS Conduit Height (Feet)	N/A
PS Conduit Width (Feet)	N/A
PS Conduit Area (Sq. Feet)	7.07
Storage, PS Crest (Acre-Ft)	242
PS Discharge at AS Crest (CFS)	110.1
PS Discharge for SDH (CFS)	167.5
PS Discharge FBH or Storm (CFS)	170.0
AS Crest (Feet)	2168.00
Storage, AS Crest (Acre-Ft)	281.7
AS Width (Feet)	80.
AS Exit Slope (%)	3.00
AS Ret. Curve Index	0.10
AS Veg. Cover Factor	0.50
AS Maintenance Code	1
AS Max. Head SDH (Feet)	3.97
AS Peak Discharge SDH/Storm (CFS)	1748.2
AS Exit Velocity SDH or Storm (F/S)	5.36
AS Stress SDH or Storm (Lb./Sq.Ft.)	0.079
Hp FBH or Storm (Feet)	5.24
AS Peak Discharge FBH/Storm (CFS)	2836.
AS Inteq. Dist. FBH or Storm (Feet)	769.
Oe/B FBH or Storm (Acre-Ft/Ft)	7.6
Uncontrolled Drainage Area (Sq.Miles)	0.03
Number of Errors	0
Number of Warnings	1

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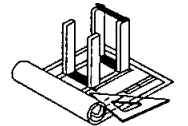
Storage Volume Table

Elevation	Area SqFt	Volume Ac-Ft
2130		0
2131	635.4	0
2134	25356	1
2139	104069	8
2149	258648	50
2159	495156	136
2166	793983	242
2168	918379	281
2172	1264428	381
2174	1353119	441



**WATER RIGHTS
PROGRAM**

Project No.:	1311-01
Drawn By:	RH
Original Date:	02-22-14



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HahnEng@inncomm.com

Kaiser Dam

242 Ac-Ft

SE1/4 Sec. 31-96-76
Tripp Co., SD

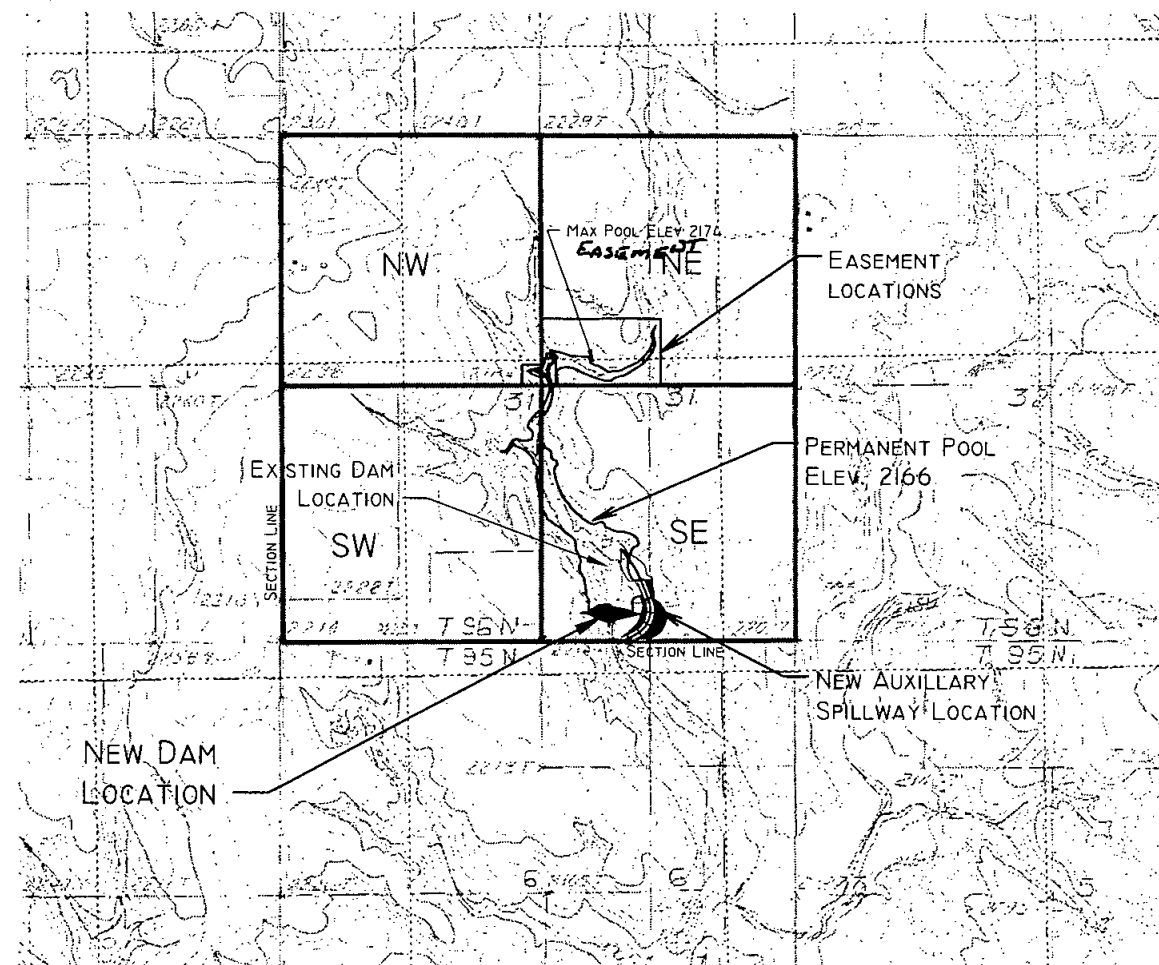
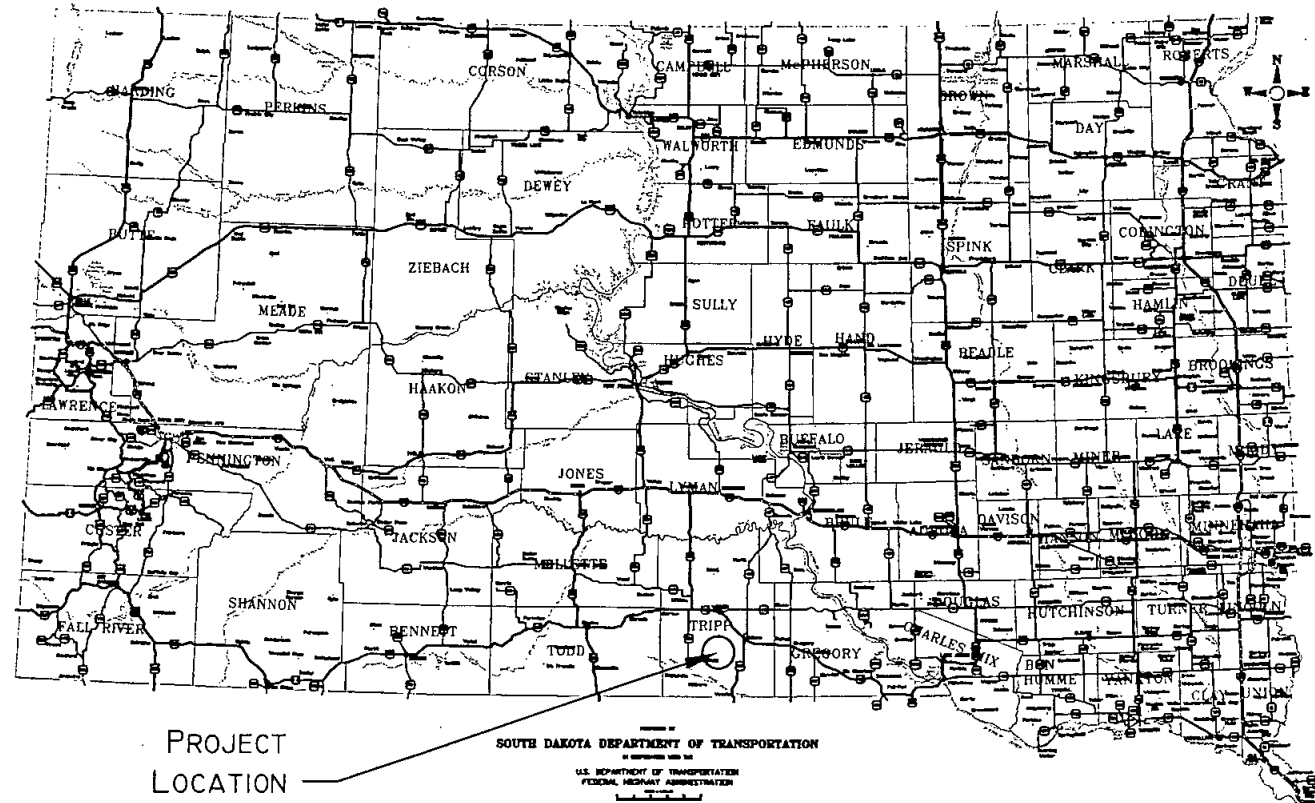
Title Sheet

REVISIONS

SHEET NO:

CO

SEQUENCE 1 OF ____



VICINITY MAP
1" = 1000 FT

LONGITUDE: 99° 52'36" W

C0	COVER SHEET
C1.1	NEW DAM OVERVIEW
C2.1	GENERAL NOTES AND INFORMATION
C3.1 THRU C3.2	DAM & SPILLWAY PLAN & PROFILE SHEETS
C4.1 THRU C4.4	TYPICAL SECTIONS & DETAILS
C5.1	DAM CROSS SECTION SHEETS
C6.1	SPILLWAY CROSS SECTION SHEETS

OWNER:

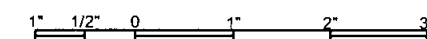
CLAY & JIM KAISER
31427 296TH ST
MILBORO, SD 57580
(605) 557-3366

PROPERTY: NW, SW & SE SEC. 31-96-76
AND N2 SEC. 6-95-76

DESIGN ENGINEER:

HAHN ENGINEERING
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PIERRE, SOUTH DAKOTA 57501
(605) 776-0292

REDUCTION SCALE.



NEW DAM DETAILS:

LOCATION:
LATITUDE = 43° 04' 59" N
LONGITUDE = 99° 52' 36" W

NEW DAM TOP ELEV: 2174.00'
WATER LEVEL: 2166.00'
WATER STORAGE: 242 ACRE FT

DAM CONSTRUCTION: 50,499 CY
DAM LENGTH: 587 FT
DAM HEIGHT: 48 FT

SPILLWAY LENGTH: 750 FT
SPILLWAY EXCAVATION: 55,241 CY

WATER CONTROL STRUCTURE: 48"Ø CCMP RISER WITH 36"Ø x 130'
FT CM DISCHARGE PIPE.

ESTIMATED DRAINAGE AREA 6,700 ACRES

EXISTING DAM PROPERTIES

EXISTING DAM LOCATION:
LATITUDE: 43° 05' 04" N
LONGITUDE: 99° 52' 36" W

FULL POOL WATER ELEV = 2151.00
CURRENT WATER ELEV 2153.00
TOP OF DAM = 2155.00

WATER STORAGE = 40 ACRE FT
DAM HEIGHT AT OUTLET = 20 FT

DAM ORIGINAL CONSTRUCTION 1955.
ESTIMATED DRAINAGE AREA 5,800 ACRES

WATER CONTROL STRUCTURE
24" DIAMETER CORRUGATED METAL PIPE.
EMERGENCY OVERFLOW CHANNEL ON WEST SIDE OF DAM.

CURRENT CONDITION LEVEL CONTROL PIPE PLUGGED WITH DEBRIS.
EXTENSIVE EROSION AT DISCHARGE POINT.

CONSTRUCTION NOTES:

EXISTING DAM TO BE UTILIZED AS TEMPORARY RETENTION DAM UNTIL
NEW DAM IS CONSTRUCTED.

FOLLOWING THE CONSTRUCTION OF NEW DAM TO THE PRIMARY SPILLWAY
ELEVATION OF 2166, THE EXISTING DAM IS TO BE BREACHED BY THE
REMOVAL OF THE EXISTING PRIMARY SPILLWAY STRUCTURE.

THE EXISTING DAM MAY BE UTILIZED FOR ADDITIONAL FILL MATERIAL
FOR THE NEW DAM FROM THE PRIMARY SPILLWAY ELEVATION OF 2166 TO
TOP OF DAM ELEVATION 2174.

WATER FROM THE EXISTING DAM TO BE UTILIZED FOR CONDITIONING
EMBANKMENT MATERIAL AS NEEDED TO ACHIEVE DESIRED COMPACTION
EFFORT.

NEW PERMANENT
POOL ELEVATION = 2166

EXISTING DAM

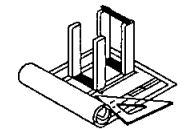
EXISTING SPILLWAY

NEW DAM LOCATION

NEW SPILLWAY LOCATION
(BORROW SITE LOCATION)

SCALE: 1"=100'

CONTOURS SHOWN ARE
AT 5 FT INTERVALS



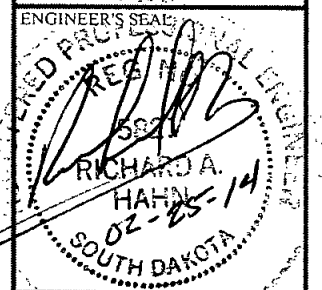
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HahnEng@mncomm.com



Kaiser Dam
280 Ac-Ft

SE1/4 Sec. 31-96-76
Tripp Co., SD

New Dam
Overview

REVISIONS

SHEET NO:

C1.1

SEQUENCE ## OF ##

QUANTITY SUMMARY

DESCRIPTION	ESTIMATED QTY
EXCAVATION-SPILLWAY	55,240.6 CY
EMBANKMENT INCLUDING 30% SHRINKAGE-DAM	50,501.0 CY
TOPSOIL SALVAGE AND PLACEMENT	7,665.7 CY
48" CCMP RISER	15.0 LF
36" OUTLET DISCHARGE PIPE	136.5 LF
36" 16" ELBOWS	2.0 EA
CONCRETE	1.3 CY
REINFORCING	25.7 LBS
SAND ANTI SEEP COLLAR	10.0 TONS
4" DIA PVC NON-PERFORATED PIPE	20.0 LF
4" DIA PVC PERFORATED PIPE	13.0 LF
8" DIA. PRESSURE TREATED POSTS	24.0 LF
2x12 PRESSURE TREATED LUMBER	16.0 LF
2x6 PRESSURE TREATED LUMBER	16.0 LF
2x10 x 10'-0" PRESSURE TREATED LUMBER	4.0 EA
2x10 x 4'-11" PRESSURE TREATED LUMBER	8.0 EA
4x6 x 8'-0" PRESSURE TREATED POSTS	4.0 EA
L2x2x1/4 6-5" STEEL ANGLE	8.0 EA
L2x2x1/4 x 3'-2" STEEL ANGLE	2.0 EA
5/8" DIA x 8" STEEL BOLTS, NUTS AND 2-WASHERS	32.0 SETS
1/2" DIA x 3" STEEL BOLTS, NUTS AND 2-WASHERS	32.0 SETS
1/2" DIA MACHINE BOLTS WITH NUTS	6.0 SETS
1/2" DIA MACHINE WASHERS	12.0 EA

HYDROLOGY INFORMATION

DAM CLASS: LOW HAZARD
DAM STORAGE: 242 ACRE FT
DAM WATER ELEV.: 2166
DAM TOP ELEV: 2174
DAM AUXILLARY SPILLWAY ELEV: 2168
TOTAL DAM HEIGHT 48 FT

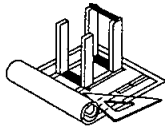
MINIMUM PRINCIPLE SPILLWAY HYDROLOGY CRITERIA
DAM PURPOSE: SINGLE IRRIGATION ONLY
STORAGE X EFFECTIVE HEIGHT = 11,616
NO EXISTING DAM IN SERIES
VEGETATED AUXILLARY SPILLWAY

SEE SEPARATE SITES CALCULATION REPORT FOR
ADDITIONAL INFORMATION

AUXILLARY SPILLWAY ANALYSIS SUMMARY

	sites02
Site Identification	S1
Watershed Runoff Curve Number	85.
Total Watershed Drainage Area (Sq.Miles)	10.59
Watershed Time of Concentration (Hours)	1.29
SDH Rainfall Total (Inches)	2.80
SDH Rainfall Duration (Hours)	24.0
FBH or Storm Rainfall Total (Inches)	4.00
FBH or Storm Rainfall Duration (Hours)	24.0
SDH Inflow Peak (CFS)	2427.9
FBH or Storm Inflow Peak (CFS)	3589.5
Initial Reservoir Elevation (Feet)	2166.00
Maximum WS SDH (Feet)	2171.97
Maximum WS FBH or Storm (Feet)	2173.24
Storage at Max. WS FBH or Storm (Acre-Ft)	415.1
Top Dam (Feet)	2173.24
Storage, Top Dam (Acre-Ft)	414.0
Emb. Yardage (CY)	N/A
PSH Drawdown (Days)	N/A
378 Drawdown (Days)	N/A
PS Crest (Feet)	2166.00
PS Number of Conduits	1
PS Conduit Diameter (Inches)	36.0
PS Conduit Height (Feet)	N/A
PS Conduit Width (Feet)	N/A
PS Conduit Area (Sq. Feet)	7.07
Storage, PS Crest (Acre-Ft)	242.
PS Discharge at AS Crest (CFS)	110.1
PS Discharge for SDH (CFS)	167.5
PS Discharge FBH or Storm (CFS)	170.0
AS Crest (Feet)	2168.00
Storage, AS Crest (Acre-Ft)	281.7
AS Width (Feet)	80.
AS Exit Slope (%)	3.00
AS Ret. Curve Index	0.10
AS Veg. Cover Factor	0.50
AS Maintenance Code	1
AS Max. Head SDH (Feet)	3.97
AS Peak Discharge SDH/Storm (CFS)	1748.2
AS Exit Velocity SDH or Storm (Ft/S)	5.36
AS Stress SDH or Storm (Lb./Sq.Ft.)	0.079
Hp FBH or Storm (Feet)	5.24
AS Peak Discharge FBH/Storm (CFS)	2836.
AS Integ. Dist. FBH or Storm (Feet)	769.
Oe/B FBH or Storm (Acre-Ft/Ft)	7.6
Uncontrolled Drainage Area (Sq.Miles)	0.03
Number of Errors	0
Number of Warnings	1

Project No.: 1311-01
Drawn By: RH
Original Date: 02-20-14



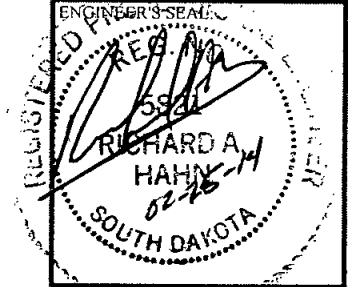
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HahnEng@mncomm.com



Kaiser Dam
280 Ac-Ft
SE1/4 Sec. 31-96-76
Tripp Co., SD

Notes

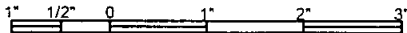
REVISIONS

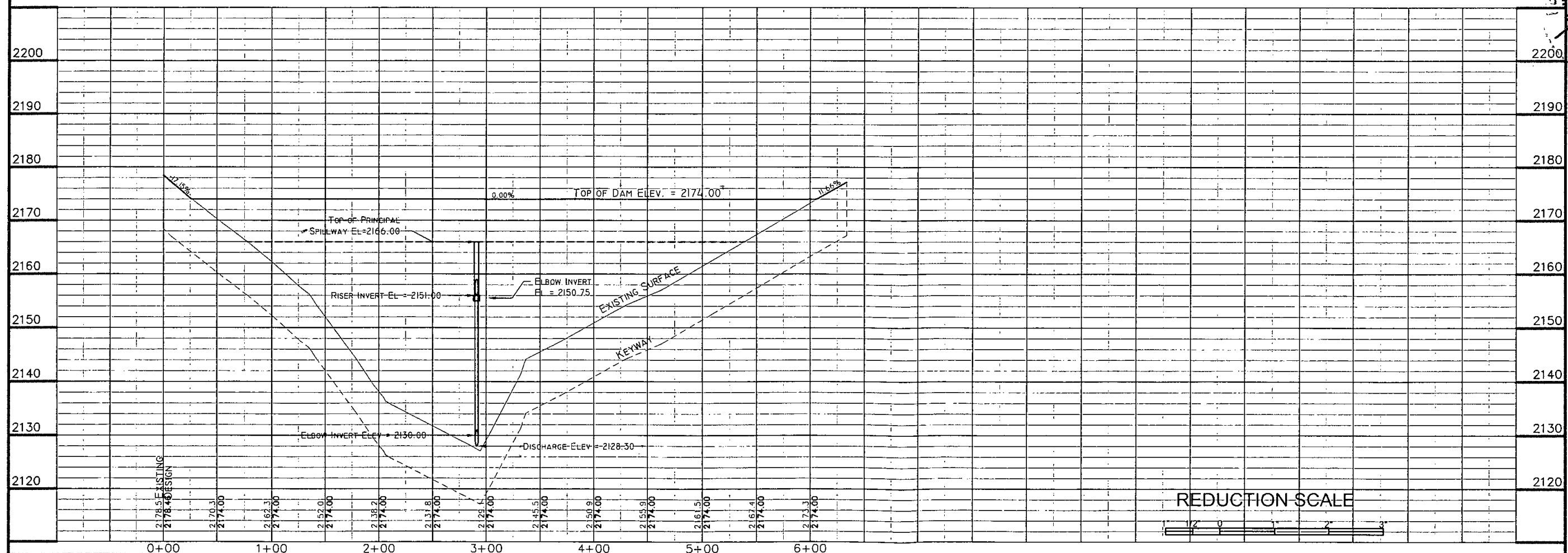
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C2.1

SEQUENCE ## OF ##

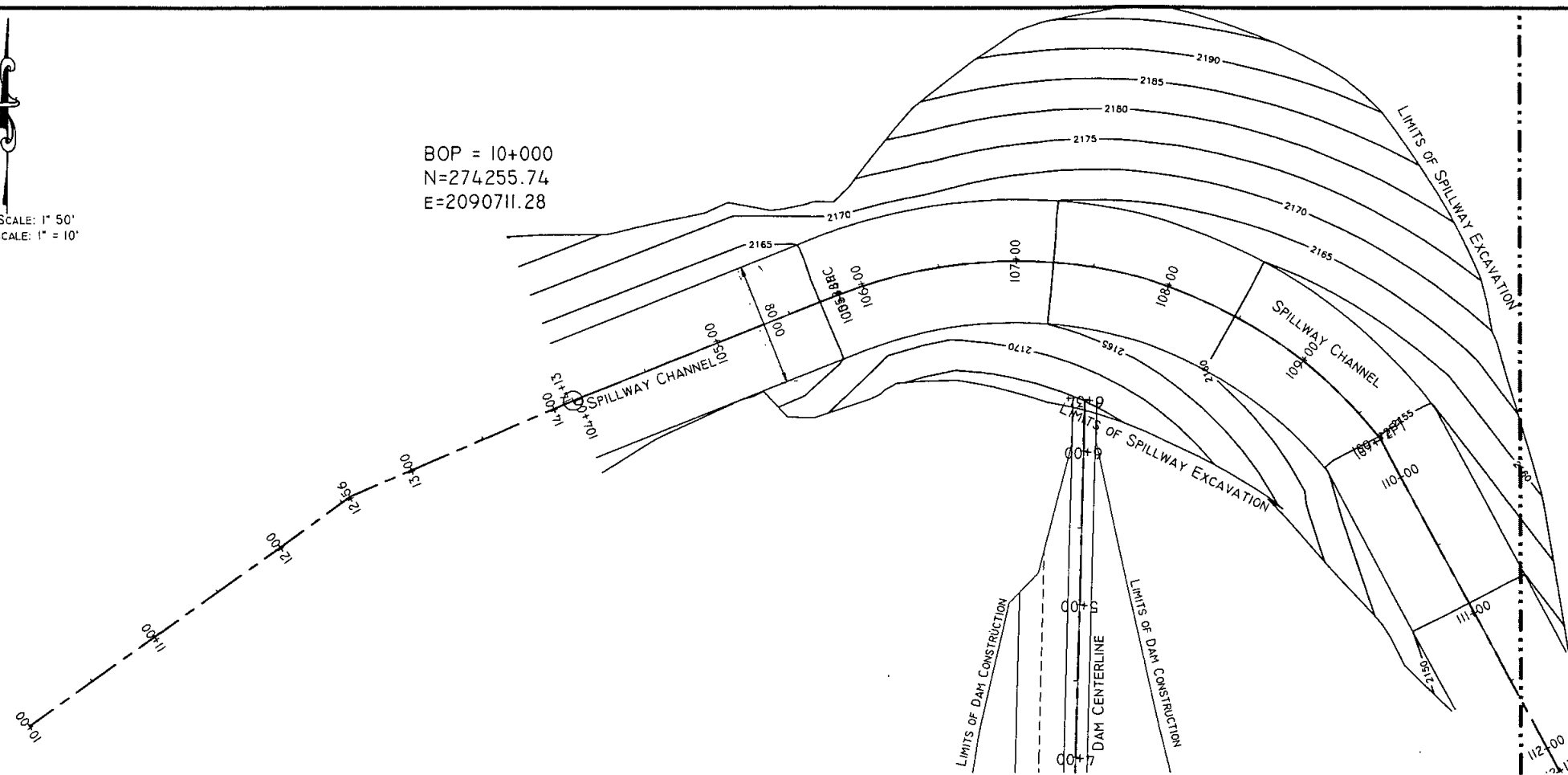
REDUCTION SCALE





HORIZ SCALE: 1" = 50'
VERT SCALE: 1" = 10'

BOP = 10+000
N=274255.74
E=2090711.28

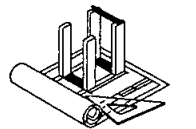


SPILLWAY EARTHWORK

EXCAVATION	55,240.6	CY
EMBANKMENT	0.0	CY
WASTE AVAILABLE	55,240.6	CY

EOP = 12+17
N=273250.78
E=2090619.01

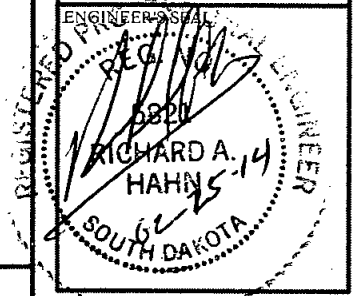
Project No.: 1311-01
Drawn By: RH
Original Date: 02-20-14



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Kaiser Dam
280 Ac-Ft
SE1/4 Sec. 31-96-76
Tripp Co., SD

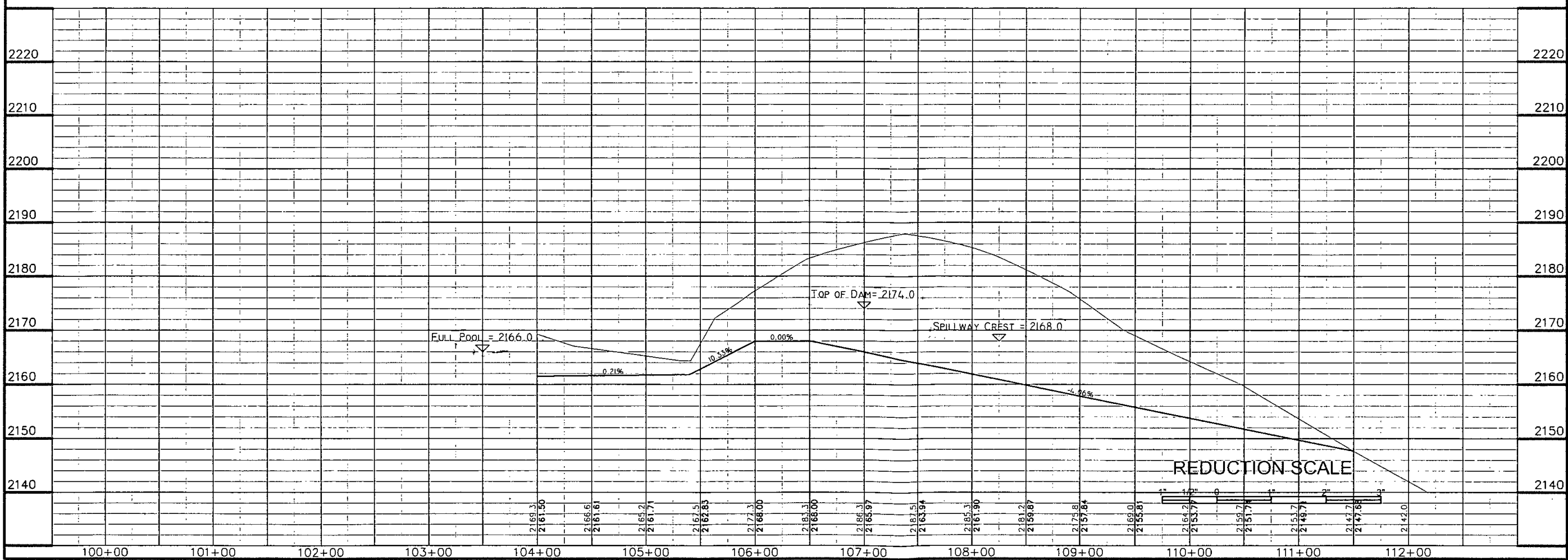
New Spillway
Plan & Profile

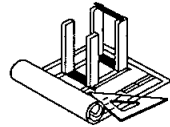
REVISIONS

SHEET NO:

C3.2

SEQUENCE ## OF ##

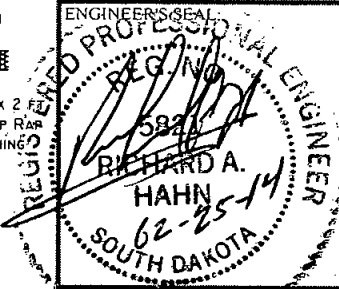




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HahnEng@mncomm.com



Kaiser Dam
238 Ac-Ft
SE1/4 Sec. 31-96-76
Tripp Co., SD

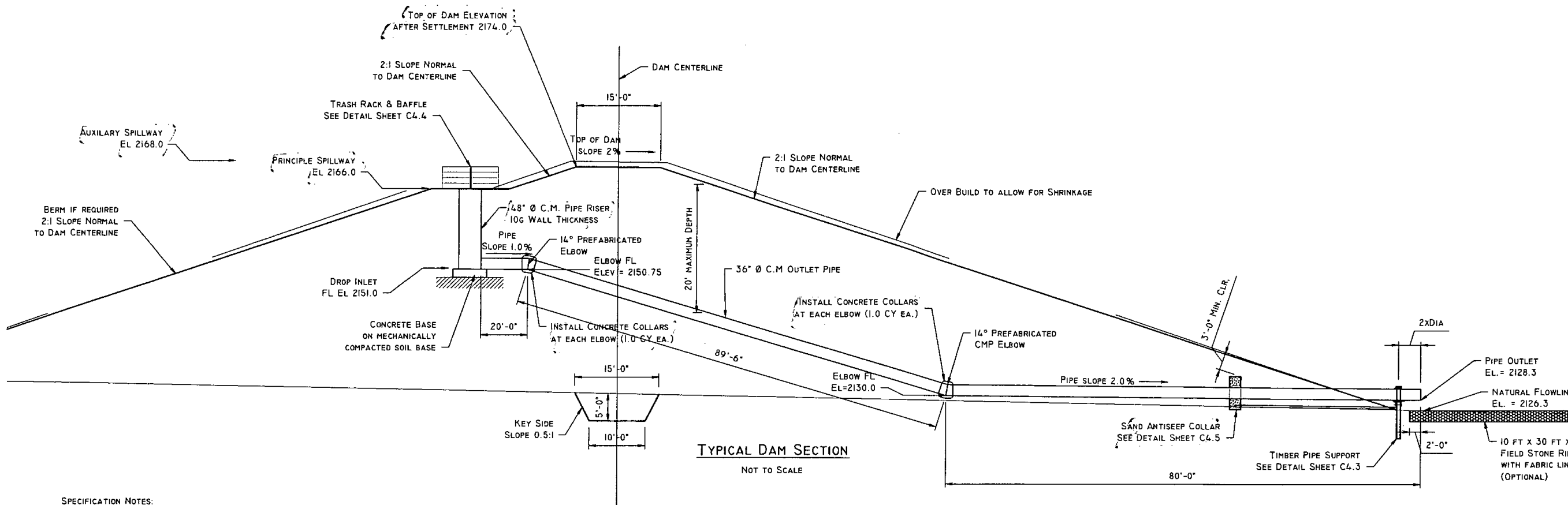
DAM SECTION
WITH DROP
INLET & CHUTE
PRINCIPAL
SPILLWAY

REVISIONS

SHEET NO:

C4.1

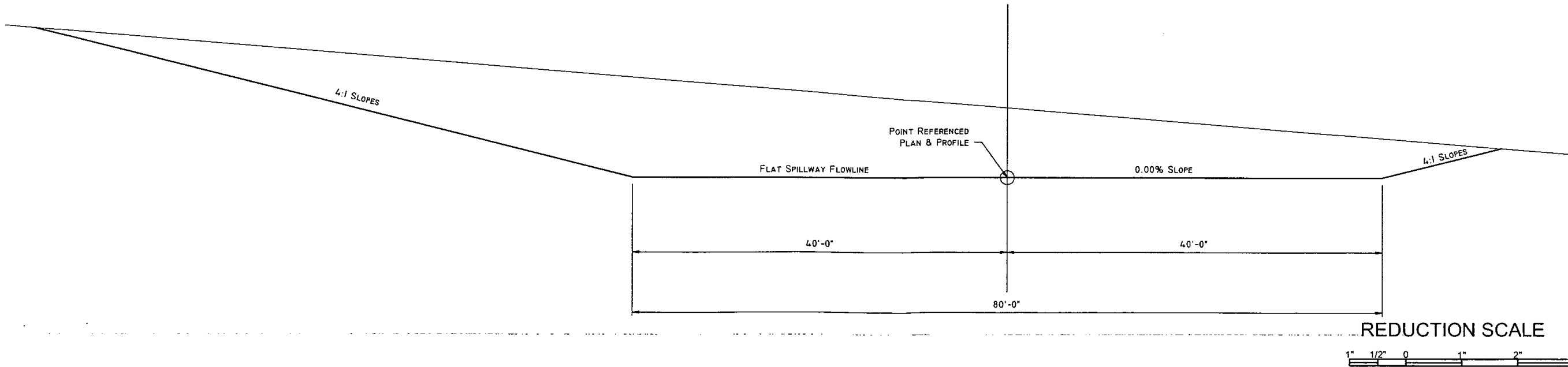
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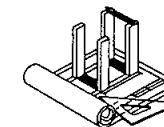


- SPECIFICATION NOTES:
- 1) APPLICABLE SOUTH DAKOTA SOIL CONSERVATION SERVICE CONSTRUCTION AND MATERIAL SPECIFICATIONS WILL BE USED FOR THIS PROJECT WITH MODIFICATIONS LISTED BELOW.
 - 2) COATED CORRUGATED METAL PIPE (CCM) WALL THICKNESS 10 GAUGE (OR MAX. AVAILABLE) OR ALTERNATE IS ALUMINIZED STEEL CORRUGATED PIPE WALL THICKNESS 10 GAUGE FOR RISER AND DISCHARGE PIPE.
 - 3) SPILLWAY SIDE SLOPES GENERATE THE BORROW MATERIAL TO CONSTRUCT THE DAM. ADJUST SIDE SLOPES AS NEEDED TO ADJUST BORROW QUANTITY.

PROJECT TABLE OF QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE	CU. YD.	1.33
REINFORCING BARS	LB.	25.7
TEE PART - C.M. PIPE RISER TOTAL HEIGHT (48" DIA.)	L.F.	15.0
TEE PART - C.M. PIPE OUTLET (36" DIA.)	L.F.	189.5
PIPE OUTLET PART - C.M. PIPE ELBOWS-14" (36" DIA.)	EA	2.0
FIELD STONE RIP RAP	TONS	35.5
RIP RAP LINER FABRIC	SQYD	52.9

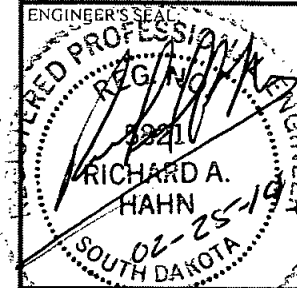




**HAHN
ENGINEERING**
Incorporated

CIVIL
STRUCTURAL
CONSTRUCTION
ENGINEERING FIRM

2860 KINGSWAY RD
 PIERRE, SOUTH DAKOTA 57501
 PH: 605-776-0292
 M: 605-280-6123
 HahnEng@mncomm.com



Kaiser Dam
 280 Ac-Ft
 SE1/4 Sec. 31-96-76
 Tripp Co., SD

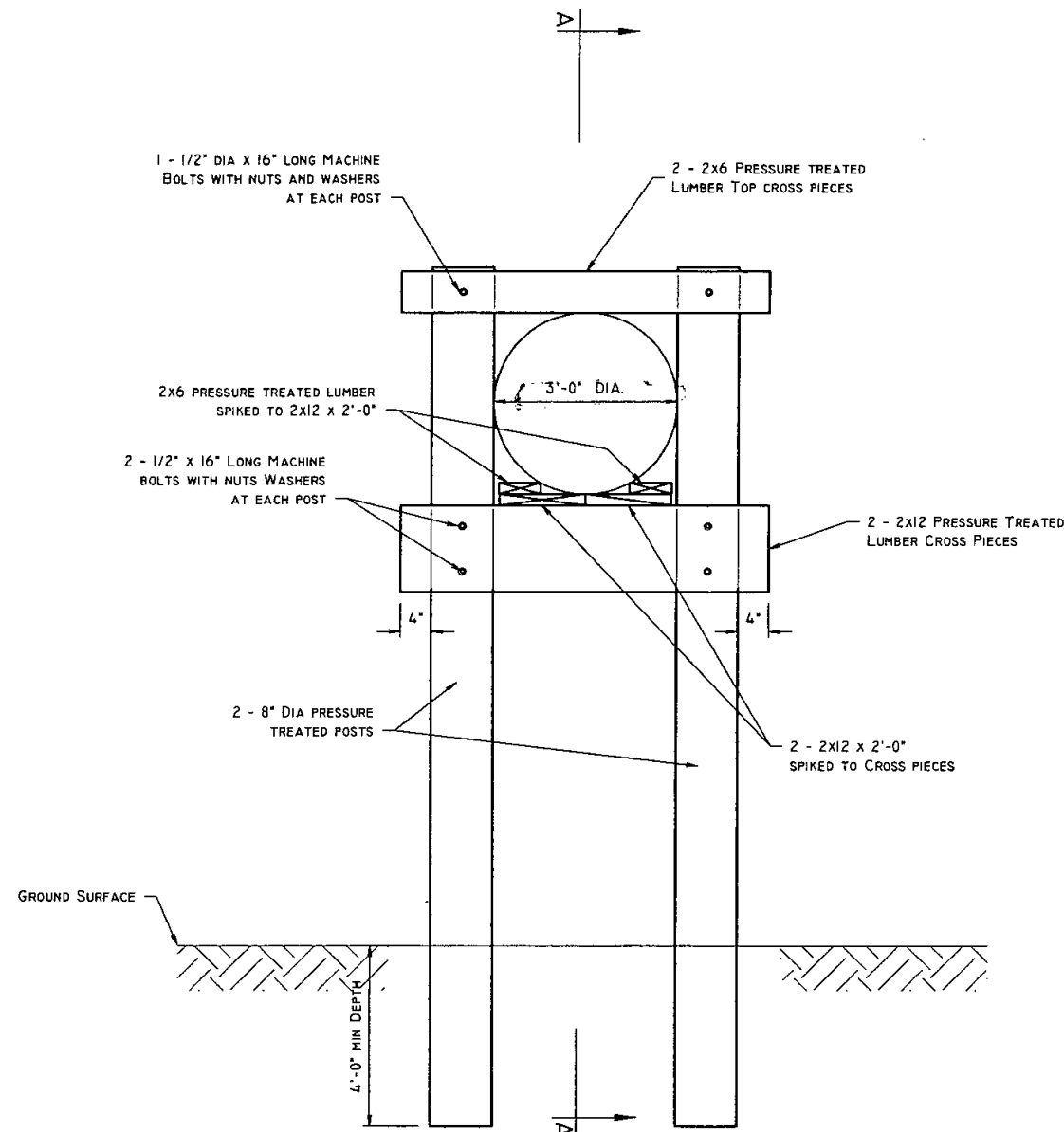
TIMBER PIPE
SUPPORT

REVISIONS

SHEET NO:

C4.3

SEQUENCE ## OF ##



PLAN VIEW

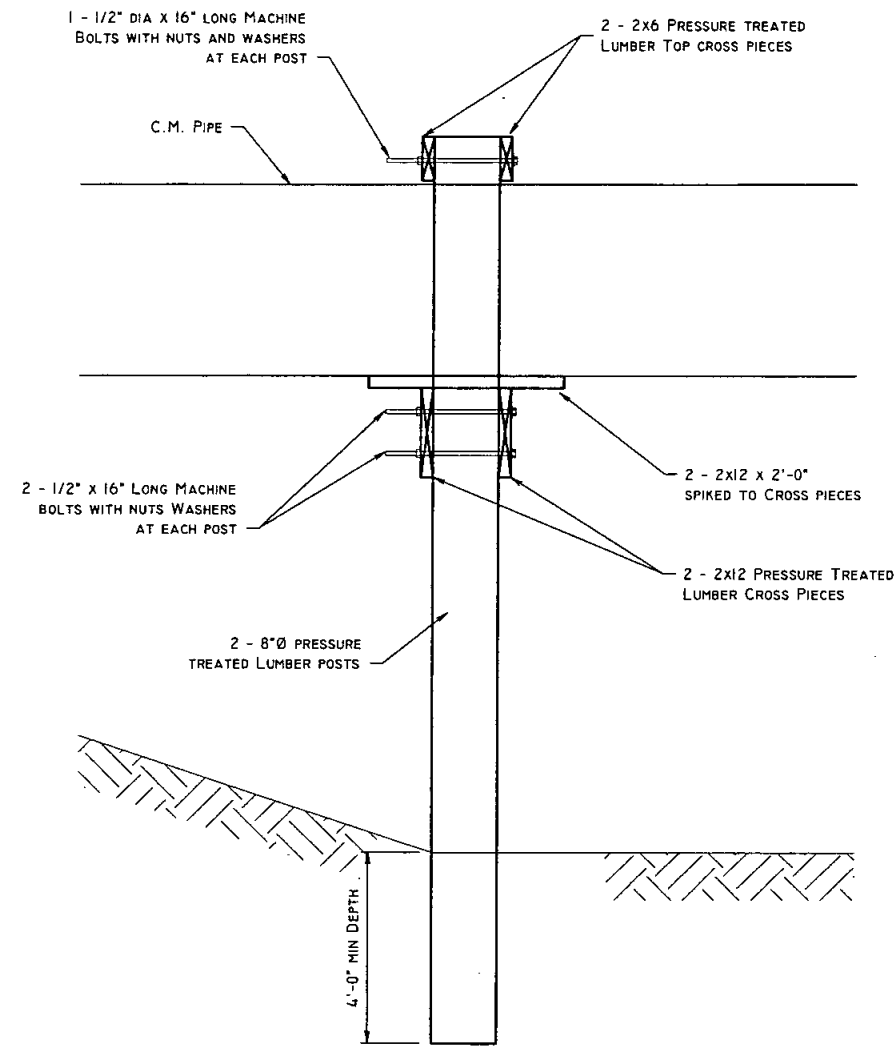
SCALE: 1/2" = 1'-0"

TABLE OF QUANTITIES

ITEM	LENGTH FOR 24" DIA. C.M. PIPE	NO. REQ'D.	QUANTITY
8" DIA. PRESSURED TREATED LUMBER POST	12'-0"	2	24 L.F.
2" x 12" PRESSURED TREATED LUMBER	6'-0"	2	12 L.F.
2"x 6" PRESSURE TREATED LUMBER	6'-0"	2	12 L.F.
2"x 12" PRESSURES TREATED LUMBER	2'-0"	2	4 L.F.
2" x 6 " PRESSURE TREATED LUMBER	2'-0"	2	4 L.F.
1/2" DIA. MACHINE BOLTS WITH NUTS		6	6 SETS
1/2" DIA. WASHERS		12	12

NOTES:

A) HAND OR MACHINE TAMP BACKFILL THOROUGHLY AROUND POSTS

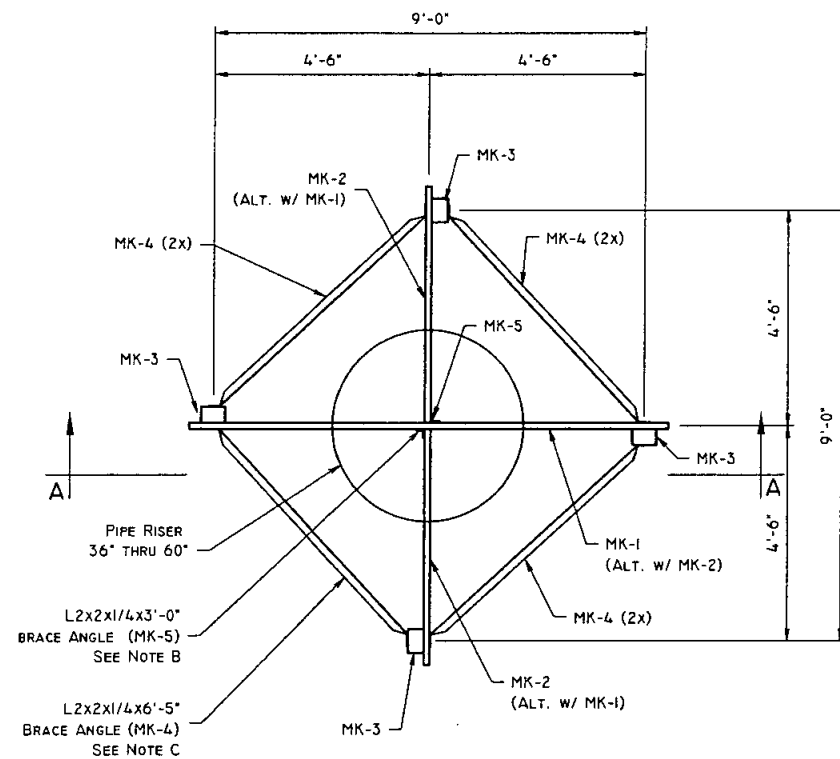


SECTION ELEVATION A-A

SCALE: 1/2" = 1'-0"

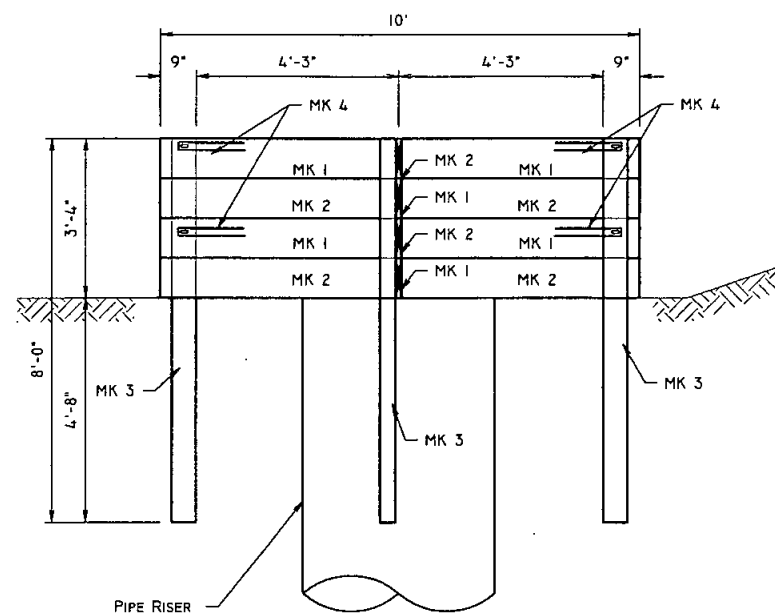
REDUCTION SCALE





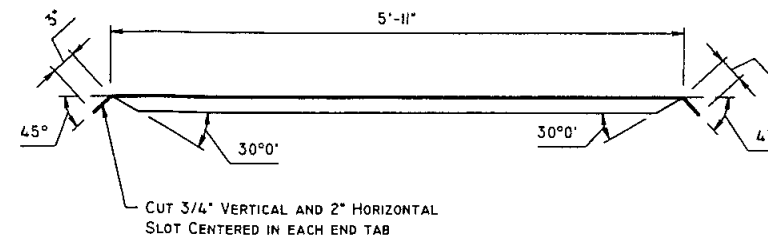
PLAN VIEW

SCALE: 1/4" = 1'-0"



SECTION ELEVATION A-A

SCALE: 1/4" = 1'-0"



BRACE ANGLE PLAN VIEW

SCALE: 1/2" = 1'-0"

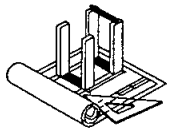
TABLE OF QUANTITIES

ITEM	MARK	NO. REQ'D.	QUANTITY
2"x 10"x 10'-0" PRESSURED TREATED LUMBER	1	4	67 BD. FT.
2" x 10" x 4'-11" PRESSURED TREATED LUMBER	2	8	66 BD. FT.
4"x 6" x 8'-0" PRESSURE TREATED POST	3	4	64 BD. FT.
L2"x 2"x 1/4"x 6'-5" STEEL ANGLE	4	8	164 LB
L2"x 2"x 1/4"x 3'-2" STEEL ANGLE	5	2	20 LB
5/8" x 8" STEEL BOLTS, NUTS AND 2 WASHERS		32	32 SETS
1/2" x 3" STEEL BOLTS, NUTS, 2 WASHERS		32	32 SETS

NOTES:

- TO THE 4" x 6" POSTS (4 REQUIRED) BOLT 2" x 10" BOARDS USING TWO 5/8" x 8" BOLT (SETS). DO NOT PLACE BOLTS CLOSER THAN 1 1/2" FROM EDGE OF BOARD
- FOR THE 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 EACH LEG
- ATTACH BRACE ANGLES TO THE TOP BOLT ON THE TOP 2" x 10" BOARD AND TO THE TOP BOLT NEXT TO THE BOTTOM BOARD
- MACHINE OR HAND TAMP BACKFILL AROUND POSTS. MACHINE COMPACT BACKFILL AROUND PIPE RISER.

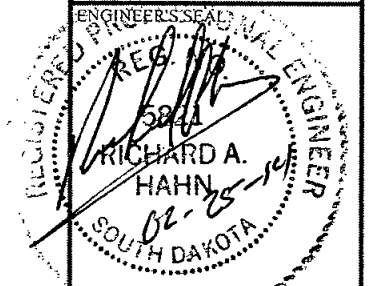
Project No.: 1311-01
 Drawn By: RH
 Original Date: 2-20-14



HAHN ENGINEERING
 Incorporated

CIVIL
 STRUCTURAL
 CONSTRUCTION
 ENGINEERING FIRM

2860 KINGSWAY RD
 PIERRE, SOUTH DAKOTA 57501
 PH: 605-776-0292
 M: 605-280-6123
 HahnEng@mncomm.com



Kaiser Dam
 280 Ac-Ft
 SE1/4 Sec. 31-96-76
 Tripp Co., SD

**TRASH RACK
 AND BAFFLE
 DETAILS**

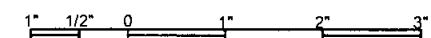
REVISIONS

SHEET NO:

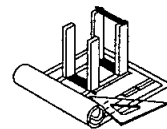
C4.4

SEQUENCE ## OF ##

REDUCTION SCALE



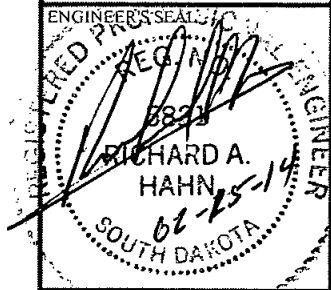
Project No.: 1311-01
 Drawn By: RH
 Original Date: 2-20-14



**HAHN
ENGINEERING**
Incorporated

CIVIL
STRUCTURAL
CONSTRUCTION
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Kaiser Dam
 280 Ac-Ft
 SE1/4 Sec. 31-96-76
 Tripp Co., SD

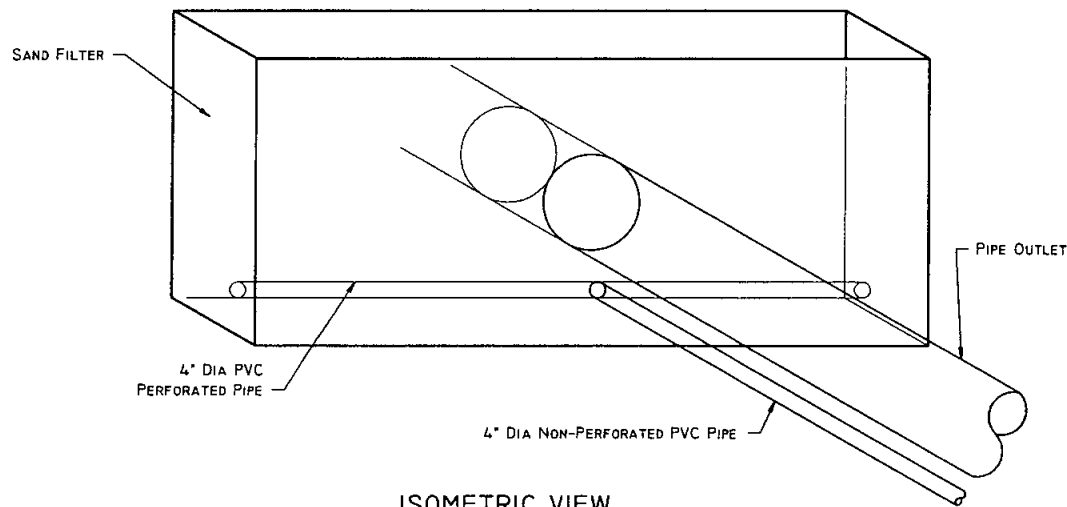
SAND ANTISEEP
 COLLAR

REVISIONS

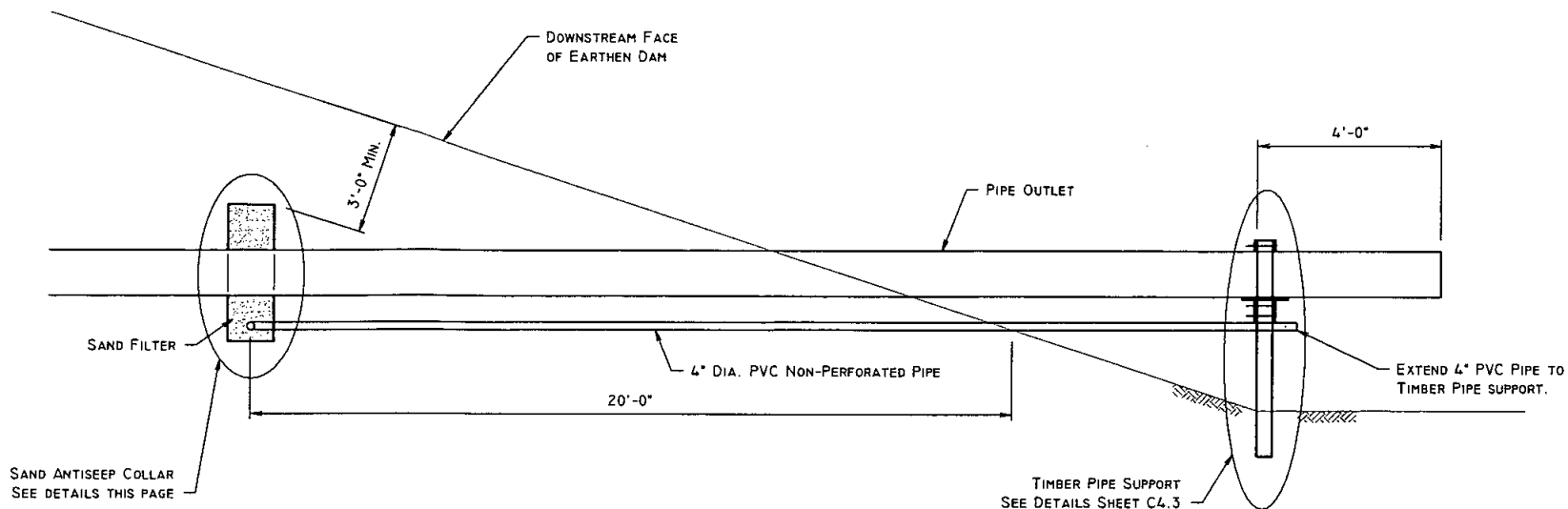
SHEET NO:

C4.5

SEQUENCE ## OF ##

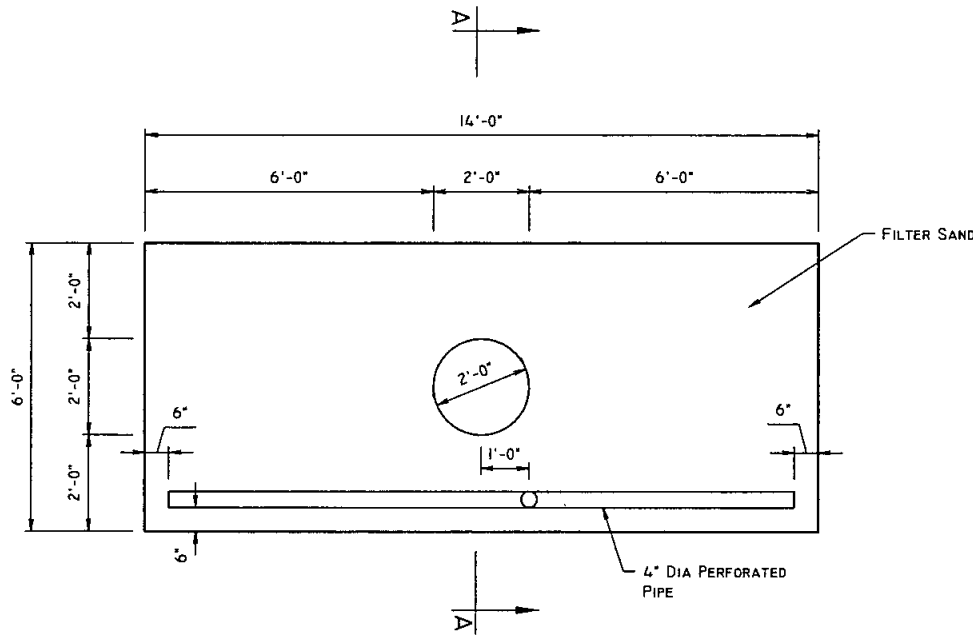


ISOMETRIC VIEW



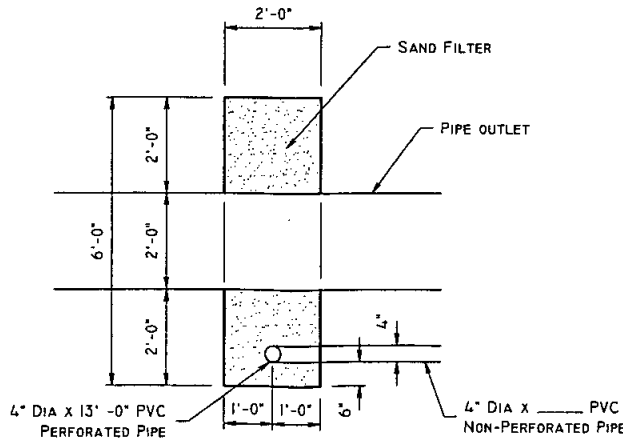
OUTLET

SCALE: 1/8" = 1'-0"



UPSTREAM ELEVATION VIEW

SCALE: 1/4" = 1'-0"



SECTION ELEVATION A-A

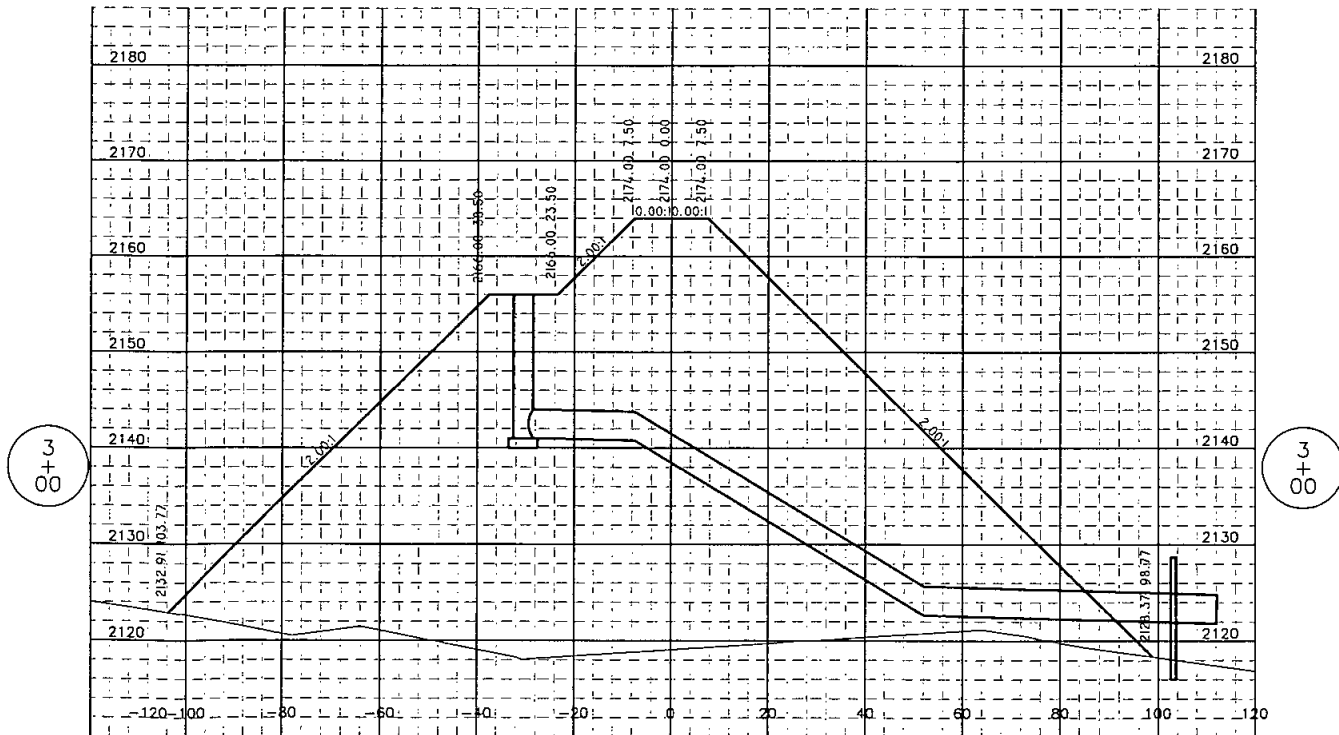
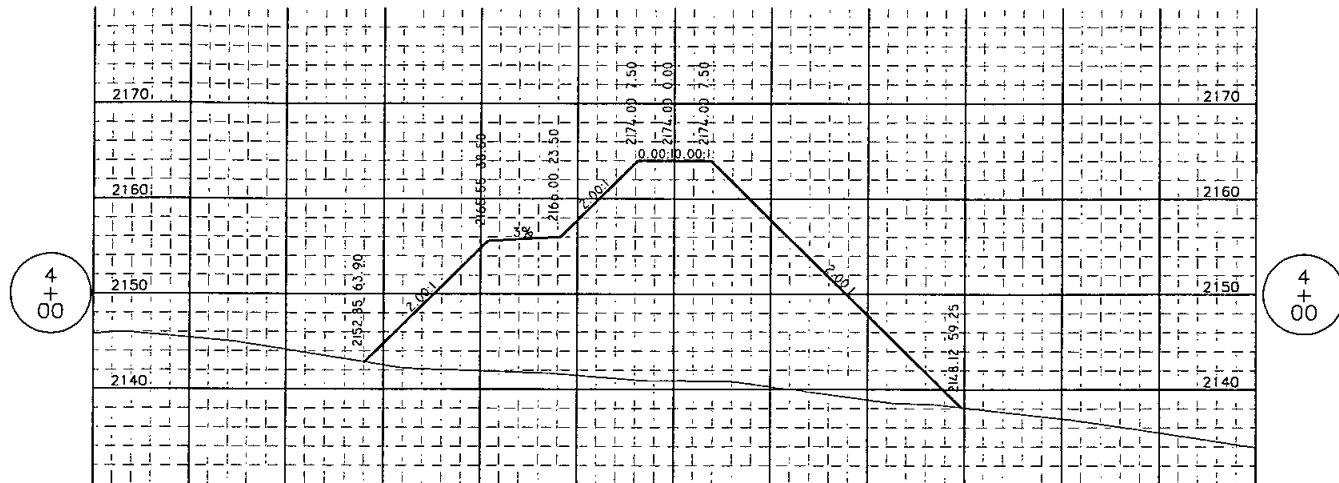
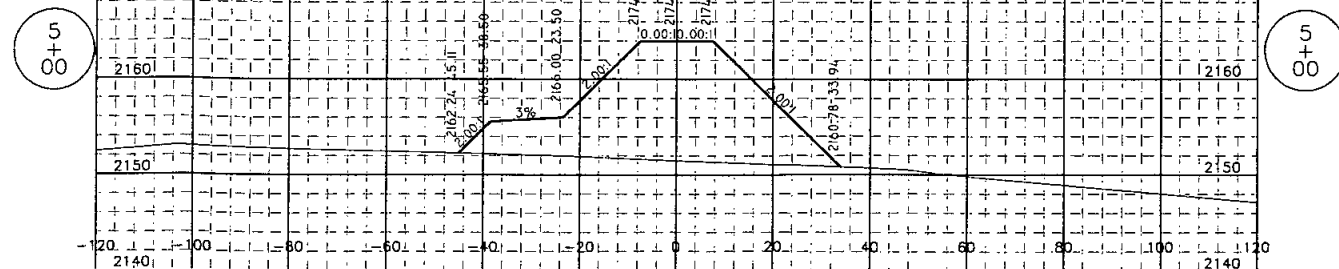
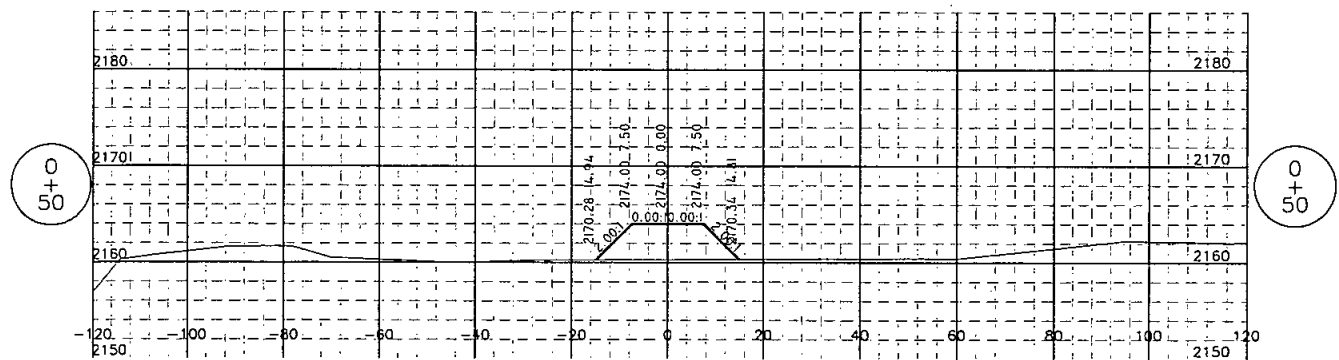
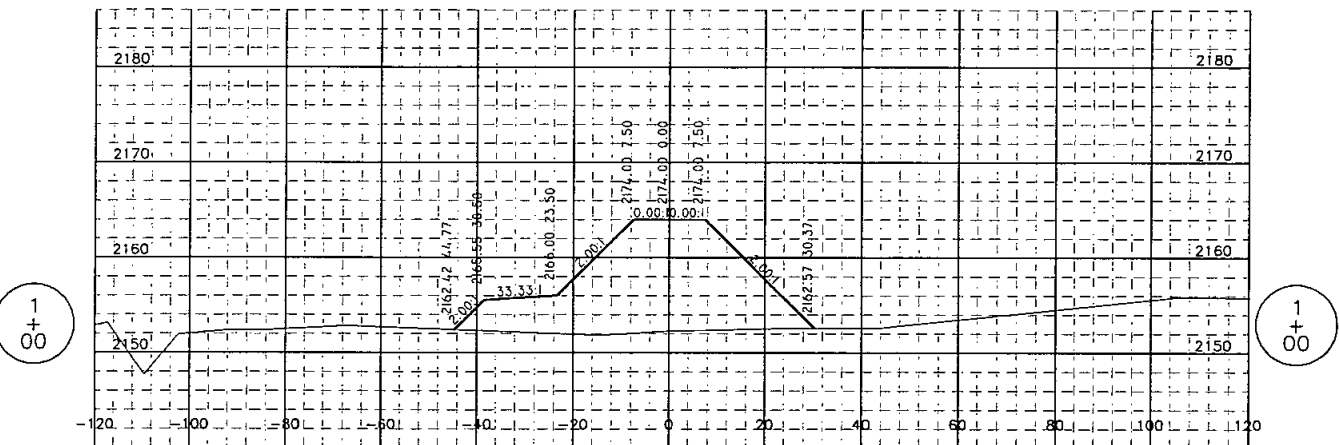
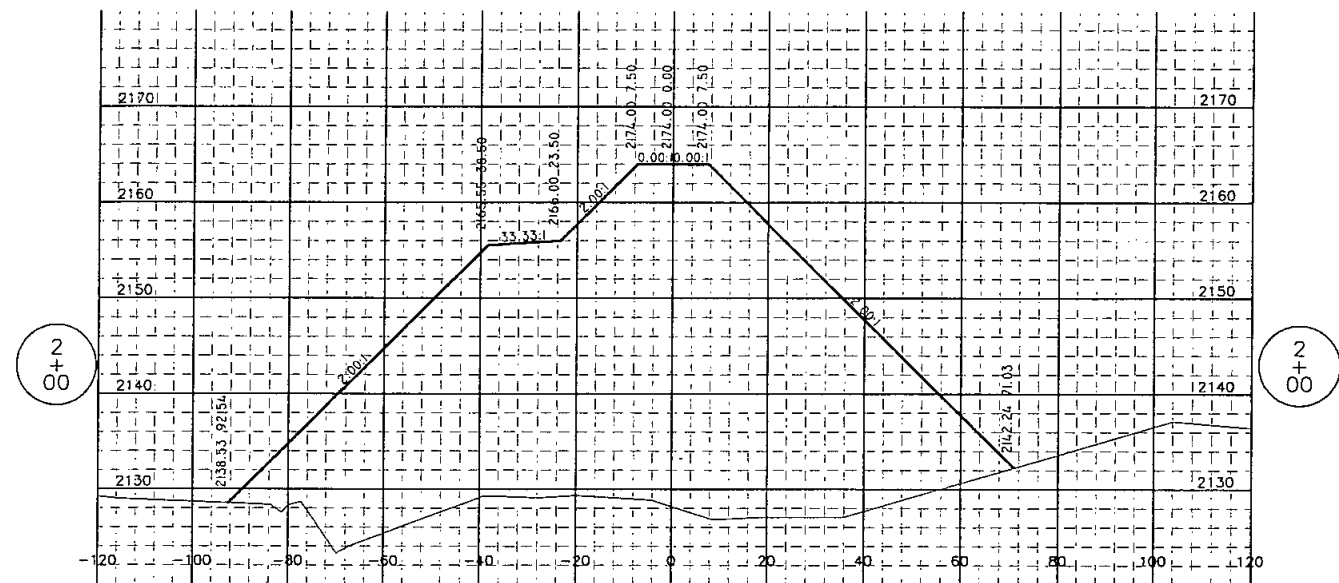
SCALE: 1/4" = 1'-0"

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

NOTES:

A) _____

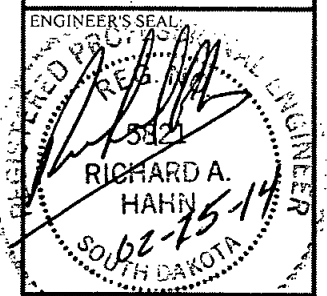


REDUCTION SCALE



Project No.: 1311-01
 Drawn By: RH
 Original Date: 02-20-14

HAHN ENGINEERING
 Incorporated
 CIVIL
 STRUCTURAL
 CONSTRUCTION
 ENGINEERING FIRM
 2860 KINGSWAY RD
 PIERRE, SOUTH DAKOTA 57501
 PH: 605-776-0292
 M: 605-280-6123
 HahnEng@mncomm.com



Kaiser Dam
 238 Ac-Ft
 SE1/4 Sec. 31-96-76
 Tripp Co., SD
 DAM
 CROSS
 SECTIONS

REVISIONS

SHEET NO:
C5.1
 SEQUENCE ## OF ##



DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES

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



March 10, 2014

Clay & Jim Kaiser
31427 296th St.
Millboro, SD 57580

Dear Mr. Kaiser:

We have reviewed the plans and specifications for your dam project located in the SW ¼ SE ¼ of Section 31-T96N-R76W, in Tripp County. The plans and specifications for the construction of the dam are approved. Approval of the plans and specifications does not authorize construction of the dam. The construction of the dam may not begin until Water Permit No. 2711-2 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 Kaiser Dam will be classified as an intermediate size Category 3, Low Hazard dam with a dam height of 48 feet and a normal storage capacity of 242 acre-feet and a maximum storage capacity of 441 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: Richard Hahn, Hahn Engineering, Pierre



**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. 2711-2, Clay and Jim Kaiser**

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. 2711-2, Clay and Jim Kaiser, 31427 296th Street, Millboro SD 57580.

The Chief Engineer is recommending APPROVAL of Application No. 2711-2 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. Low flows as needed for downstream domestic use, including livestock watering, and prior water rights must be bypassed. This permit does not authorize the diversion of water from contributing tributaries when flow from the Keya Paha River at the USGS gaging station located at Wewela is 15 cfs or less, unless written authorization is received from the Chief Engineer. Diversion under this permit shall be in accordance with any written orders issued by the Chief Engineer.

Irrigation from stored water in the dam may take place when the Keya Paha River low flow criteria is in effect as follows:

- When there is no inflow to the dam.
- When inflow is occurring, and equal amount of water is being bypassed through the dam using a low flow outlet mechanism.

2. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Jeanne Goodman, Chief Engineer
March 10, 2014

REPORT ON
WATER PERMIT APPLICATION No. 2711-2
Clay & Jim Kaiser
December 12, 2013

Water Permit Application No. 2711-2 has been filed by Clay & Jim Kaiser to impound 242 acre-feet of water from runoff by constructing a dam located in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 31-T96N-R76W, in Tripp County. The application also requests impoundment of sufficient water to maintain water at the outlet elevation. The application proposes to appropriate 3.91 cubic feet of water per second from the storage dam for irrigation of 274 acres located in the NE $\frac{1}{4}$ of Section 1-T95N-R77W, the SE $\frac{1}{4}$ of Section 36-T96N-R77W and the SE $\frac{1}{4}$ of Section 31-T96N-R76W. The water will also be used for livestock water purposes.

Discussion:

The dam will be classified as an intermediate size, Category 3, Low Hazard dam. The dam has been designed by Hahn Engineering. The plans and specifications have been reviewed and will be approved; however, construction of the dam cannot begin until Water Permit Application No. 2711-2 is approved.

The dam will be 48 feet high with a normal storage capacity of 242 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 441 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 100-year frequency event.

The dam has a drainage area of 6,700 acres or 10.46 square miles. The dam has a 48-inch diameter CMP riser with a 36 inch diameter CMP barrel with 8.0 feet of freeboard as the primary spillway, and an 80 foot wide earthcut spillway with 6.0 feet of available freeboard as the secondary spillway. A 100-year frequency event produces a peak runoff of approximately 2,050 cfs. The earthcut secondary spillway will have a capacity of approximately 3,050 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 369 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 780 acre-feet, and the annual yield with a 10 percent chance of occurrence, or 1 out of 10 years, is expected to be 2,450 acre-feet.

The Kaiser Dam will be located in the SE $\frac{1}{4}$ of Section 31-T96N-R76W on an unnamed tributary to the Keya Paha River, about 1.5 miles upstream of the confluence of the unnamed tributary and the Keya Paha River.

Review of Existing Water Rights and Qualifications:

The water source for this proposed project is an unnamed tributary to the Keya Paha River. There are 13 existing water rights appropriating 22.92 acre feet from the Keya Paha River and contributing tributaries.

The Water Management Board at a February 27, 1991, hearing revised the qualifications on water rights/permits from the Keya Paha River and contributing tributaries. The Board adopted the following qualification to be added to all new and existing water rights/permit from the Keya Paha River and tributaries.

Low flows as needed for downstream domestic use, including livestock watering, and prior water rights must be bypassed. This permit does not authorize the diversion of water from the Keya Paha River or contributing tributaries when flow from the Keya Paha River at the USGS gaging station located at Wewela is 15 cfs or less, unless written authorization is received from the Chief Engineer. Diversions under this permit shall be in accordance with any written orders issued by the Chief Engineer.

The 15 cfs by pass was selected to assure that water is available for domestic use and prior water rights. Table 1 shows the probability for flow availability at the USGS gaging station at Wewela, based upon 68 years of flow data. Based upon this information there is a 90 percent probability that flow will be at or above 15 cfs during the irrigation season except for the months of August and September. A 90 percent probability indicates, based upon historical records, the Chief Engineer would have to issue shutoff orders, on average, 1 out of 10 years.

Probability	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
90%	7.1	15.0	39.8	51.9	37.3	28.7	15.1	9.2	11.0	20.9	21.2	13.3
75%	17.6	28.3	63.4	73.9	59.2	41.5	23.2	17.3	18.1	25.5	29.9	22.5
50%	30.0	46.3	103.6	117.6	90.5	72.4	40.3	28.6	26.2	33.1	39.8	33.5
25%	44.2	77.4	179.7	199.1	164.2	131.6	67.2	43.4	39.3	47.0	57.2	48.0
10%	70.6	162.3	358.1	339.0	305.1	256.5	123.6	71.6	55.5	75.4	76.4	69.6

Table 1 – Probability Table for Flow at the USGS Gaging Station 06464500 - Keya Paha River at Wewela, SD - 1938 to 2013

In the past 20 years, the Chief Engineer has issued shutoff orders to water right holders on the Keya Paha River and tributaries once in 2012. However, letters warning of low flow conditions and reminding the water right holders of the 15 cfs flow limit were sent out three additional years in 2006, 2007 and 2008.

If this water permit application is approved, the permit should contain the Wewela gaging station by pass qualification. If in the future shutoff orders were issued, the water permit holder would be allowed to continue to irrigate from the dam as long as the water was placed into storage prior to the shutoff order being issued. Any inflow to the dam must be bypassed until the shutoff order was rescinded or expired.

Conclusions:

1. Water Permit Application No. 2711-2 should be approved since unappropriated water is available, and approval should not have any adverse effect on existing Water Permits/Rights.
2. The applicant has received a Permanent Flood Easement for 0.2 acres, and a Temporary Flood Easement for 3.65 acres located in the NE ¼ of Section 31-T96N-R76W.

3. If approved, the water permit should contain the following qualification to protect existing rights and domestic use:

Low flows as needed for downstream domestic use, including livestock watering, and prior water rights must be bypassed. This permit does not authorize the diversion of water from contributing tributaries to the Keya Paha river when flow in the Keya Paha River at the USGS gaging station located at Wewela is 15 cfs or less, unless written authorization is received from the Chief Engineer. Diversions under this permit shall be in accordance with any written orders issued by the Chief Engineer.



Timothy G. Schaal, P.E.
Engineer IV



Mark D. Rath
Natural Resources Engineer III

State of South Dakota, county of Tripp-ss.

of said county being first duly sworn, on oath says that
She is the General Manager of

a weekly newspaper printed and published at Winner, said county of Tripp, and has full and personal knowledge of all the facts herein stated that said newspaper is a legal newspaper and has a bona fide circulation of a least two hundred copies weekly and has been published within said County for fifty-two successive weeks prior to the publication of the notice herein mentioned, and was printed wholly or in part in a office maintained at said place of publication; that the

Notice of Application

a printed copy of which, taken from the paper in which the same was published, is attached to this sheet, and is made a part of this affidavit, was published in said newspaper at least one in each week for 1 weeks, on the day of each week on which said newspaper was regularly published to wit:

That the full amount of the fees for the publication of the
*annexed notice is \$ 21.60

Subscribed and sworn to before me this 19th
day of March, 2014

Notary Public

My Commission Expires January 20, 2020

APR - 3 2014

**WATER RIGHTS
PROGRAM**

TO APPROPRIATE WATER

TO APPROPRIATE WATER
Notice is given that Clay & Jim Kaiser, 31427 296th St. Millboro SD 57580 have filed an application for a water permit to impound 242 acre-feet of water from runoff by constructing a dam located in the SW 1/4 SE 1/4 Section 31 with water impounded in portions of the SE 1/4 Section 31; all in T96N-R76W. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The applicant proposes to appropriate 3.91 cubic feet of water per second from the storage dam for irrigations of 274 acres located in the NE 1/4 Section 1-T95N-R77W, SE 1/4 Section 36-T96N-R77W and the SE 1/4 Section 31-T96N-R76W. The water will also be used for livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7941-3 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 recommend, unless a petition is filed 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 a 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 applicants mailing address is given above. A petition filed by either an interested person or the applicant must be filed

by March 31, 2014.

The petition may be informal, but must include a statement describing the petitioner's interest in the application and 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 appellation. Steven M. Pimer, Secretary, Department of Environment and Natural Resources.

Natural Resources.
Published once at the total approximate
cost of \$21.60 (12) nos 2no18190199.

RECEIVED

MAR 25 2014

Form 8

WATER RIGHTS
PROGRAM

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)

County of Hughes) SS

I, Marylinn 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 date:

3-19-14

Cost of Printing \$33.01

Marylinn Baker
(Signature)

Bookkeeper
(Title)

3-21-14
(Date Signed)

March 19, 2014

Public Notice

acre-feet of water from runoff by constructing a dam located in the SW 1/4 SE 1/4 Section 31 with water impounded in portions of the SE 1/4 Section 31; all in T86N-R76W. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The applicant proposes to appropriate 3.91 cubic feet of water per second from the storage dam for irrigation of 274 acres located in the NE 1/4 Section 1-T95N-R77W, SE 1/4 Section 36-T86N-R77W and the SE 1/4 Section 31-T96N-R76W. The water will be also be used for livestock water purposes. Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7941-a 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 March 31, 2014. 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 Grontlund at the above Water Rights Program address to request copies of information pertaining to this application. Steven M. Pinner, Secretary, Department of Environment and Natural Resources, 31427 Resources, 2950 S. Milboro SD 57580 have filed an application the total approximate cost of to impound 242 \$33.01.

SNAXLP 134122*
10/13/13
NOTICE OF
APPLICATION
NO. 2711-2 to
Appropriate
Water
Notice is given
that Clay & Jim
Kaiser, 31427
Resources, 2950
S. Milboro SD
57580 have
filed an application
for a water permit
to impound 242
\$33.01.



DEPARTMENT OF ENVIRONMENT
and NATURAL RESOURCES

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



March 10, 2014

Winner Advocate
125 W 3rd St
Winner SD 57580

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 2711-2 to Appropriate Water. Please publish the notice once on March 19, 2014. 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 Clay & Jim Kaiser, 31427 296th St, Millboro SD 57580 (Ph # 605-557-3366).

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



March 10, 2014

Capital Journal
PO Box 878
Pierre SD 57501

ATTENTION: Legal Public Notice

Enclosed is a Notice on Application No. 2711-2 to Appropriate Water. Please publish the notice once on March 19, 2014. 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 Clay & Jim Kaiser, 31427 296th St, Millboro SD 57580 (Ph # 605-557-3366).

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

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

March 10, 2014

Clay & Jim Kaiser
31427 296th St
Millboro SD 57580

Dear Sirs:

Water Permit Application No. 2711-2 for irrigation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Winner Advocate printed at Winner SD (Ph # 605-842-1481) and the Capital Journal printed at Pierre SD (Ph # 605-224-7301). 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
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.

Instruction to Newspaper - Publish the Notice on March 19, 2014. 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. 2711-2 to Appropriate Water

Notice is given that Clay & Jim Kaiser, 31427 296th St, Millboro SD 57580 have filed an application for a water permit to impound 242 acre-feet of water from runoff by constructing a dam located in the SW 1/4 SE 1/4 Section 31 with water impounded in portions of the SE 1/4 Section 31; all in T96N-R76W. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The applicant proposes to appropriate 3.91 cubic feet of water per second from the storage dam for irrigation of 274 acres located in the NE 1/4 Section 1-T95N-R77W, SE 1/4 Section 36-T96N-R77W and the SE 1/4 Section 31-T96N-R76W. The water will also be used for livestock water purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 7941-3 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 March 31, 2014.

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 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



APR 25 2014

Clay & Jim Kaiser
31427 296th St
Millboro SD 57580

Dear Sirs:

Enclosed is Water Permit No. 2711-2 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,

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

enclosures



Sec 31 - T096N - R76W - SE 1/4

60 Acres irrigation system
is not completed

Sec 36 & Sec 01 may contain a few
more acres than stated.

RECEIVED

NOV 04 2014

WATER RIGHTS
PROGRAM

No One Does More For Veterans.

2711-2

RECEIVED

NOV 04 2014

WATER RIGHTS
PROGRAMNOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USEDate 10-24-14TO: Water Rights Program, DENR
523 E. Capitol
Pierre, SD 57501-3181

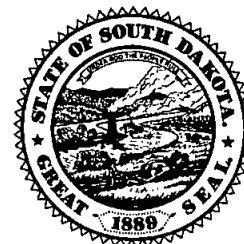
FROM:

Clay Kaiser
(name)31427 296th st
(address)Millboro SD 57586
(city, state, zip)(605) 557-3366
(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. 2711-2 states that the water use system is to be constructed by3-31-2019, and water is to be put to beneficial use by 3-31-2023
(date) (date)The water use system was completed on 9-4-14
(date)Applying the water to beneficial use was completed on 9-4-14
(date)

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

Clay Kaiser
(signature)

WATER RIGHTS PROGRAM -- FILE DOCUMENTATION

NAME & ADDRESS: Clay Kaiser, 31427 296th St, Millboro SD 57580

DATE: December 11, 2014

TELEPHONE: 605 557-3366

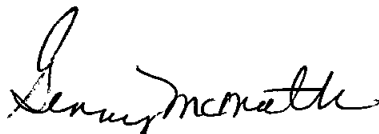
RE: completion of works

COMMENTS:

Along with the 2014 irrigation questionnaire Mr. Kaiser submitted the completion of works form indicating the system was completed and ready for inspection. He also wrote a note about part of the system not being completed.

I called to find out about the extent of development. He confirmed that he had most of the system done but does not have the pipeline put in for the 60 acres in the SE ¼ Section 31. I explained that he had a full five years to construct the project and that we would wait to schedule an inspection until the entire system was completed.

He was worried that unless he sent in the "completion of works form" he would be unable to continue irrigating the two quarters he had a system on. I told him he was entitled to irrigate all of the acreage authorized under the permit and still had time on his permit for construction of the remainder of the system.



Genny McMath
Water Rights Program

Schaal, Tim

From: Gronlund, Eric
Sent: Tuesday, January 10, 2017 11:27 AM
To: Schaal, Tim
Subject: 2711-2, Kaiser

Clay Kaiser called. Has this permit to irrigate from his dam. Has two of the pivot up. For the last 50 acre pivot, he inquired since the land is on the opposite side from the pump station whether he can trench the pipeline in along the dam face. I said I doubt that would be advisable but that he should talk to you. He indicated he could put it above ground but that would require on going maintenance (winter draining and potential for damage).

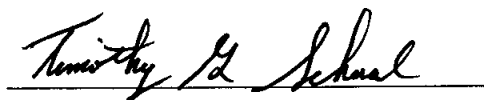
If he need to go above ground, he'd still bury up to a point and then bring out of the ground across the dam. Inquired whether he could still bury in the natural secondary spillway area.

He's going to be out this afternoon but asked that you call and leave a message. Clay Kaiser – 605 557-3366.

File No. 2711-2Water Rights Division -DENR
Conversation or File DocumentationNAME OF PERSON OR FILE: Clay KaiserADDRESS: 31427 296th Street, Millboro, SD COUNTY: TrippDATE: January 11, 2017 TELEPHONE: 557-3366

RE:

I talked to Clay Kaiser today, he wants to bury a water line across his dam and asked if we had any requirements against that. I told him no we did not have any requirements against that, but had some concerns. I told him to be careful when connecting the pipe joints and to be sure they were water tight and to drain the pipe when not in use. He said they would be sure to drain the pipe. Also suggested they look for any leaks or wet areas on the dam, and to be sure to reclaim the area when they cross the earth cut secondary spillway. I told him to let us know when he was done setting up their irrigation and we could come down and inspect the dam and Water Permit.



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