

**WATER PERMIT NO. 6366-3**

Name of Applicant: Mark Amundson, Sutton Bay

Address: 6829 W Honeysuckle Court, Sioux Falls SD 57106

Phone: 605 361-9412

Amount of Water Claimed: 100 acre-feet

Total Acres: NA

Source of Water Supply: runoff & Missouri River

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

County: Sully

Type of Waste Disposal System:

Location: 12 miles northwest of Agar

PRIORITY

Date Received: 8-21-2002

Application/License Fee: \$275

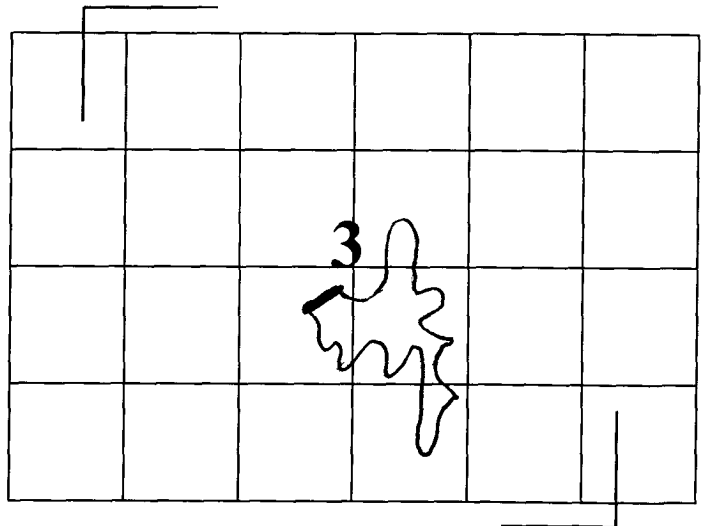
Corrected Application Received: 10-17-2002

Period of Annual Use: January 1 – December 31

Remarks: Will utilize diversion works from Miss R. authorized by No. 6269-3 to fill and maintain dam

Diversion Point: NE ¼ SW ¼ Sec 3-T116N-R79W

Water Impounded: NE ¼ SW ¼, W ½ SE ¼ Sec 3-T116N-R79W



Depth of Well: NA

Well Driller: : NA

Remarks:

Type of Map: topo

Prepared by: Laurie Schultz, PE

Reviewed and the Number Assigned on: 10-17-02

By: **Karen Schlaak**

Notice of Hearing - date to intervene: \_\_\_\_\_

**SOUTH DAKOTA  
WATER PERMIT NO. 6366-3**

Date of first receipt of application October 17, 2002.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 6366-3 to Mark Amundson, Sutton Bay, 6829 West Honeysuckle Court, Sioux Falls SD 57106 authorizing the construction of the dam and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 6366-3 authorizes impoundment of 100 acre-feet of water from runoff and Missouri River diversions by constructing a dam located in the NE  $\frac{1}{4}$  SW  $\frac{1}{4}$  Section 3 with water impounded in the NE  $\frac{1}{4}$  SW  $\frac{1}{4}$ , W  $\frac{1}{2}$  SE  $\frac{1}{4}$  Section 3; all in T116N-R79W. This permit will utilize the existing diversion works from the Missouri River authorized by Water Permit No. 6269-3 to fill and maintain the dam as needed. Water Permit No. 6269-3 appropriates 3.12 cubic feet of water per second from the Missouri River located in the NE  $\frac{1}{4}$  SW  $\frac{1}{4}$  Section 33-T117N-R79W and the SE  $\frac{1}{4}$  SW  $\frac{1}{4}$  Section 4-T116N-R79W for the irrigation of a 100 acre golf course.
2. The water appropriated shall be used for the purpose of fish and wildlife propagation and recreation and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 6366-3 is November 25, 2002.
5. The date from which applicant may claim right is October 17, 2002.
6. One-fifth of the construction is to be completed on or before May 25, 2002.
7. All construction is to be completed on or before November 25, 2007.
8. Water is to be put to beneficial use on or before November 25, 2011.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

**QUALIFICATIONS**

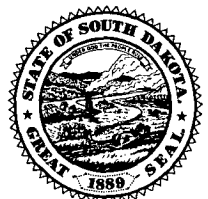
1. Water Permit No. 6366-3 authorizes storage of 100 acre feet of water in dam. The lake may be filled one or more times per year.
2. Pumping from the Missouri River into the dam is authorized to the primary outlet elevation of 1757.0 feet mean sea level.
3. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

**WATER MANAGEMENT BOARD**

By: *Eric Garland*  
Garland Erbele, Chief Engineer  
Water Rights Program  
Department of Environment and Natural Resources

JAN 15 2003

date



FORM 2: Application for uses other than irrigation  
(type or print)

|                                                                                                                    |                                    |                                                      |
|--------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------|
| Mail to:<br>Water Rights Program<br>Joe Foss Building<br>523 E. Capitol<br>Pierre, SD 57501-3181<br>(605) 773-3352 | No. <u>6366-3</u>                  | (office use only)<br>Hydrologic Unit <u>10130105</u> |
|                                                                                                                    | Basin <u>Missouri River</u>        |                                                      |
|                                                                                                                    | Newspaper <u>Onida Watchman</u>    | <u>Onida</u>                                         |
|                                                                                                                    | <u>Potter Co. News, Gettysburg</u> |                                                      |

RECEIVED  
OCT 17 2002  
WATER RIGHTS  
PROGRAM

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

Check use(s) of water:

|                                                 |                                           |                                                     |                                          |
|-------------------------------------------------|-------------------------------------------|-----------------------------------------------------|------------------------------------------|
| <input type="checkbox"/> Municipal              | <input type="checkbox"/> Suburban Housing | <input checked="" type="checkbox"/> Recreational    | <input type="checkbox"/> Institutional   |
| <input type="checkbox"/> Rural Water System     | <input type="checkbox"/> Commercial       | <input checked="" type="checkbox"/> Fish & Wildlife | <input type="checkbox"/> Geothermal Heat |
| <input type="checkbox"/> Domestic (over 18 gpm) | <input type="checkbox"/> Industrial       | <input type="checkbox"/> Other                      |                                          |

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

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

- Name of Applicant Mark Amundson, Sutton Bay Phone 605-361-9412  
(check one) ☒ Owner ☐ Tenant/lessee  
Mailing Address 6829 West Honeysuckle Court, Sioux Falls State SD 57106  
(Street, RR, or Box and City) (Zip Code)
- Amount of water claimed \_\_\_\_\_ \*CFS or \_\_\_\_\_ \*\*GPM 100 AF (Normal Pool) \*\*\*AF  
(\*Cubic Feet per Second) (\*\*Gallons per Minute) (\*\*\*Acre Feet - storage capacity of dam/dugout or annual use if applicable)
- Source of water supply Runoff from 194 acres, and Missouri River
- Location of point of diversion (example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)  
NE 1/4 SW 1/4 SE 1/4 of Section 3, T116N, R79 W Water Impounded: NE 1/4 SW 1/4, W 1/2 SE 1/4  
Sec 3 - T116N - R79W County Sully
- County or counties where water will be used Sully
- Annual period during which water is to be used Annually for recreation and wildlife Jan 1 - Dec 31
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

The project will include construction of a dam on a 194 acre drainage area near Sutton Bay in Sully County. The dam will be used for recreation (hunting and fishing). The intent of this application is to authorize a dam with a 100 acre foot storage capacity and to utilize the existing diversion works from the Missouri River authorized by Water Permit No. 6269-3 to fill and maintain the dam as needed. Water Permit No. 6269-3 appropriates 3.12 cfs to irrigate 100 acres. This application needs to add the use of filling and maintaining the dam to the outlet elevation when runoff is not sufficient to offset evaporation.

STATE OF SOUTH DAKOTA)  
County of Hughes SS

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

I, Mark Amundson, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Applicant's signature [Signature]

Subscribed and sworn to before me this 16th day of October 20 02

JODI L. PEASE

My Commission Expires  
January 18, 2008

NOTARY PUBLIC  
SEAL SOUTH DAKOTA  
Notary Public Signature

(type or print in ink)

**1. Well Information - Proposed Construction**

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

On applicants property \_\_\_\_\_ On property owned by others \_\_\_\_\_

**2. Wastewater Disposal System Information**

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

**3. Dugout Information**

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

**4. Water Storage Dams**

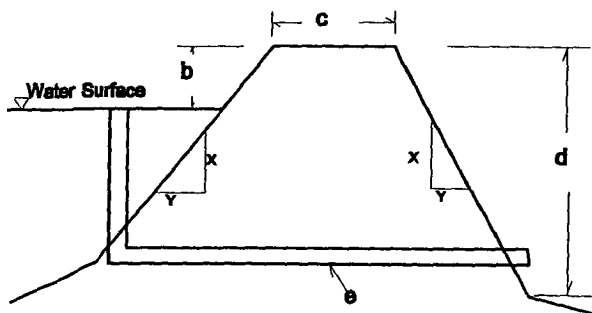
If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

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

**Brosz Engineering, Inc.**

**3030 Airport Road**

**Pierre, SD 57501**



- b) Freeboard **4'**
- c) Crest Width **14'**  
Crest Length **300'**
- d) Height **37'**
- e) Primary Outlet Capacity **435 cfs**  
If pipe, diameter **60"**
- f) Secondary Spillway Capacity **140 cfs**  
Spillway Width **60'**
- g) X & Y Slope \_\_\_\_\_  
Upstream **1:3**  
Downstream **1:3**
- h) Surface Area of Impoundment **17.2 acres**
- i) Storage **100** Acre Feet
- j) Drainage Area Above Dam **194** Acres

## Water Permit Application No.

Top of Dam Elev. - 1765  
 2nd Spillway Elev. - 1761  
 P. Spillway Elev. - 1757  
 DIS Toe Elev. - 1728

Cat. 3 - Low Hazard Dam

Ht. = 37 ft.

Normal Storage Capacity - 100.16  
 Int. Storage Capacity - 172  
 Max. Storage Capacity - 281

Int. Capacity x Eff Ht =  $172 \times 33 = 5676 > 3000 \therefore 50\text{yr}$   
Minimum Spillway Design

From USGS WRI 80-80 "Tech for Est. Flood Peaks... in 50"

DA = 194 Ac = 0.30 mi<sup>2</sup>

Slope = 170 ft/mi

Si = 3.33

$$Q_{50} = 106 A^{.63} S^{.45} S_i^{-.69}$$

$$= 106 (0.30)^{.63} (170)^{.45} (3.33)^{-.69}$$

$$= 106 (0.47) (10.09) (0.44)$$

$$= \underline{220 \text{ cfs}}$$

$$Q_{100} = 132 A^{.65} S^{.46} S_i^{-.67}$$

$$= 132 (0.30)^{.65} (170)^{.46} (3.33)^{-.67}$$

$$= 132 (0.46) (10.62) (0.45)$$

$$= \underline{288 \text{ cfs}}$$

From USGS WRI 98-4055 "Tech for Est. Peak-Flow Magnitude... in 50"

DA = 0.30

$$Q_{50} = 944 \times CA^{.627}$$

$$= 944 \times (0.30)^{.627}$$

$$= \underline{447 \text{ cfs}}$$

$$Q_{100} = 1270 \times CA^{.663}$$

$$= 1270 \times (0.30)^{.663}$$

$$= \underline{575 \text{ cfs}}$$

Secondary Spillway Flow

$$Q = CLH^{3/2} \quad C = 2.6$$

$$= 2.6 (60) (4)^{1.5} \quad L = 60$$

$$= \underline{1250 \text{ cfs}} \quad H = 4$$

NRCs Annual Yield  
 DA = 194 ISO = 2 CN = 80 (Dupree - Pasture-Good)

$$80\% \text{ chance} = 0.25$$

$$0.25 \times 194/12 = \underline{4 \text{ Ac-Ft}}$$

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

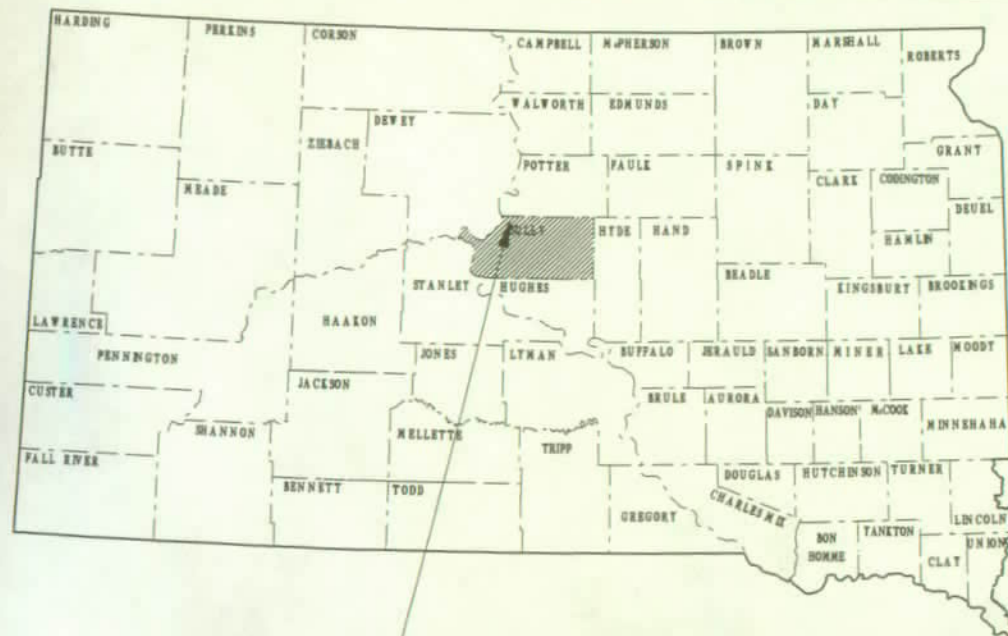
$$0.62 \times 194/12 = \underline{10 \text{ Ac-Ft}}$$

$$10\% \text{ chance} = 2.5$$

$$2.5 \times 194/12 = \underline{40 \text{ Ac-Ft}}$$

Section 74:02:08:09

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

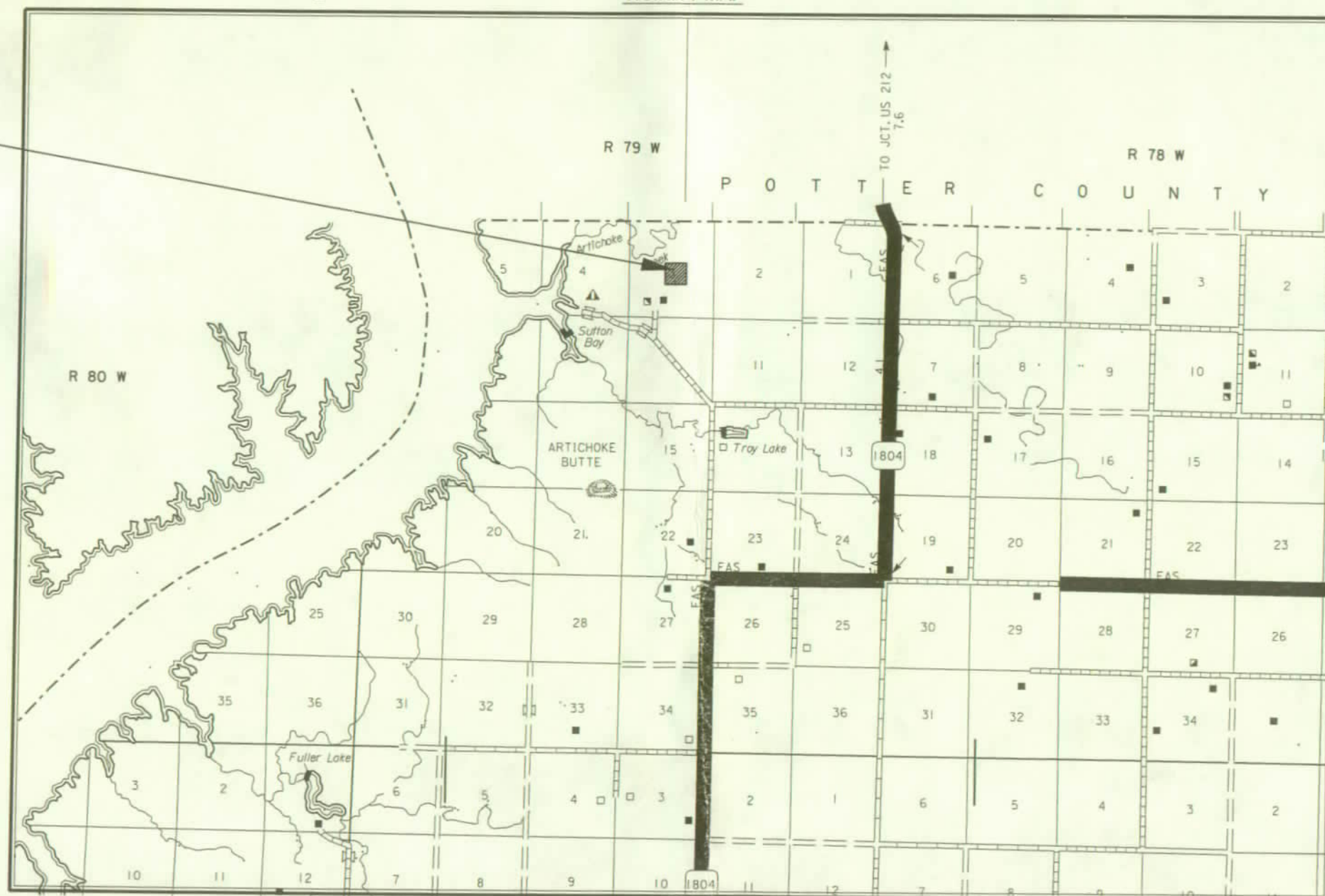


PROJECT

# **BROSZ ENGINEERING, INC.** **PLANS FOR PROPOSED**

## **SUTTON BAY DAM** **DAM FILL GRADING,** **RIPRAP PLACEMENT,** **PRIMARY SPILLWAY INSTALLATION**

VICINITY MAP



Project Site

**SCALES**  
 PLAN 1" = 200'  
 PROFILE HORIZONTAL = 1" = 200'  
 VERTICAL = 1" = 20'  
 CROSS HORIZONTAL = 1" = 40'  
 SECTIONS VERTICAL = 1" = 20'

**LEGEND**

STATE AND NATIONAL LINE  
 COUNTY LINE  
 SECTION LINE  
 QUARTER LINE  
 SIXTEENTH LINE  
 PROPERTY LINE  
 SURVEY LINE  
 ROW LINE  
 WORK LIMITS

| SUTTON<br>BAY           | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------|---------|--------------|-----------------|
|                         | DAM     | 1            | 21              |
| Plotting Date: 09/30/02 |         |              |                 |
| Revised Date: _____     |         |              |                 |
| Initials: SS            |         |              |                 |

### INDEX OF SHEETS

- Title Sheet & Layout Map
- Notes
- Estimate of Materials/Notes
- Site Map
- Typical Sections
- Plan Sheet
- Profile Sheet
- General Dam Sheet
- Outlet Support
- Primary Spillway Inlet
- Cross Sections
- Soil Investigation Information
- Borrow Areas

02-203  
 RECEIVED  
 OCT - 9 2002  
 WATER RIGHTS  
 PROGRAM



SPECIFICATIONS

The work on the project shall consist of removing and replacing topsoil, unclassified excavation, primary spillway installation, installation of riprap revetment along the face of the dam and at the outfall of the primary spillway, erosion control through seeding, fertilizing and mulching. The work shall include all labor, equipment, materials and fuel to complete the items above and reasonably associated with those items. The work shall follow the Standard Specifications for Roads and Bridges, 1998 Edition of the South Dakota Department of Transportation and any supplemental specifications thereto adopted. The specifications shall be modified as stated below.

SECTION 120 - EXCAVATION AND EMBANKMENT CONSTRUCTION

120.2B Rock Excavation:

Rock Excavation consists of excavating hard solid rock in ledges and bedded deposits which is so hard or firmly cemented that it must be blasted before it can be excavated and removed. An excavator mounted with a drop hammer or a heavy duty dozer mounted with ripper teeth must be used to break the material into chunks.

Rock excavation includes all boulders and other detached rock having a volume of (1) one cubic yard or more.

If rock is encountered which must be blasted or ripped as described above, the material shall be paid for at \$8.00 per cubic yard, as measured in the field by the Engineer.

120.3A2 Salvage of Topsoil:

All topsoil shall be removed to a depth of 6" from the footprint of the dam and borrow areas and replaced on the downstream face and used to restore borrow areas upon completion of construction.

120.3B3a Specified Density Method:

The Contractor shall use the Specified Density Method to compact the embankment.

The contractor shall scarify the exposed subgrade surface for the footprint of the dam to a depth of twelve inches and re-compact to the required density. Any areas of excessively wet material below the grade shall be excavated and replaced with fat clay borrow material. The excavated wet material can be dried and used in the embankment once it has dried to optimum moisture.

Special care shall be taken to ensure proper benching technique is implemented when placing embankment against existing slopes.

Embankment material shall be spread in horizontal layers not exceeding 8 inches in thickness (loose measurement) over the full width of the proposed embankment section. Motor graders shall be used on each lift to spread the material and to obtain uniform thickness. The construction equipment shall be routed uniformly over the entire area of each layer. The addition of water or drying of fill material to maintain ± 3% optimum moisture is required at all times.

120.3C3f Water:

Sufficient equipment shall be available to apply the quantity of water required to secure the proper compaction before evaporation, absorption, or drainage prevents or interferes with the specified results. Moisture content of materials shall be uniform for the full depth and extent of each layer.

120.4 Method of Measurement:

A. Excavation: Volume shall be computed in cubic yards by the average end area method. The accepted quantity of excavation shall be measured in its original position by surveying cross-sections before the topsoil is removed. Final cross-sections shall be taken after the topsoil is replaced.

The volume of topsoil that is stockpiled and replaced shall be paid for as Placing Topsoil and shall be measured when in the stockpile. This volume shall be added to the volume computed from the cross-sections unclassified quantity. No allowance shall be made for shrinkage when stockpiling.

SECTION 230 - SALVAGING, STOCKPILING AND PLACING TOPSOIL

230.4 Method of Measurement:

The quantity for work in this section shall be included in the "Unclassified Excavation" except for placement which will be paid for under "Placing Topsoil" bid item.

SECTION 450 - PIPE CULVERTS

450.1 Description:

The work shall consist of furnishing and installing new metal culvert.

450.3 Construction Requirements:

Class C bedding shall be used.

450.5 Basis of Payment:

The new metal culvert shall be paid for by the linear foot furnished, and by the linear foot installed.

SECTION 680 – UNDERDRAINS

The perforated and un-perforated PVC pipe, and all fittings shall meet the material requirements for ASTM D1785, Schedule 40 PVC.

SECTION 700 – RIPRAP

Riprap for the entire project shall be class B. Riprap shall be salvaged from the surrounding hillsides. Geotextile shall be placed under all riprap and shall conform to South Dakota Standard Specifications for Roads and Bridges, Section 831.

SECTION 730 - SEEDING

730.3 Construction Requirements

The bid item Permanent Seeding includes all materials, equipment and labor necessary to seed all areas disturbed by the construction of this project.

The seed mixture shall consist of:

|                                          |                              |
|------------------------------------------|------------------------------|
| 8.0 PLS (Pure Live Seed) pounds per acre | Oahe Intermediate Wheatgrass |
| 5.0 PLS pounds per acre                  | Western Wheatgrass           |
| 5.0 PLS pounds per acre                  | Green Needlegrass            |
| 18 PLS pounds per acre                   |                              |

Tags for each bag of seed with testing analysis shall be supplied at or before the time of application.

Fertilizer with a minimum guaranteed analysis of 18-46-0 shall be applied to all newly seeded areas at the rate of 100 pounds per acre. The Contractor prior to or at the time of application shall provide certificate of chemical analysis.

Mulch shall consist of grass, hay or straw and shall be blown on and punched in at the rate of (2) two tons per acre on all newly seeded areas.

730.4 Method of Measurement

The area to be seeded, fertilized and mulched is estimated at 1 acre.

730.5 Basis of Payment

The computed quantities of seeding as shown on these plans and included in the estimate of quantities shall be paid for as per plan quantities, with additions and subtractions due to changes in the field agreed on by the Contractor and the Engineer. No construction field measurement shall be taken, otherwise.

RATES OF MATERIALS

|                         |      |             |
|-------------------------|------|-------------|
| <b>Water:</b>           |      |             |
| Unclassified Excavation | 15   | Gal / CY    |
| <b>Erosion Control:</b> |      |             |
| Seeding                 | 18.0 | Lbs / Acre  |
| Fertilizing             | 100  | Lbs / Acre  |
| Mulching                | 2.0  | Tons / Acre |

INCIDENTAL ITEMS

- 3/8" x 5-1/2" Bolt, nut, and 2 washers: Incidental to F&I 4" PVC pipe.
- Grout for manhole incidental to F&I 84" Concrete Manhole.

# ESTIMATE OF MATERIALS

| BID ITEM<br>NUMBER | ITEM                                   | QUANTITY | UNIT |
|--------------------|----------------------------------------|----------|------|
| 1                  | Mobilization                           | LS       | LS   |
| 2                  | Unclassified Excavation                | 1440     | CY   |
| 3                  | Borrow                                 | 44982    | CY   |
| 4                  | Placing Topsoil                        | 1350     | CY   |
| 5                  | Furnish 84" Manhole                    | 10       | VF   |
| 6                  | Install 84" Manhole                    | 10       | VF   |
| 7                  | Furnish 84" Standard Round Base Slab   | 1        | EA   |
| 8                  | Install 84" Standard Round Base Slab   | 1        | EA   |
| 9                  | Furnish 60" SRMP                       | 160      | LF   |
| 10                 | Install 60" SRMP                       | 160      | LF   |
| 11                 | Class B Riprap                         | 1959     | Ton  |
| 12                 | F&I Geotextile Type B                  | 2050     | SqYd |
| 14                 | Furnish Trash Rack & Antivortex Baffle | 1        | EA   |
| 15                 | Install Trash Rack & Antivortex Baffle | 1        | EA   |
| 16                 | Furnish Timber Pipe Support            | 1        | EA   |
| 17                 | Install Timber Pipe Support            | 1        | EA   |
| 18                 | Furnish & Install Antiseep Collar      | 1        | EA   |
| 19                 | Permanent Seeding                      | LS       | LS   |

## Incremental Pond Volumes

| Elevation | Acre-Feet |
|-----------|-----------|
| 1740.00   | 1.88      |
| 1741.00   | 2.50      |
| 1742.00   | 3.22      |
| 1743.00   | 4.05      |
| 1744.00   | 5.01      |
| 1745.00   | 6.11      |
| 1746.00   | 7.39      |
| 1747.00   | 8.84      |
| 1748.00   | 10.50     |
| 1749.00   | 13.20     |
| 1750.00   | 18.87     |
| 1751.00   | 26.19     |
| 1752.00   | 34.98     |
| 1753.00   | 45.85     |
| 1754.00   | 57.88     |
| 1755.00   | 70.99     |
| 1756.00   | 85.08     |
| 1757.00   | 100.16    |
| 1758.00   | 116.25    |
| 1759.00   | 133.51    |
| 1760.00   | 152.37    |
| 1761.00   | 172       |
| 1765.00   | 281       |

Note:  
All pond volumes are calculated based  
on USGS contours.

### Construction Notes:

- All Class B Riprap shall be acquired from on site.
- All required materials and assembly shall be included in the bid item for "Furnish Trash Rack & Antivortex Baffle".
- All required materials and assembly shall be included in the bid item for "Furnish Timber Pipe Support".
- All required materials and assembly shall be included in the bid item for "Furnish and Install Antiseep Collar".
- A plastic or rubber substitution can be made for the antiseep collar provided the shop drawings are approved by the project engineer prior to installation.
- Gravel material for compacted gravel pad under the Base Slab shall be included in the bid item for "Install 84" Manhole".

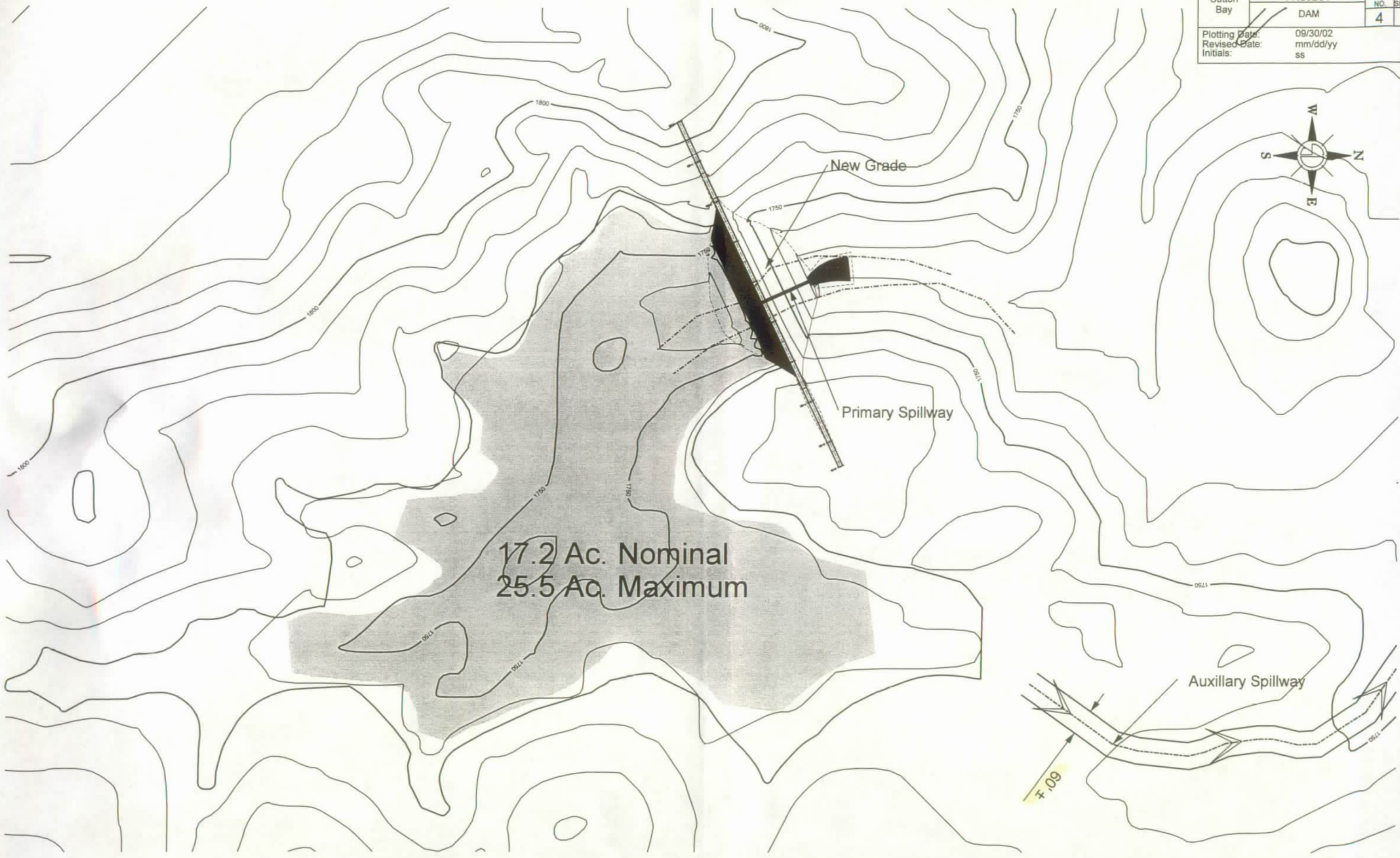
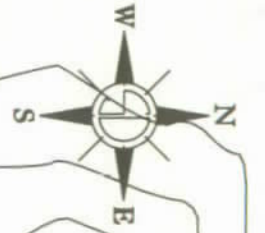
### Design Parameters:

Category 3, Small Dam  
Primary spillway is designed for a 50-year event.  
Contributing area of 194 Ac.

|                           |         |              |                 |
|---------------------------|---------|--------------|-----------------|
| Sutton<br>Bay             | Project | Sheet<br>No. | Total<br>Sheets |
|                           | Dam     | 3            | 21              |
| Plotting Date: 10/11/2002 |         |              |                 |
| Revised Date:             |         |              |                 |
| Initials: SS              |         |              |                 |

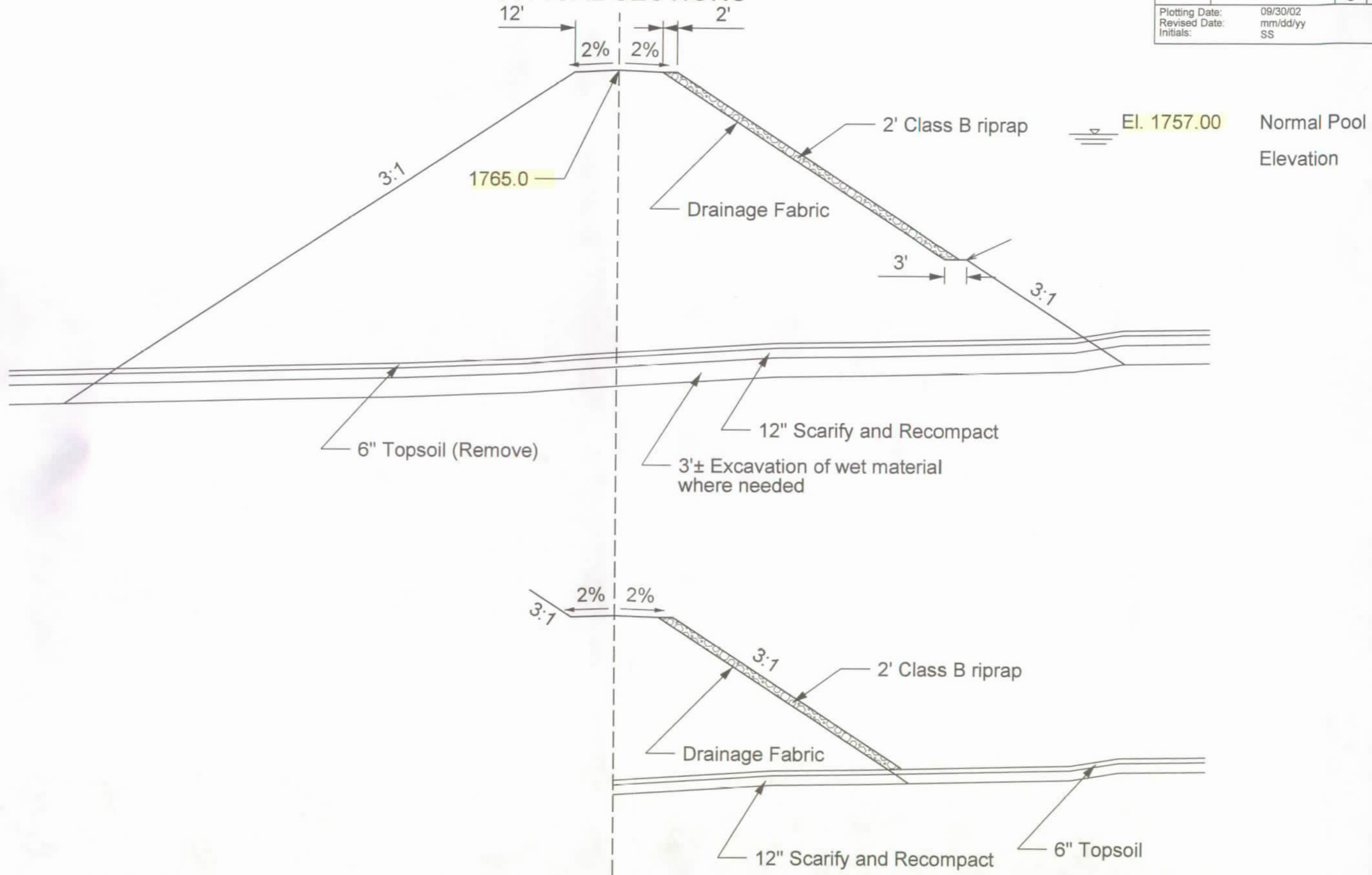
02-203  
RECEIVED  
OCT 15 2002  
WATER RIGHTS  
PROGRAM

|                         |         |              |                 |
|-------------------------|---------|--------------|-----------------|
| Sutton<br>Bay           | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|                         | DAM     | 4            | 21              |
| Plotting Date: 09/30/02 |         |              |                 |
| Revised Date: mm/dd/yy  |         |              |                 |
| Initials: ss            |         |              |                 |



# TYPICAL SECTIONS

| SUTTON BAY     | PROJECT  | SHEET NO. | TOTAL SHEETS |
|----------------|----------|-----------|--------------|
|                | DAM      | 5         | 21           |
| Plotting Date: | 09/30/02 |           |              |
| Revised Date:  | mm/dd/yy |           |              |
| Initials:      | SS       |           |              |

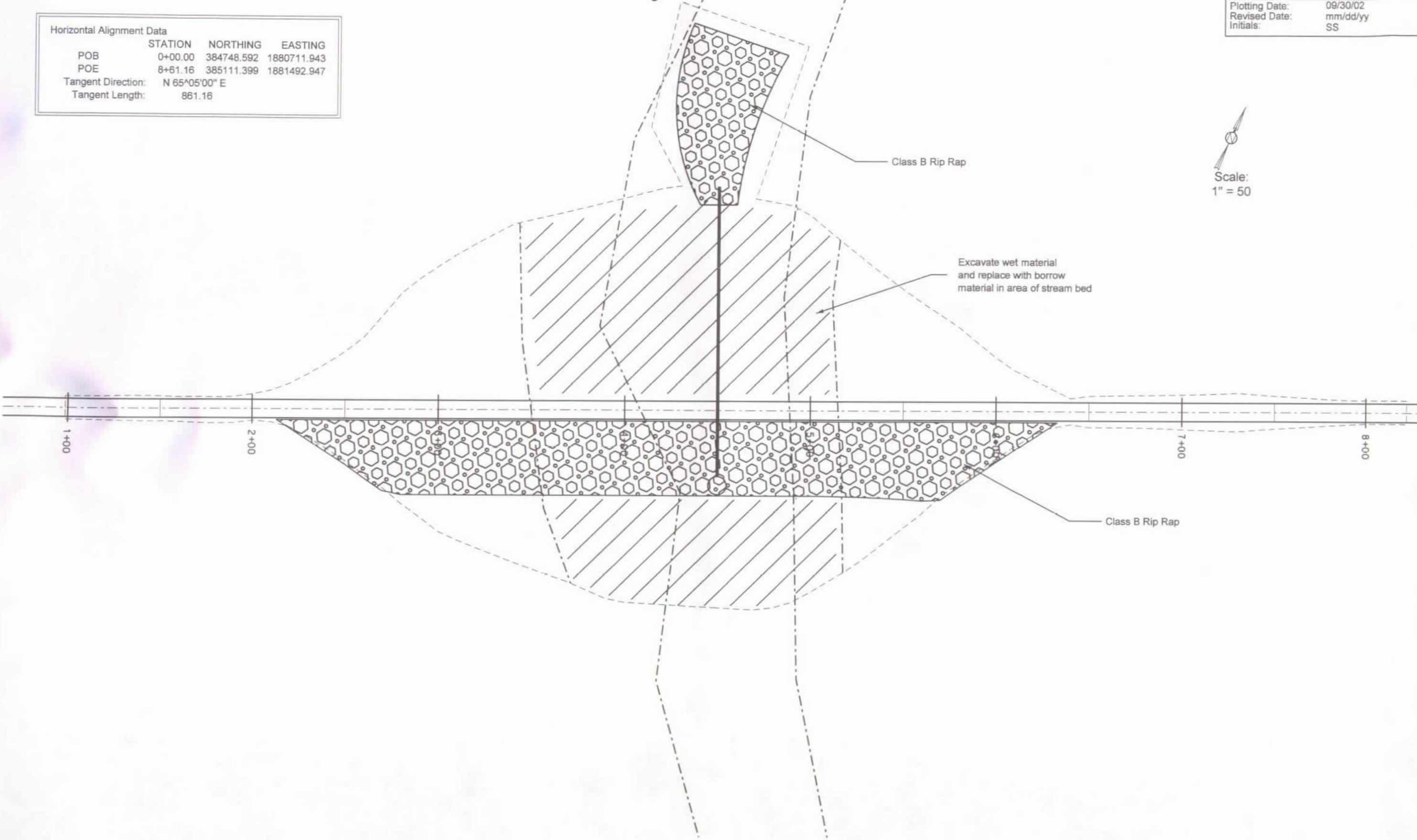


# Sutton Bay Dam Plan Sheet

|                         |         |              |                 |
|-------------------------|---------|--------------|-----------------|
| SUTTON<br>BAY           | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|                         | DAM     | 6            | 21              |
| Plotting Date: 09/30/02 |         |              |                 |
| Revised Date: mm/dd/yy  |         |              |                 |
| Initials: SS            |         |              |                 |

| Horizontal Alignment Data |               |            |             |
|---------------------------|---------------|------------|-------------|
|                           | STATION       | NORTHING   | EASTING     |
| POB                       | 0+00.00       | 384748.592 | 1880711.943 |
| POE                       | 8+61.16       | 385111.399 | 1881492.947 |
| Tangent Direction:        | N 65°05'00" E |            |             |
| Tangent Length:           | 861.16        |            |             |

Scale:  
1" = 50'

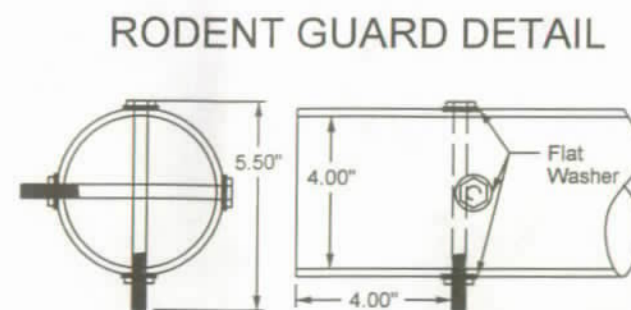
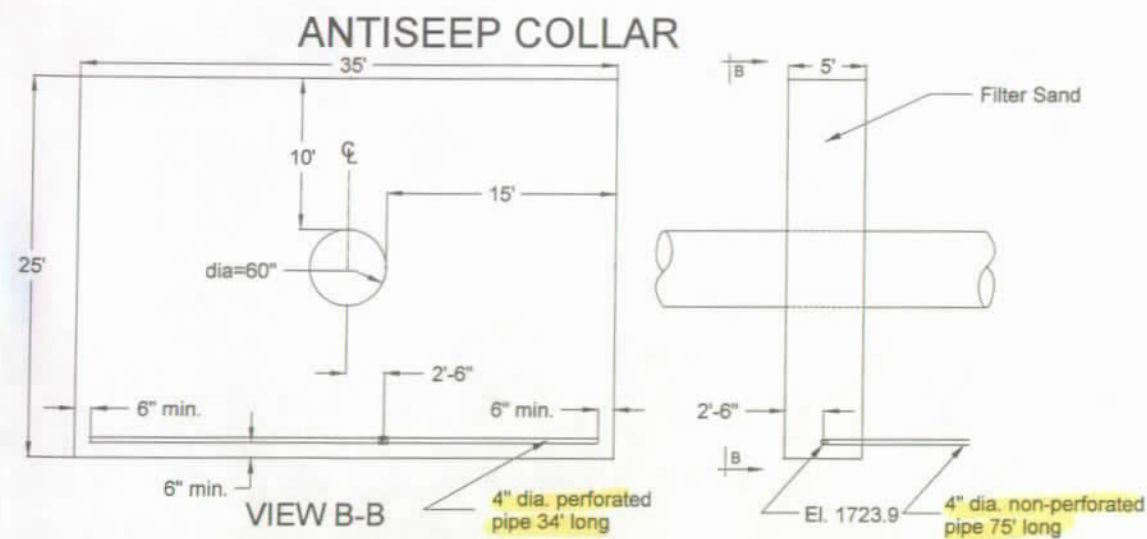
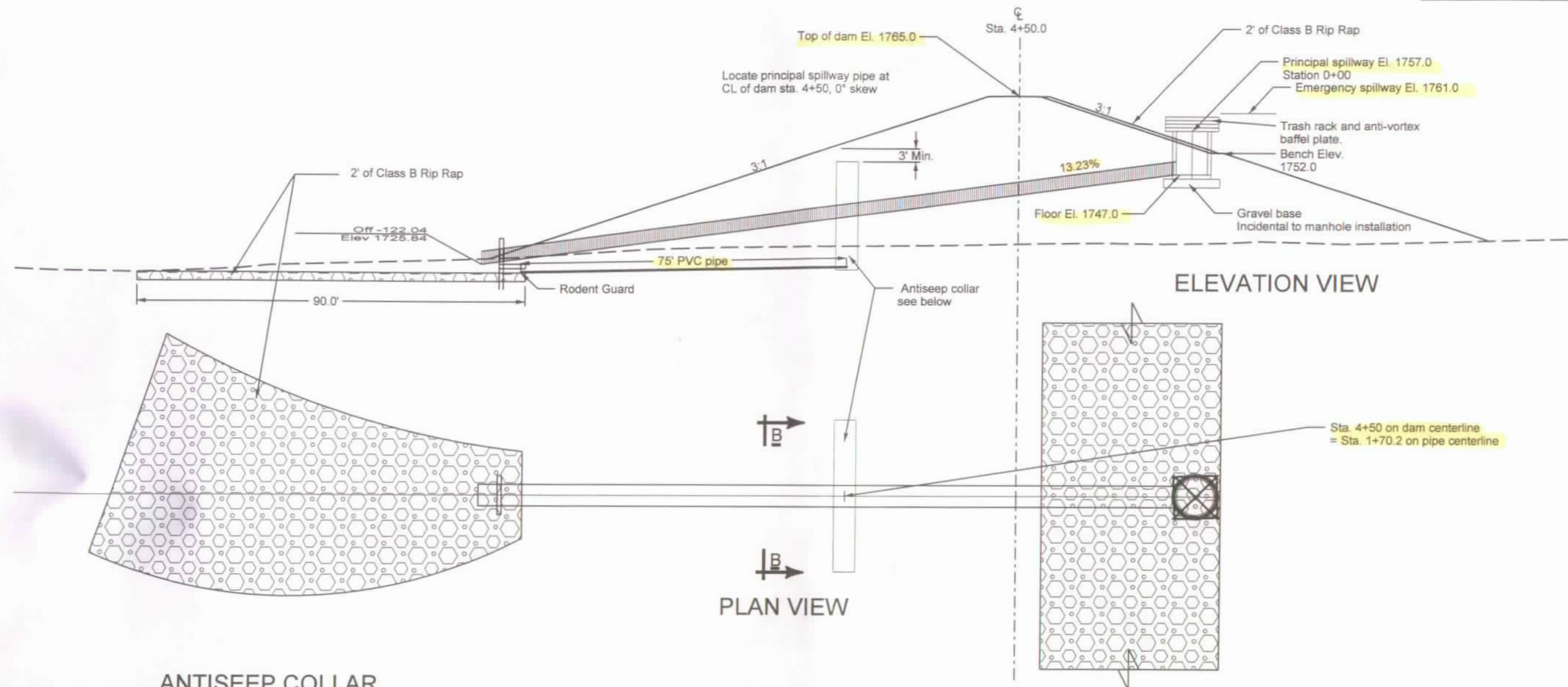




# CROSS SECTION OF DAM ALONG CL OF PRIMARY SPILLWAY AND ANTISEEP COLLAR DETAILS

| SUTTON<br>BAY | PROJECT<br>DAM | SHEET<br>NO. | TOTAL<br>SHEETS |
|---------------|----------------|--------------|-----------------|
|               |                | 8            | 21              |

Plotting Date: 09/30/02  
Revised Date: mm/dd/yy  
Initials: SS

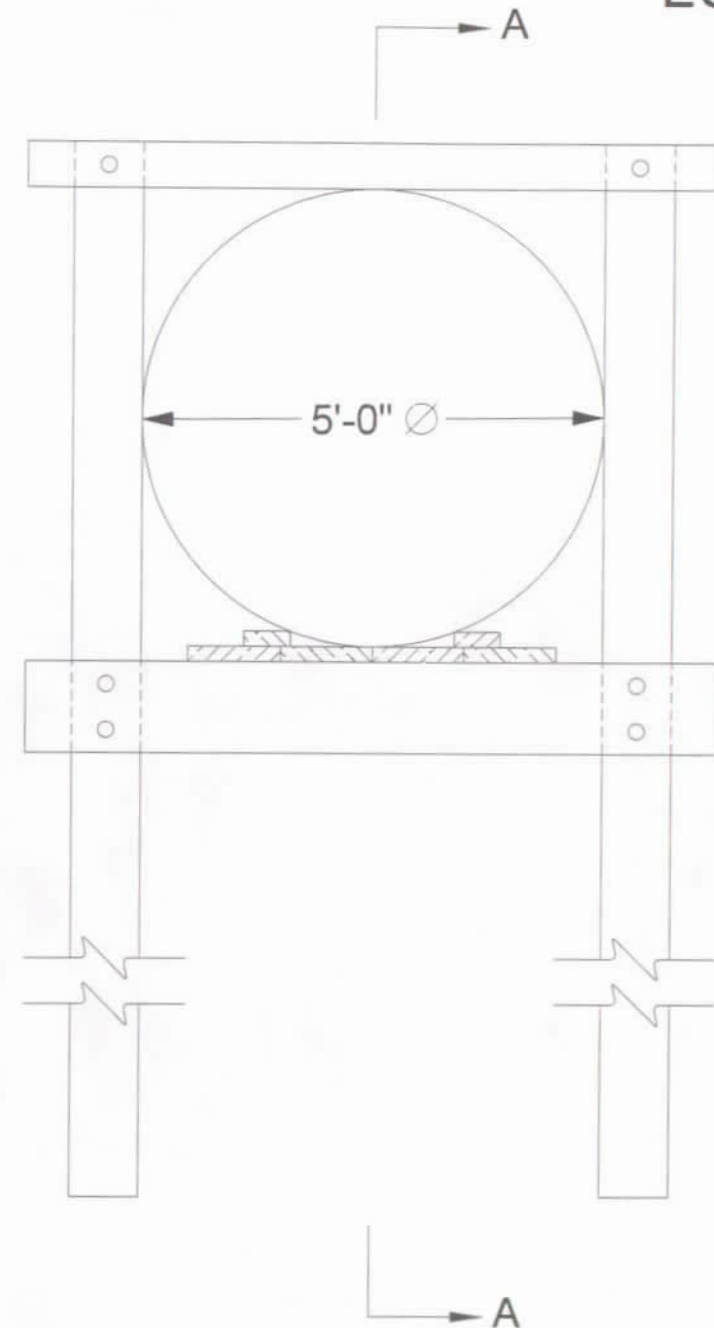


| Table of Antiseep Collar Quantities |      |          |
|-------------------------------------|------|----------|
| ITEM                                | UNIT | QUANTITY |
| 4" PVC pipe (perforated)            | LF   | 34       |
| 4" PVC pipe (non-perforated)        | LF   | 75       |
| Filter sand                         | ton  | 262      |
| 4" PVC Tee                          | EA   | 1        |
| 4" PVC end cap                      | EA   | 2        |
| 3/8" x 5-1/2" bolt, nut, washers    | set  | 2        |

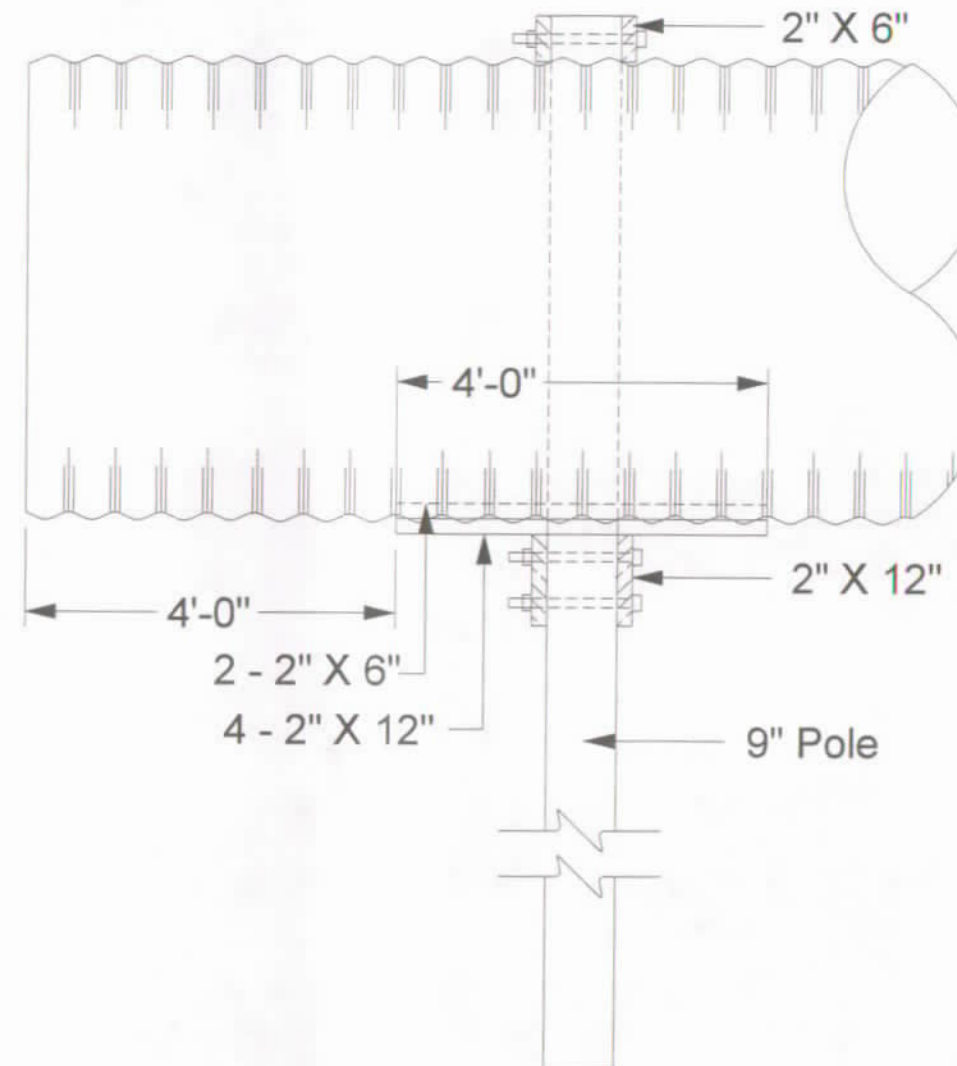
| Table of Primary Spillway Quantities |      |          |
|--------------------------------------|------|----------|
| ITEM                                 | UNIT | QUANTITY |
| Precast Concrete Manhole 84"         | LF   | 10       |
| SRMP (Spiral Rib Metal Pipe)         | LF   | 160      |

# LUMBER OUTLET SUPPORT STRUCTURE

| SUTTON<br>BAY           | PROJECT<br>DAM | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------|----------------|--------------|-----------------|
|                         |                | 9            | 21              |
| Plotting Date: 09/30/02 |                | mm/dd/yy     |                 |
| Revised Date:           |                | SS           |                 |
| Initials:               |                |              |                 |



ELEVATION VIEW



SECTIONAL ELEVATION A - A

## TIMBER PIPE SUPPORT

| ITEM                                       | NO. REQ'D | Quantity  |
|--------------------------------------------|-----------|-----------|
| 9" x 15' dia. pressure treated pole        | 2         | 2         |
| 2" x 12" x 7' - 6" pressure treated lumber | 2         | 45 BD.FT. |
| 2" x 6" x 7' - 6" pressure treated lumber  | 2         | 23 BD.FT. |
| 2" x 12" x 4' - 0" pressure treated lumber | 4         | 23 BD.FT. |
| 2" x 6" x 4' - 0" pressure treated lumber  | 2         | 12 BD.FT. |
| 1/2" x 16" machine bolts with nuts         | 6         | 6 Sets    |
| 1/2" flat washers                          | 12        | 12        |

### Notes:

- Two 9" posts (2 required) bolt 2" x 12" boards using two 1/2" x 16" bolts per 2" x 12" board. Do not place bolts closer than 1 1/2" from edge of board.

|                         |         |              |                 |
|-------------------------|---------|--------------|-----------------|
| SUTTON<br>BAY           | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|                         | DAM     | 10           | 21              |
| Plotting Date: 09/30/02 |         |              |                 |
| Revised Date: mm/dd/yy  |         |              |                 |
| Initials: SS            |         |              |                 |



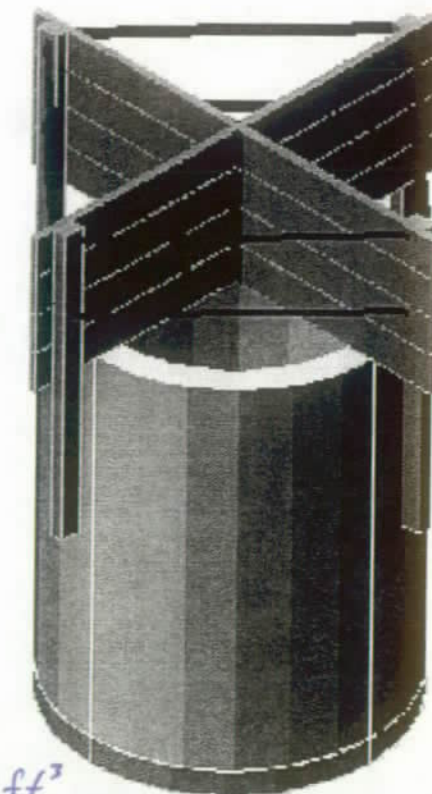
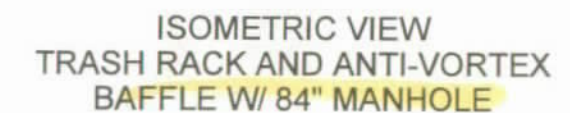
Notes:

1. Two 4" x 6" posts (4 required) bolt 2" x 10" boards using two 5/8" x 8" bolts per 2" x 10" board. Do not place bolts closer than 1 1/2" from edge of board.
2. For center brace angles drill 8 - 9/16" holes 5/8" from outer edge of each leg of each angle and centered 5 1/4" apart along the leg
3. Attach brace angles to top bolt on top 2" x 10" board and to top bolt on next to bottom board



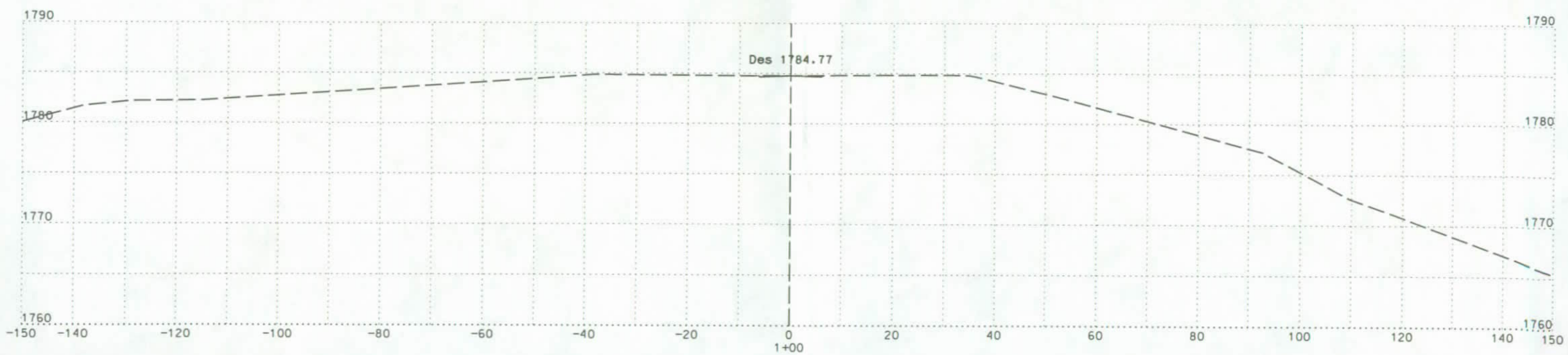
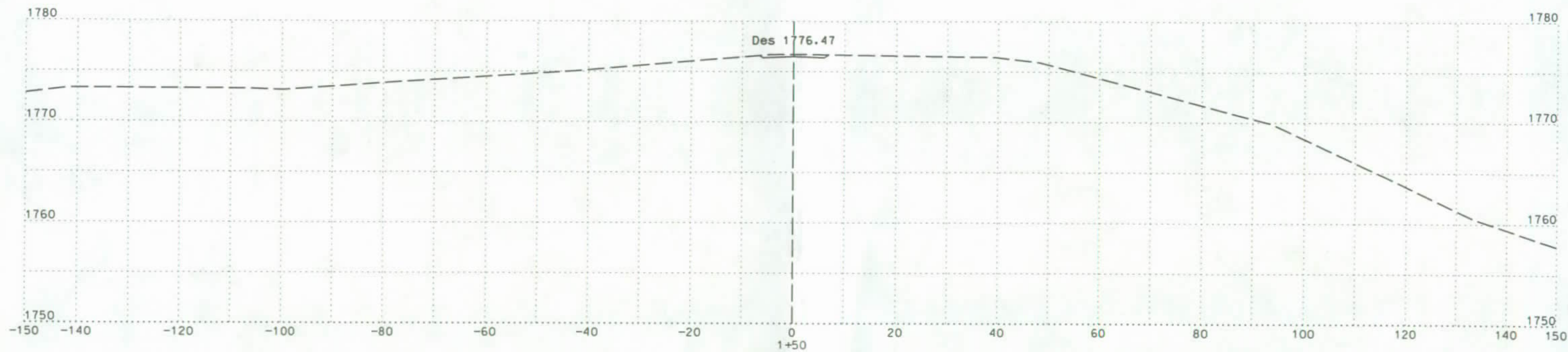
**Notes:**

1. Concrete for riser shall meet South Dakota specifications for M-6 concrete (Section 462 "South Dakota Standard Specifications for Roads and Bridges")
2. Concrete for base slab shall meet South Dakota specifications for M-6 concrete (Section 462 "South Dakota Standard Specifications for Roads and Bridges")
3. Mortar shall consist of 1 part Portland Cement and two parts mortar sand. (Conforming to Section 750 and 810 "South Dakota Standard Specifications for Roads and Bridges", respectively)

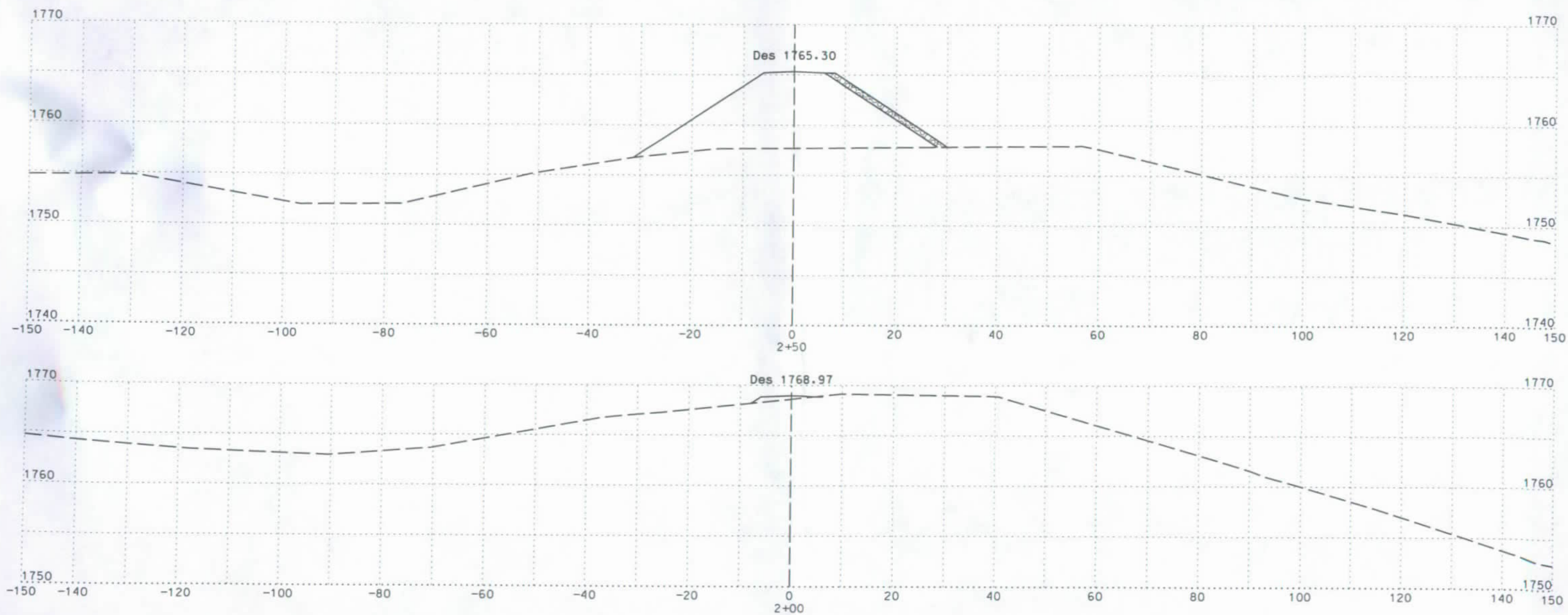


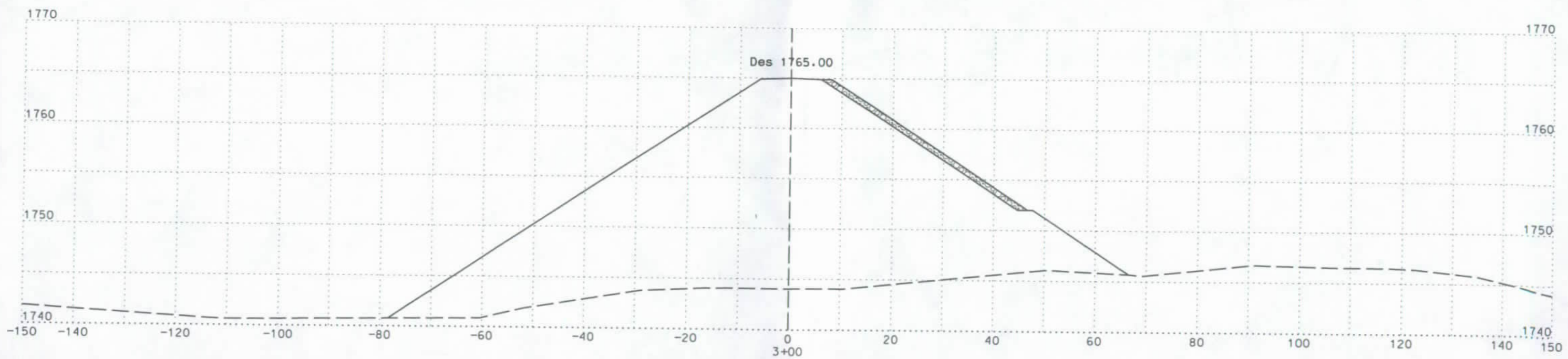
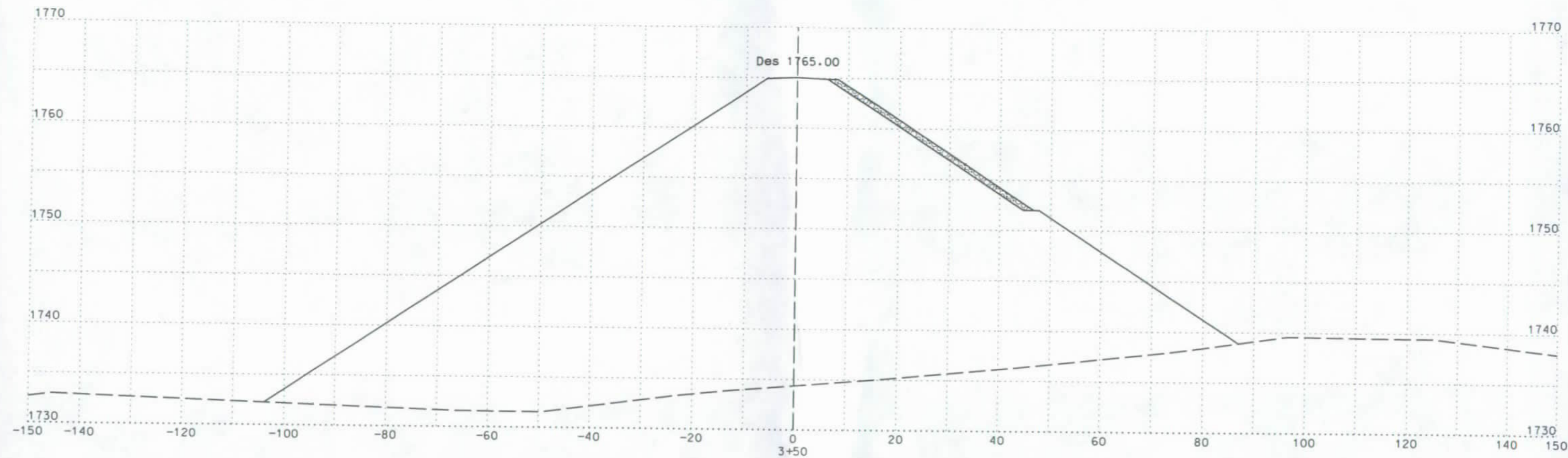
$$13' \times 13' \times 2' = 338 \text{ ft}^3$$
$$24 \times 2000 = 48000 \text{ lb}$$
$$= 142 \text{ lb/ft}^3 \quad \text{OK}$$

| SUTTON<br>BAY                                                     | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------------------------------------------------|---------|--------------|-----------------|
|                                                                   | DAM     | 11           | 21              |
| Plotting Date: 09/30/02<br>Revised Date: mm/dd/yy<br>Initials: SS |         |              |                 |

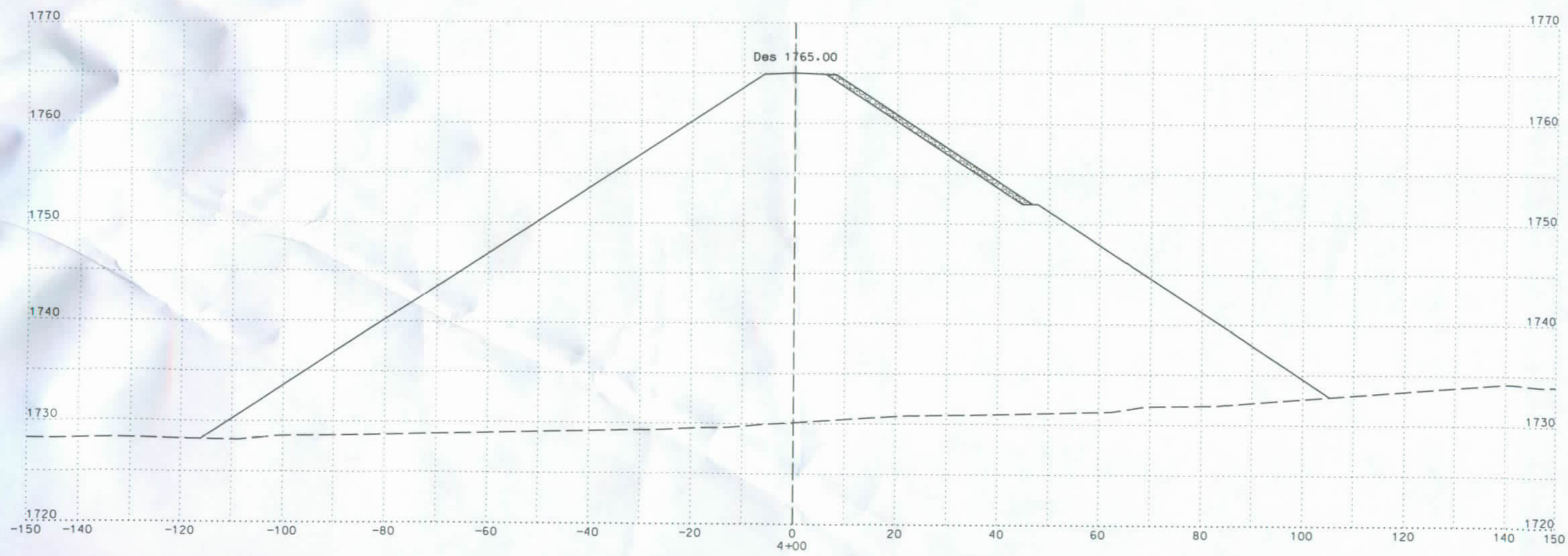


| SUTTON<br>BAY           | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------|---------|--------------|-----------------|
|                         | DAM     | 12           | 21              |
| Plotting Date: 09/30/02 |         |              |                 |
| Revised Date: mm/dd/yy  |         |              |                 |
| Initials: SS            |         |              |                 |

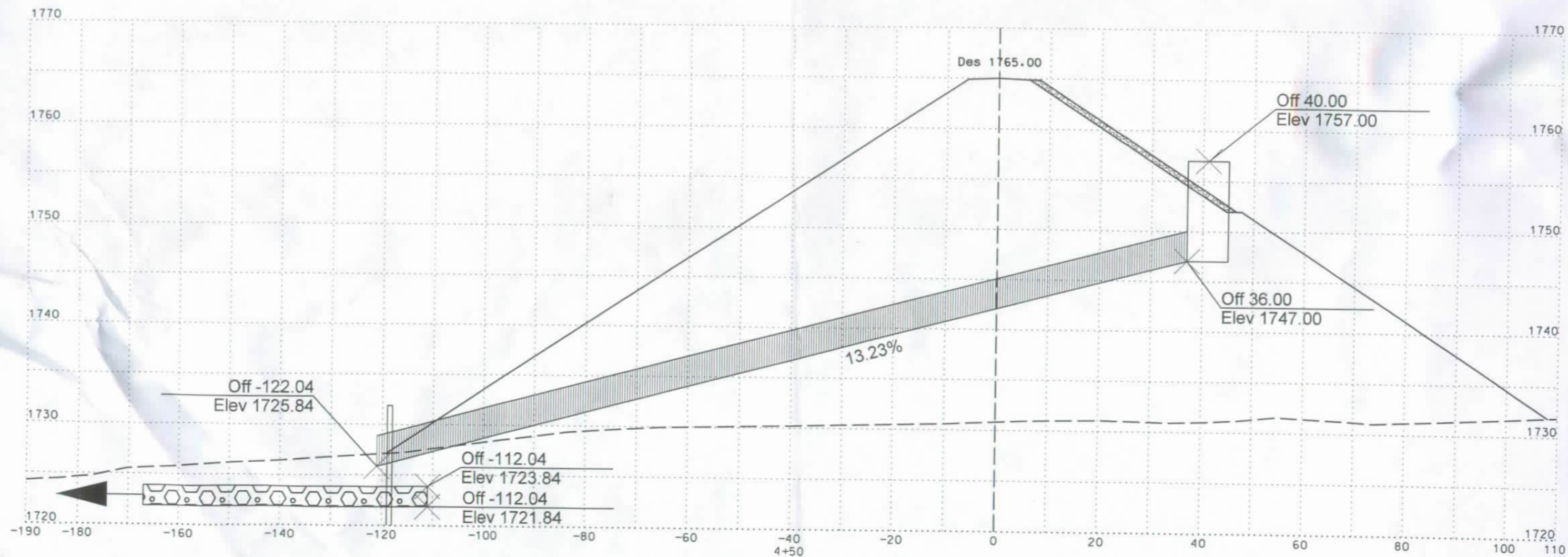


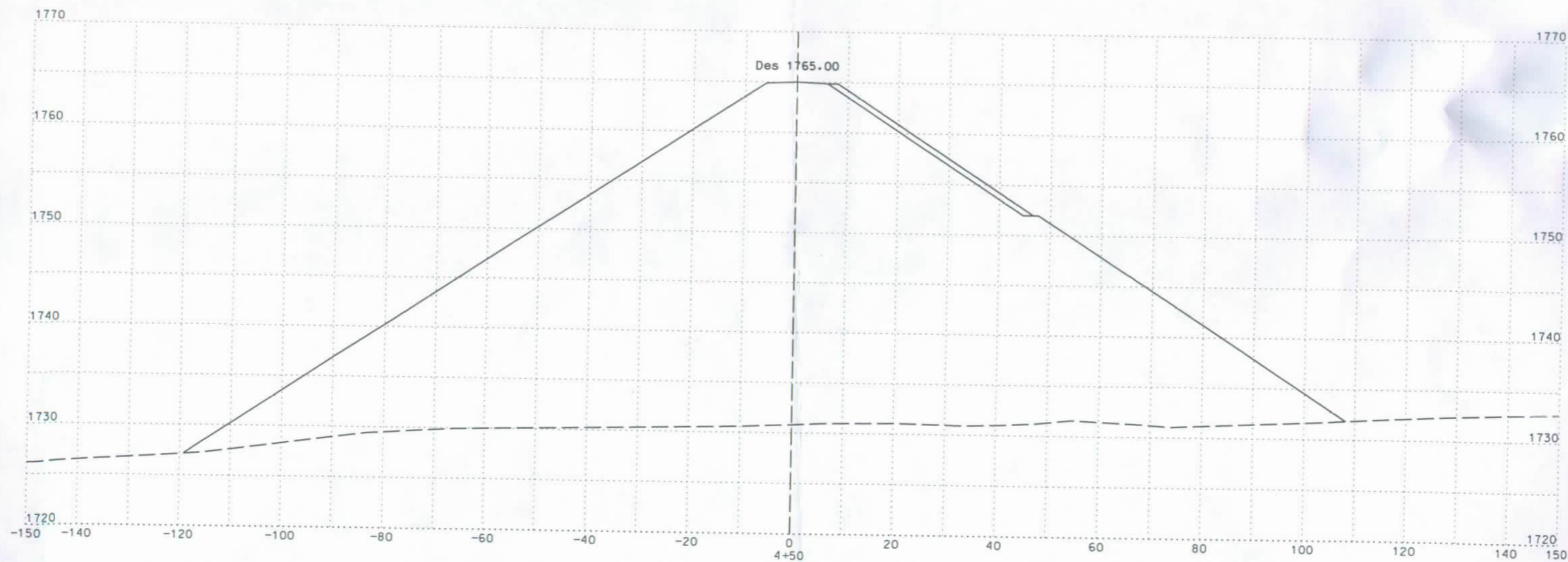


| SUTTON<br>BAY  | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|----------------|---------|--------------|-----------------|
|                | DAM     | 14           | 21              |
| Plotting Date: |         | 09/30/02     |                 |
| Revised Date:  |         | mm/dd/yy     |                 |
| Initials:      |         | SS           |                 |

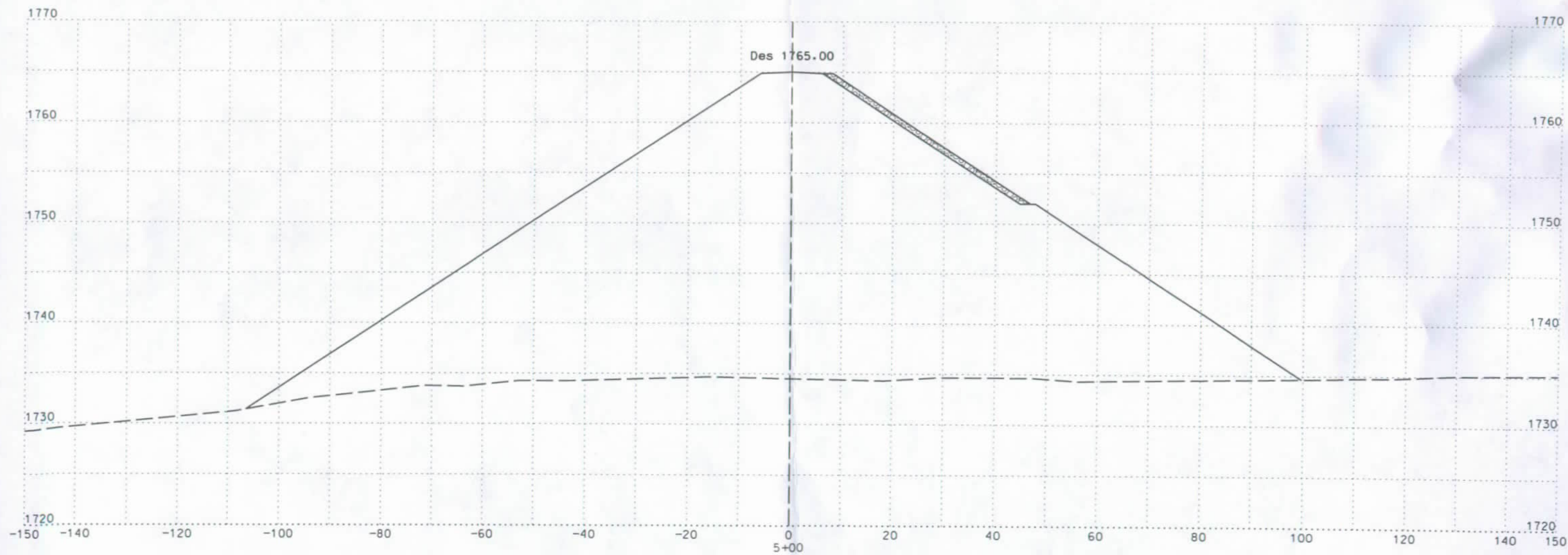


| SUTTON<br>BAY                                                     | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------------------------------------------------|---------|--------------|-----------------|
|                                                                   | DAM     | 15           | 21              |
| Plotting Date: 09/30/02<br>Revised Date: mm/dd/yy<br>Initials: SS |         |              |                 |

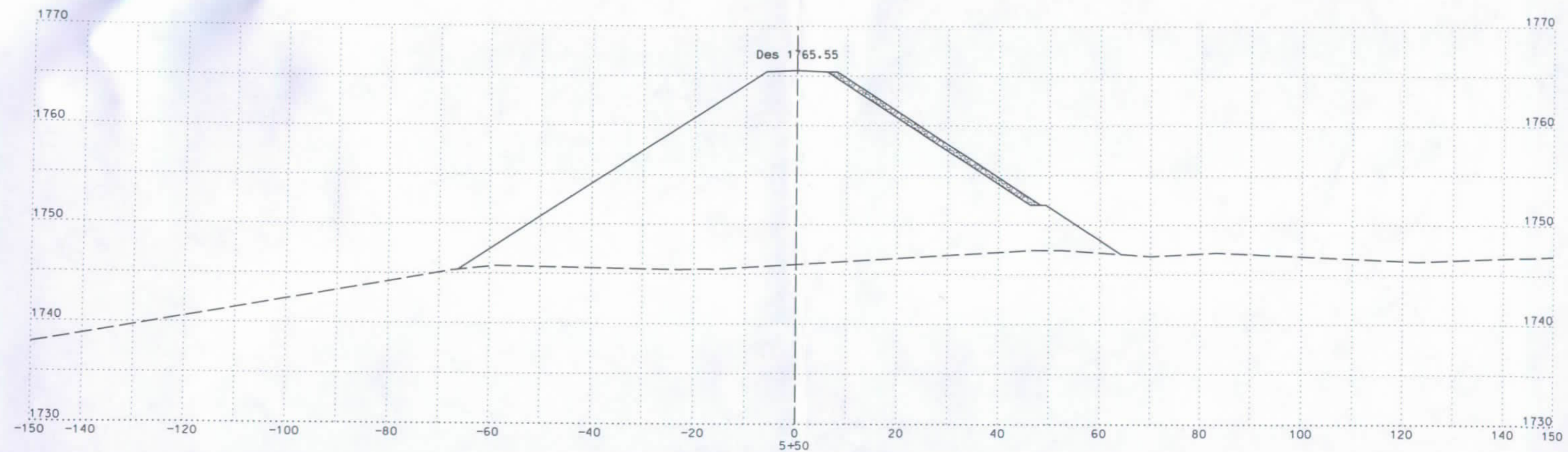
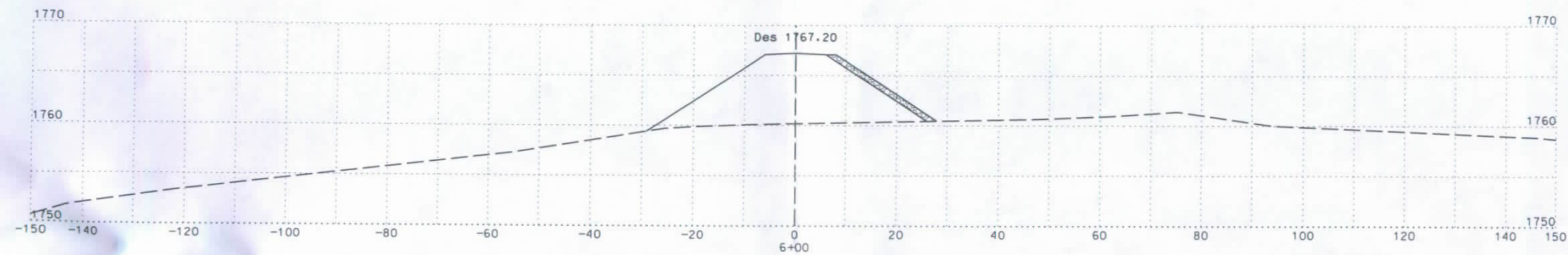




| SUTTON<br>BAY           | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------|---------|--------------|-----------------|
|                         | DAM     | 17           | 21              |
| Plotting Date: 09/30/02 |         |              |                 |
| Revised Date: mm/dd/yy  |         |              |                 |
| Initials: SS            |         |              |                 |



| SUTTON<br>BAY                                                     | PROJECT | SHEET<br>NO. | TOTAL<br>SHEETS |
|-------------------------------------------------------------------|---------|--------------|-----------------|
|                                                                   | DAM     | 18           | 21              |
| Plotting Date: 09/30/02<br>Revised Date: mm/dd/yy<br>Initials: SS |         |              |                 |



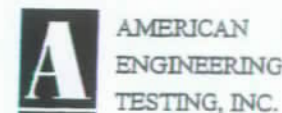


# SUBSURFACE BORING LOG

Figure 2

| AET JOB NO: 21-00346.1                              |                                                                              | LOG OF BORING NO. B-1    |         |               |                |               |                          |             |    |    |       |
|-----------------------------------------------------|------------------------------------------------------------------------------|--------------------------|---------|---------------|----------------|---------------|--------------------------|-------------|----|----|-------|
| PROJECT: Sutton Bay Dam: Sully County, South Dakota |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| DEPTH<br>IN<br>FEET                                 | SURFACE ELEVATION:<br>MATERIAL DESCRIPTION                                   | GEOLOGY                  | N       | GW            | SAMPLE<br>TYPE | REC.<br>IN.   | FIELD & LABORATORY TESTS |             |    |    |       |
|                                                     |                                                                              |                          |         |               |                |               | WC                       | DEN         | LL | PL | %-200 |
| 1                                                   | Topsoil, silt, brown, dry (ML)                                               | Topsoil                  |         |               |                |               |                          |             |    |    |       |
| 1                                                   | Fat Clay, brown & gray, oxidized, fractured, moist, roots, rather stiff (CH) | Fine Alluvium            | 11      |               | 2L             | 18            |                          |             |    |    |       |
| 2                                                   |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| 3                                                   |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| 4                                                   | SHALE, Textural Classification: Fat clay, brown to grey, moist, stiff (CH)   | Pierre Formation         | 26      |               | 2L             | 18            | 32                       | 84          |    |    |       |
| 5                                                   |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| 6                                                   |                                                                              |                          | 26      |               | 2L             | 18            | 37                       | 81          |    |    |       |
| 7                                                   |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| 8                                                   |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| 9                                                   |                                                                              |                          | 28      |               | 2L             | 18            |                          |             |    |    |       |
| 10                                                  |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| 11                                                  |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| 12                                                  | some shell fossil                                                            |                          | 29      |               | 2L             | 18            |                          |             |    |    |       |
| 13                                                  |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| 14                                                  |                                                                              |                          | 43      |               | 2L             | 18            |                          |             |    |    |       |
| 15                                                  |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| END OF BORING                                       |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| DEPTH: DRILLING METHOD                              |                                                                              | WATER LEVEL MEASUREMENTS |         |               |                |               |                          |             |    |    |       |
| 14.0 6.5" HSA                                       |                                                                              | DATE                     | TIME    | SAMPLED DEPTH | CASING DEPTH   | CAVE-IN DEPTH | DRILLING FLUID LEVEL     | WATER LEVEL |    |    |       |
|                                                     |                                                                              | 9/4/02                   | 5:30 pm |               |                | 14.0'         |                          | None        |    |    |       |
| BORING COMPLETED: 9/4/02                            |                                                                              |                          |         |               |                |               |                          |             |    |    |       |
| CC: DS CA: DD Rig: Pierre                           |                                                                              |                          |         |               |                |               |                          |             |    |    |       |

AET CORP 21-00346.GPJ AET CORP.GDT 9/11/02  
2/99



# SUBSURFACE BORING LOG

Figure 3

| AET JOB NO: 21-00346.1                              |                                                                                                          | LOG OF BORING NO. B-2    |         |               |                |               |                          |             |    |    |       |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------|---------|---------------|----------------|---------------|--------------------------|-------------|----|----|-------|
| PROJECT: Sutton Bay Dam: Sully County, South Dakota |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| DEPTH<br>IN<br>FEET                                 | SURFACE ELEVATION:<br>MATERIAL DESCRIPTION                                                               | GEOLOGY                  | N       | GW            | SAMPLE<br>TYPE | REC.<br>IN.   | FIELD & LABORATORY TESTS |             |    |    |       |
|                                                     |                                                                                                          |                          |         |               |                |               | WC                       | DEN         | LL | PL | %-200 |
| 1                                                   | Topsoil, silt, brown, dry (ML)                                                                           | Topsoil                  |         |               |                |               |                          |             |    |    |       |
| 1                                                   | Fat Clay, grey to brown, oxidized, moist, rather stiff, some sand present in soil matrix to 3' (CH)      | Fine Alluvium            |         |               |                |               |                          |             |    |    |       |
| 2                                                   |                                                                                                          |                          | 10      |               | 2L             | 18            |                          |             |    |    |       |
| 3                                                   | saturated, soft                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| 4                                                   |                                                                                                          |                          | 4       |               | 2L             | 18            |                          |             |    |    |       |
| 5                                                   |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| 6                                                   |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| 6                                                   | Shale, Textural Classification: Fat clay, gray, oxidized, moist, rather stiff, some gypsum crystals (CH) | Pierre Formation         | 12      |               | 2L             | 18            | 43                       | 75          |    |    |       |
| 7                                                   |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| 8                                                   |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| 9                                                   |                                                                                                          |                          | 22      |               | 2L             | 18            | 39                       | 79          |    |    |       |
| 10                                                  | stiff, bentonite seam at 10' saturated in fractures                                                      |                          |         |               |                |               |                          |             |    |    |       |
| 11                                                  |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| 12                                                  | unweathered shale, very stiff                                                                            |                          | 42      |               | 2L             | 18            |                          |             |    |    |       |
| 13                                                  |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| 14                                                  |                                                                                                          |                          | 71      |               | 2L             | 18            |                          |             |    |    |       |
| 15                                                  |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| END OF BORING                                       |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| DEPTH: DRILLING METHOD                              |                                                                                                          | WATER LEVEL MEASUREMENTS |         |               |                |               |                          |             |    |    |       |
| 14.0 6.5" HSA                                       |                                                                                                          | DATE                     | TIME    | SAMPLED DEPTH | CASING DEPTH   | CAVE-IN DEPTH | DRILLING FLUID LEVEL     | WATER LEVEL |    |    |       |
|                                                     |                                                                                                          | 9/4/02                   | 1:20 pm |               |                | 14.0'         |                          | None        |    |    |       |
|                                                     |                                                                                                          | 9/4/02                   | 5:45 pm |               |                | 14.0'         |                          | None        |    |    |       |
| BORING COMPLETED: 9/4/02                            |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |
| CC: DS CA: DD Rig: Pierre                           |                                                                                                          |                          |         |               |                |               |                          |             |    |    |       |

AET CORP 21-00346.GPJ AET CORP.GDT 9/11/02  
2/99



AMERICAN  
ENGINEERING  
TESTING, INC.

# SUBSURFACE BORING LOG

| SUTTON<br>BAY | PROJECT<br>DAM | SHEET<br>NO. | TOTAL<br>SHEET |
|---------------|----------------|--------------|----------------|
|               |                | 20           | 21             |

Plotting Date: 09/30/02  
Revised Date: mm/dd/yy  
Initials: SS

Figure 4

| AET JOB NO: 21-00346.1                              |                                                                                        | LOG OF BORING NO. B-4 |    |    |                |             |                          |     |     |    |     |
|-----------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------|----|----|----------------|-------------|--------------------------|-----|-----|----|-----|
| PROJECT: Sutton Bay Dam: Sully County, South Dakota |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |
| DEPTH<br>IN<br>FEET                                 | SURFACE ELEVATION: _____<br>MATERIAL DESCRIPTION                                       | GEOLOGY               | N  | GW | SAMPLE<br>TYPE | REC.<br>IN. | FIELD & LABORATORY TESTS |     |     |    |     |
|                                                     |                                                                                        |                       |    |    |                |             | WC                       | DEN | LL  | PL | %-2 |
| 1                                                   | Topsoil, silt, brown, dry (ML)                                                         | Topsoil               | 19 |    | 2L             | 18          |                          |     |     |    |     |
|                                                     | Sandy Silt, brown, slightly moist, stiff (ML)                                          | Fine Alluvium         |    |    |                |             |                          |     |     |    |     |
| 2                                                   |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |
| 3                                                   | Sandy Clay with Gravel, grey to brown, oxidized, moist, stiff (CL)                     | Glacial Till          | 17 |    | 2L             | 18          |                          |     |     | 56 | 19  |
| 4                                                   | Silty Gravel, light brown to brown, oxidized, dry, dense, (GM)                         | Glacial Till          |    |    |                |             |                          |     |     |    |     |
| 5                                                   |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |
| 6                                                   | Shale, Textured Classification: Fat Clay, grey, oxidized, fractured, moist, stiff (CH) | Pierre Formation      | 16 |    | 2L             | 18          | 36                       | 73  | 111 | 33 |     |
| 7                                                   |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |
| 8                                                   |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |
| 9                                                   | mottled with some bentonite                                                            |                       | 23 |    | 2L             | 18          | 36                       | 78  |     |    |     |
| 10                                                  |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |
| 11                                                  |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |
| 12                                                  |                                                                                        |                       | 41 |    | 2L             | 18          |                          |     |     |    |     |
| 13                                                  |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |
| 14                                                  | some gypsum crystals present, very stiff                                               |                       | 38 |    | 2L             | 18          |                          |     |     |    |     |
| 15                                                  |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |
| END OF BORING                                       |                                                                                        |                       |    |    |                |             |                          |     |     |    |     |

|                           |          |                          |         |               |              |               |                      |             |  |
|---------------------------|----------|--------------------------|---------|---------------|--------------|---------------|----------------------|-------------|--|
| DEPTH: DRILLING METHOD    |          | WATER LEVEL MEASUREMENTS |         |               |              |               |                      |             |  |
| 14.0                      | 6.5" HSA | DATE                     | TIME    | SAMPLED DEPTH | CASING DEPTH | CAVE-IN DEPTH | DRILLING FLUID LEVEL | WATER LEVEL |  |
|                           |          | 9/4/02                   | 2:55 pm |               |              | 14.0'         |                      | None        |  |
| BORING COMPLETED: 9/4/02  |          |                          |         |               |              |               |                      |             |  |
| CC: DS CA: DD Rig: Pierre |          |                          |         |               |              |               |                      |             |  |

# Potential Borrow Areas

| SUTTON<br>BAY           | PROJECT<br>DAM | SHEET<br>NO.<br>21 | TOTAL<br>SHEETS<br>21 |
|-------------------------|----------------|--------------------|-----------------------|
| Plotting Date: 09/30/02 |                |                    |                       |
| Revised Date: mm/dd/yy  |                |                    |                       |
| Initials: SS            |                |                    |                       |

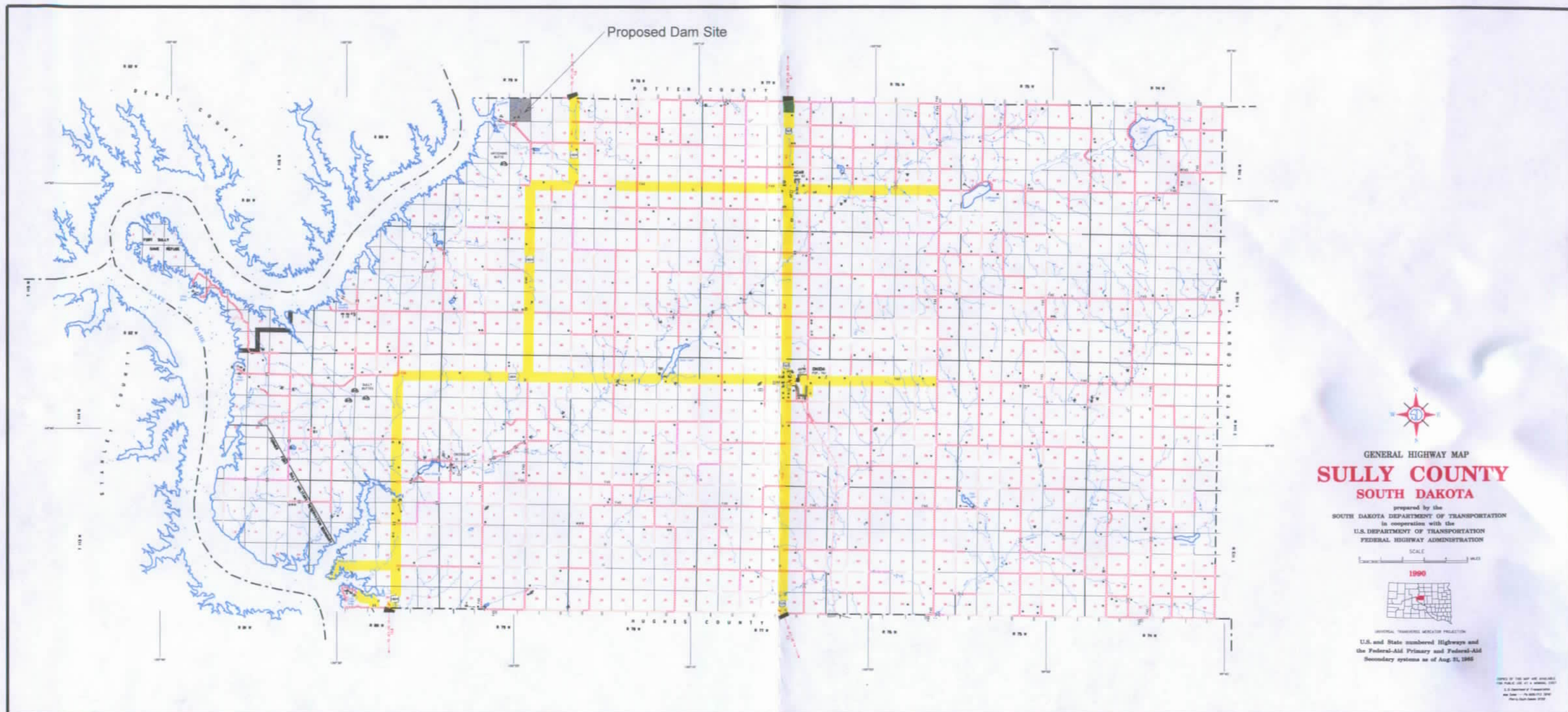


Borrow can only consist of the gray to brown fat clays present in the top 5'± of the borrow areas. If additional borrow area is needed, it shall be approved by the project engineer.

The existing dam grade shall be removed and dried for use in the new dam grade.

Topographic map of Section 3, T116N R79W. The map shows Artichoke Creek, a blue pond, and a green road. The map includes contour lines, a grid, and a survey point labeled "SE Corner". A circular stamp for Laurie A. Schuch, Registered Professional Engineer, is visible in the bottom right corner.

6366-3



GENERAL HIGHWAY MAP  
**SULLY COUNTY**  
 SOUTH DAKOTA

prepared by the  
 SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION  
 in cooperation with the  
 U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION

SCALE  
 1 INCH = 10 MILES

1990



U.S. and State numbered Highways and  
 the Federal-Aid Primary and Federal-Aid  
 Secondary systems as of Aug. 31, 1989

z:\02592\Maps\SULY.DGN 08/21/2002 08:28:06 AM

4366-3

**RECEIPT**  
**WATER RIGHTS PROGRAM**  
South Dakota Department of Environment and Natural Resources

Date August 21, 2002

RECEIVED OF Mark Amundson, 6829 W Honeysuckle Cir., Sioux Falls SD 57106

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

|                                                                                                                        |       |        |
|------------------------------------------------------------------------------------------------------------------------|-------|--------|
| Fee for Application for Permit No. <u>6366-3</u> to Appropriate Water, to construct and to put water to beneficial use | 275   | 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>6366-3</u>            | 50    | 00     |
| Fee for Filing Transfer Form _____                                                                                     |       |        |
| Fee for _____                                                                                                          |       |        |
| Fee for Issuing New Well Driller's License No. _____ for C.Y. _____                                                    |       |        |
| Fee for Renewal of Well Driller's License No. _____ for C.Y. _____                                                     |       |        |
| Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____                                                 |       |        |
| Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____                                              |       |        |
| (Any Other Work Provided by Law)                                                                                       | TOTAL | 275.00 |

No. 000854

By Darland Ebele  
Chief Engineer



3030 Airport Rd., Ste. A, Box 23  
Pierre, SD 57501  
Phone: (605)224-1123  
Fax: (605)224-0659

Registered in North Dakota, South Dakota, and Montana

October 9, 2002

Tim Schaal  
DENR  
523 E Capitol  
Pierre, SD 57501

02-0203  
RECEIVED  
OCT - 9 2002  
WATER RIGHTS  
PROGRAM

RE: SUTTON BAY DAM

Dear Mr. Schaal:

Attached are two copies of the plans and specifications for the proposed Sutton Bay Dam in Sully County. Also attached is a copy of the hydraulics analyses.

This is a Low Hazard, Category 3 dam. No Emergency Preparedness Plan was developed because there are no structures below the dam.

The Water Rights Permit application was previously submitted to Eric Gronlund.

If there is any additional information you need, please let us know.

Sincerely,

Laurie Schultz, PE  
Project Manager

Cc: Mark Amundson  
File S02-P592

### Sutton Bay Dam Hydrologic Computations

|                              |                           |                  |
|------------------------------|---------------------------|------------------|
| Runoff Area                  | 0.303 Mi <sup>2</sup>     | 8447155.2        |
| Surface Area                 | 0.036 Mi <sup>2</sup>     | 1003622.4        |
| Annual Evaporation           | 36.5 In.                  |                  |
| Annual Mean Precipitation    | 16.7 In.                  |                  |
| Runoff Percent               | 46.5 %                    |                  |
| 25 Year Direct Precipitation | 1396708 ft <sup>3</sup>   | 10448100 gallons |
| 25 Year Runoff               | 4816896 ft <sup>3</sup>   | 36032883 gallons |
| Total Precipitation Gain     | 6213604 ft <sup>3</sup>   | 46480983 gallons |
| Total Evaporation            | 3052684.8 ft <sup>3</sup> | 22835667 gallons |
| Total water gain             | 3160919 ft <sup>3</sup>   | 23645316 gallons |

### 1998 Regional Regression Equations for South Dakota (Subregion D)

*USGS*

*WRI 98-4055*

Contributing drainage area (mi<sup>2</sup>)      CA=    0.303

|                         | Q(yrs) | Flow    |
|-------------------------|--------|---------|
| $78.5 \cdot CA^{0.357}$ | 2      | 51 cfs  |
| $230 \cdot CA^{0.455}$  | 5      | 134 cfs |
| $395 \cdot CA^{0.515}$  | 10     | 214 cfs |
| $676 \cdot CA^{0.585}$  | 25     | 336 cfs |
| $944 \cdot CA^{0.627}$  | 50     | 447 cfs |
| $1270 \cdot CA^{0.663}$ | 100    | 575 cfs |
| $2300 \cdot CA^{0.732}$ | 500    | 960 cfs |

*✓ OK*

# ESTIMATE OF PEAK DISCHARGES FOR AREAS < 100 SQ. MILES

USGS WRI 80-80

A = 0.303 Contributing Drainage Area (sq. miles)  
 S = 170.0 Main Channel Slope (ft./mile)  
 Si = 3.33 Soil Infiltration Index (inches)

## Flood - Frequency Equations (Regression Analysis)

|        |       |                     |                     |                     |   |         |
|--------|-------|---------------------|---------------------|---------------------|---|---------|
| Q2 =   | 21.2  | A <sup>0.48</sup> * | S <sup>0.44</sup> * | Si <sup>-1.16</sup> | = | 28 cfs  |
| Q10 =  | 57.7  | A <sup>0.56</sup> * | S <sup>0.43</sup> * | Si <sup>-0.80</sup> | = | 103 cfs |
| Q25 =  | 83.4  | A <sup>0.60</sup> * | S <sup>0.44</sup> * | Si <sup>-0.72</sup> | = | 164 cfs |
| Q50 =  | 106.0 | A <sup>0.63</sup> * | S <sup>0.45</sup> * | Si <sup>-0.69</sup> | = | 220 cfs |
| Q100 = | 132.0 | A <sup>0.65</sup> * | S <sup>0.46</sup> * | Si <sup>-0.67</sup> | = | 288 cfs |

OK

## Rational Method

C = 0.2      0.1 - 0.3      from chart  
 I = 4.5      50 Yr 24 Hr event  
 Ad = 194

Q = C\*I\*Ad = 175 ac-in/hr

1.00833 conversion factor

176 cfs

OK

## HEC 11, Chapter 5

### Riprap design for Auxillary Spillway

$Q := 3.63$  Design discharge ( $m^3/s$ )

$Sf := 0.1667$  Slope ( $ft/ft$ )  
 Slope is greater than 0.002  $ft/ft$  so ...

$R := 0.3$  Hydraulic radius (m) from HEC-RAS

$nb := 0.3225 \cdot Sf^{0.38} \cdot R^{-0.16}$   
 $nb = 0.198$

$n1 := 0$  Irregularity factor

$n2 := 0$  Variation in cross section

$n3 := 0$  Effect of obstructions

$n4 := 0.003$  Amount of Vegetation

$m := 1.1$  Degree of Meander

$n := (nb + n1 + n2 + n3 + n4) \cdot m$

$n := .035$  Manning's number for Riprap

$d := 0.4$  Normal depth (m) from HEC-RAS

$A := 32$  Flow area from ( $m^2$ ) HEC-RAS

$Va := \frac{Q}{A}$

$Va = 0.113$  Design velocity ( $m/s$ )

$da := d$

$da := 0.06$

Bank angle correction factor for 1V to 2H

$f := 41$

$K1 := 0.73$

D50f := 0.001      Median grain size of virgin soils (m)

SGrip := 2.55      Specific gravity of riprap

Sf := 1.5      Stability factor (Uniform flow, FS added)

C := 1.5      From chart 2

Ar := 30      Angle of Repose (approximated from soil type)

K1 := 0.70      Bank angle correction factor (Chart 4)

Cpa := 1      There are no piers or abutments in flow path

$$D50r := \frac{0.00594 \cdot Va^3}{da^{0.5} \cdot K1^{1.5}}$$

$$D50r = 6.044 \times 10^{-5}$$

$$D50 := D50r \cdot C \cdot Cpa$$

$$D50 = 9.066 \times 10^{-5} \quad D50 > D50f, \text{ and difference is not excessive}$$

$$D50e := D50 \cdot 3.28083$$

$$D50e = 2.974 \times 10^{-4} \quad \text{Riprap size in feet}$$

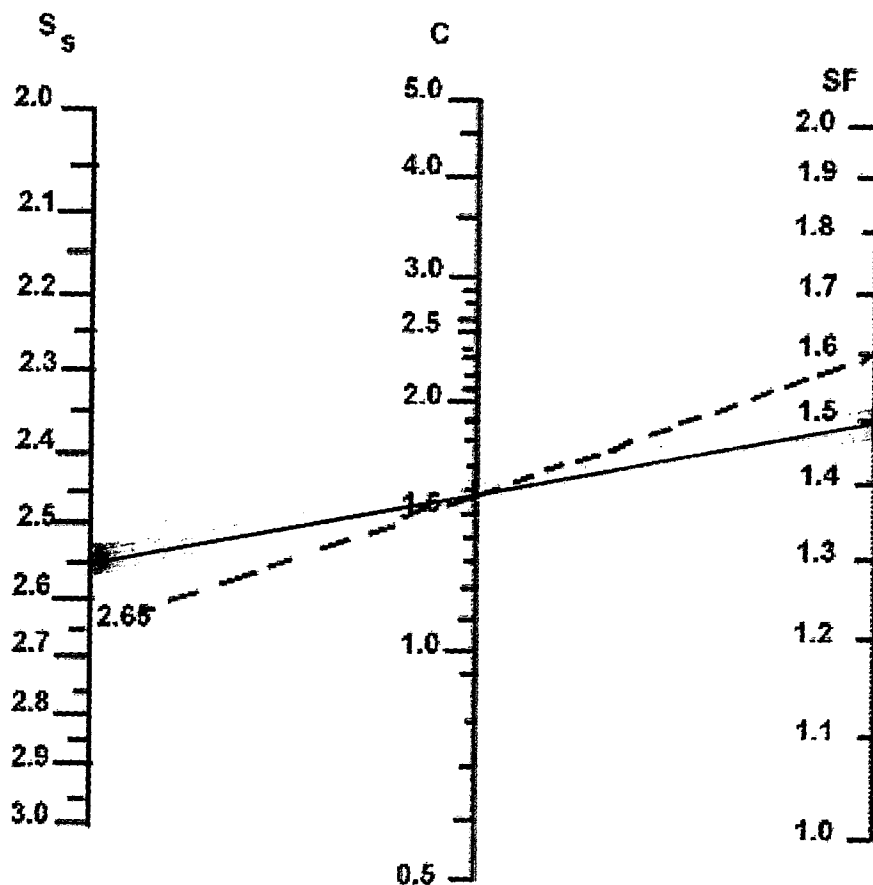
Chart 2. Correction Factor for Riprap Size

$$C = 1.61 SF^{1.5} / (S_s - 1)^{1.5}$$

$CORR = D_{50}$  CORRECTION FACTOR

SF = STABILITY FACTOR

$S_s$  = SPECIFIC GRAVITY OF ROCK

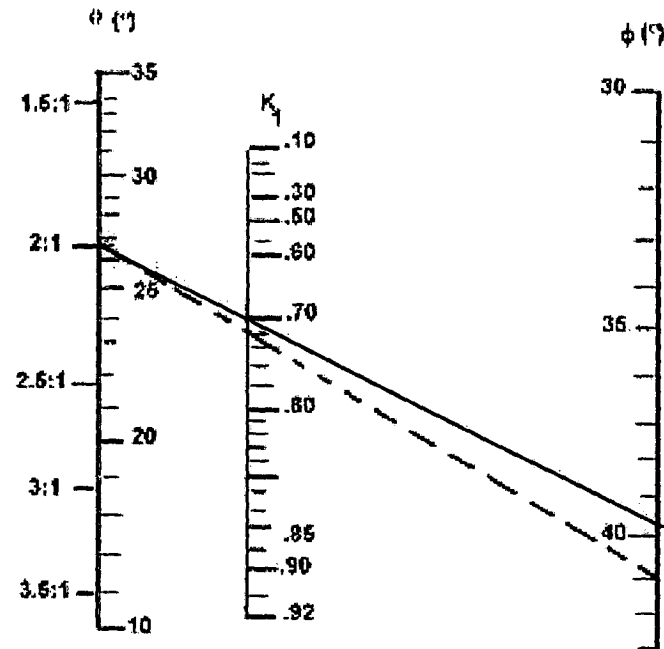
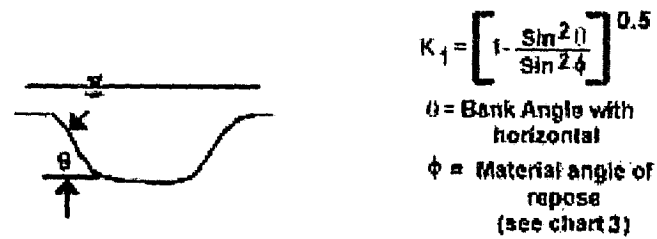


Example:

Given:  
 $S_s = 2.65$   
 $SF = 1.60$

Find:  
 $C$

Solution:  
 $C = 1.59$



**EXAMPLE 1:**

Given:

$\theta = 1V:2H$   
 Very Angular  
 $\phi = 41^\circ$

Find:

$K_1$

Solution:

$K_1 = 0.73$

Figure 26. Bank Angle Correction Factor ( $K_1$ ) Nomograph (Chart 3); Example 1

$$D_{50} = 0.00594 V_a^3 / ([d_{avg}]^{0.5} [K_1]^{1.5})$$

$D_{50}$  = Median Riprap Size (m)

# HEC 11, Chapter 4

## Riprap design for face of dam

### *Hudson Relationship*

Ver := 1      Hor := 3      Angle of bank to horizontal

$$\theta := \operatorname{atan}\left(\frac{\operatorname{Ver}}{\operatorname{Hor}}\right)$$

$$\theta = 0.322$$

H := 0.33      Wave height in meters (from chart 7 of HEC-11)  
assuming 40 mph wind with duration of 1 Hour

$$D50 := \frac{0.57 \cdot H}{\cot(\theta)^{\left(\frac{1}{3}\right)}}$$

$$D50 = 0.13$$

$$D50e := D50 \cdot 3.28083$$

$$D50e = 0.428 \quad \text{Riprap size in feet}$$

# Weir Flow Equation

Dia := 96      Diameter of manhole (in)

$D := \frac{\text{Dia}}{12}$       Conversion

D = 8      Diameter of pipe (ft)

$P := \pi \cdot D$

P = 25.133      Perimeter of weir (ft)

h := 3.0      Allowable head (ft)

$Q := 3.33 \cdot P \cdot h^{1.5}$       Weir equation

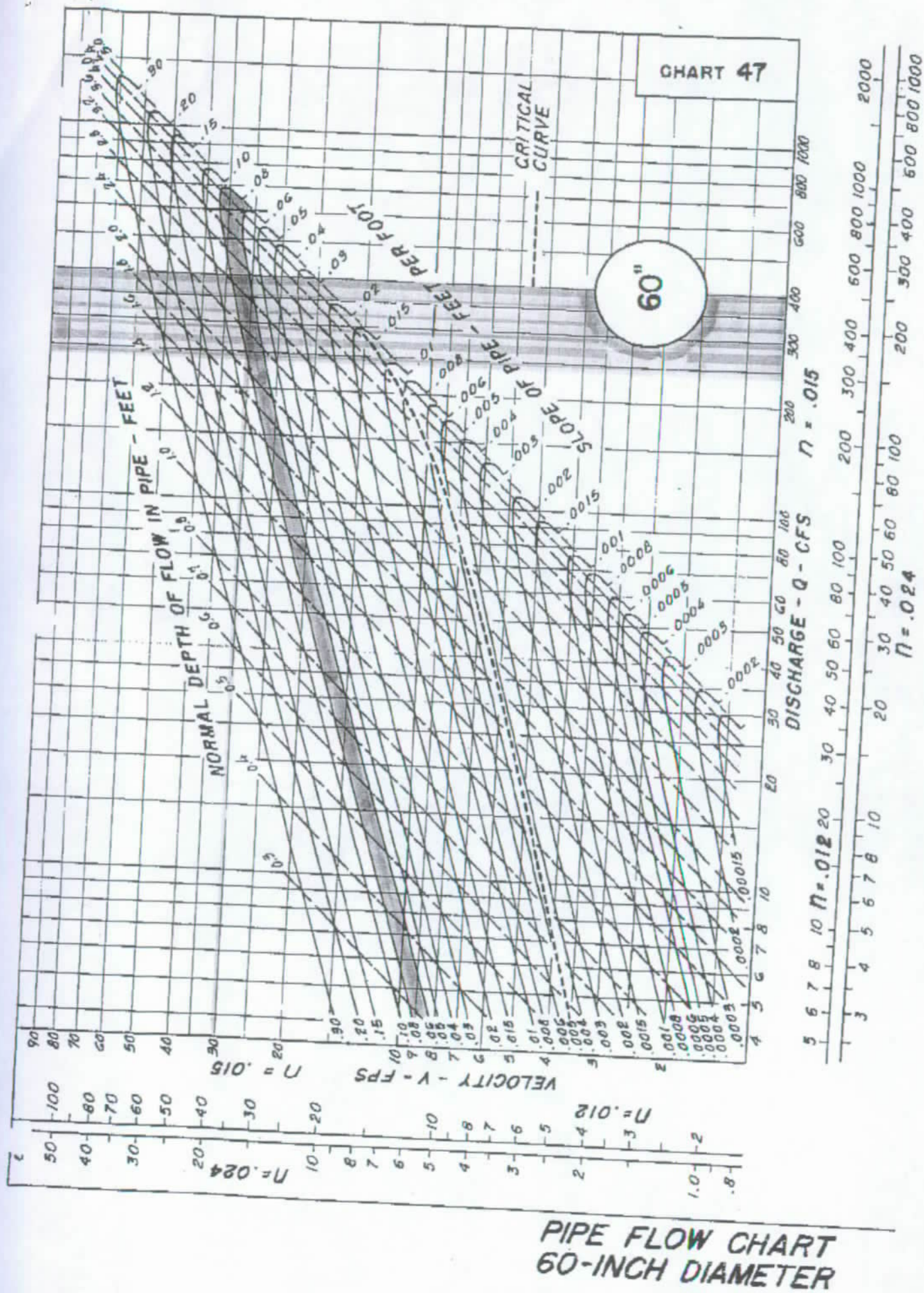
Q = 434.877      Maximum flow into manhole (cfs)

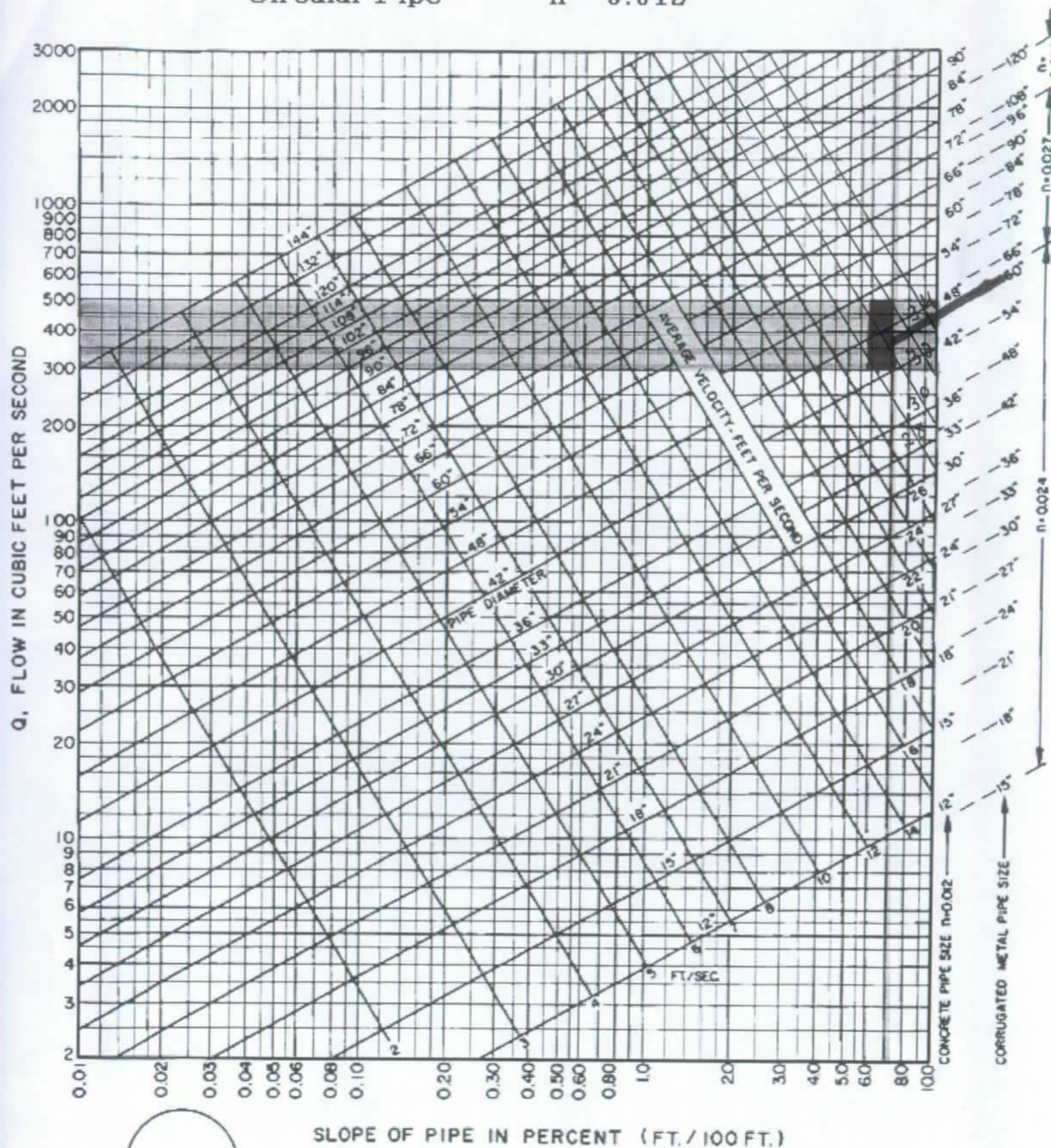
## From Charts

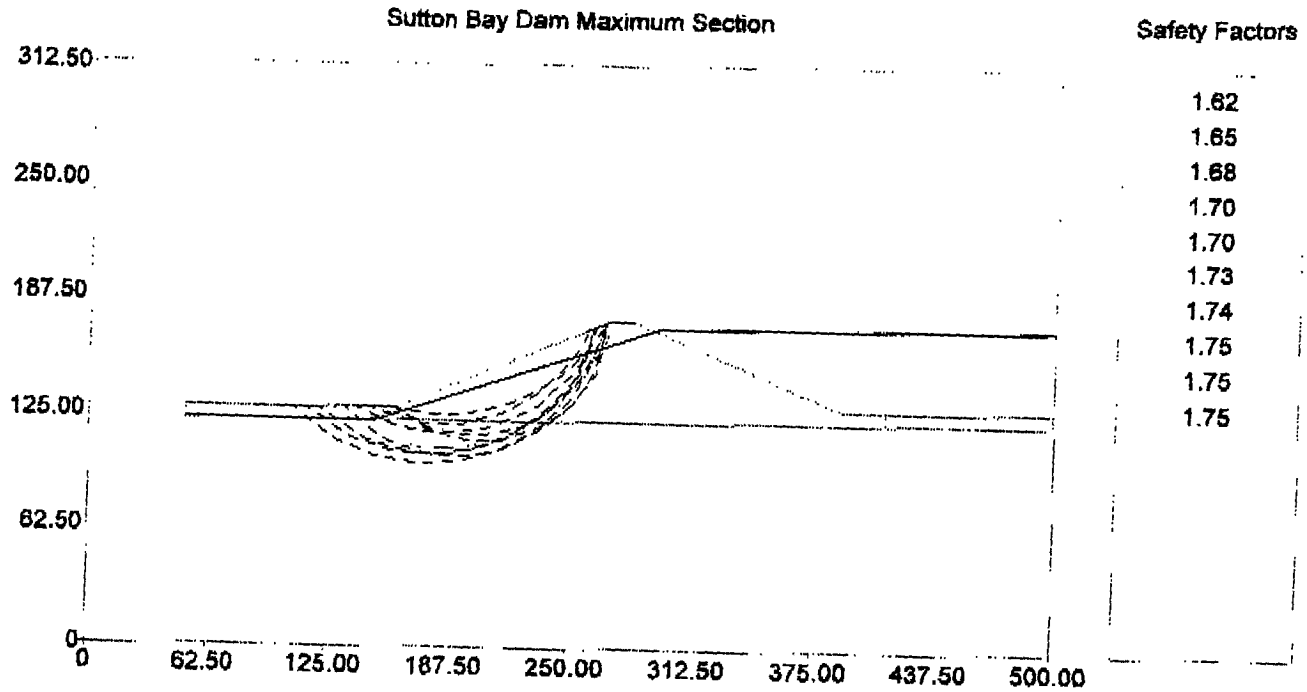
60" Spiral Rib Metal Pipe (SRMP) or will maintain capacity for 300 to 500 cfs. The outlet velocity of the SRMP will be around 35 fps. This velocity will need to be reduced before dissipating back into the natural streambed.

## Comments

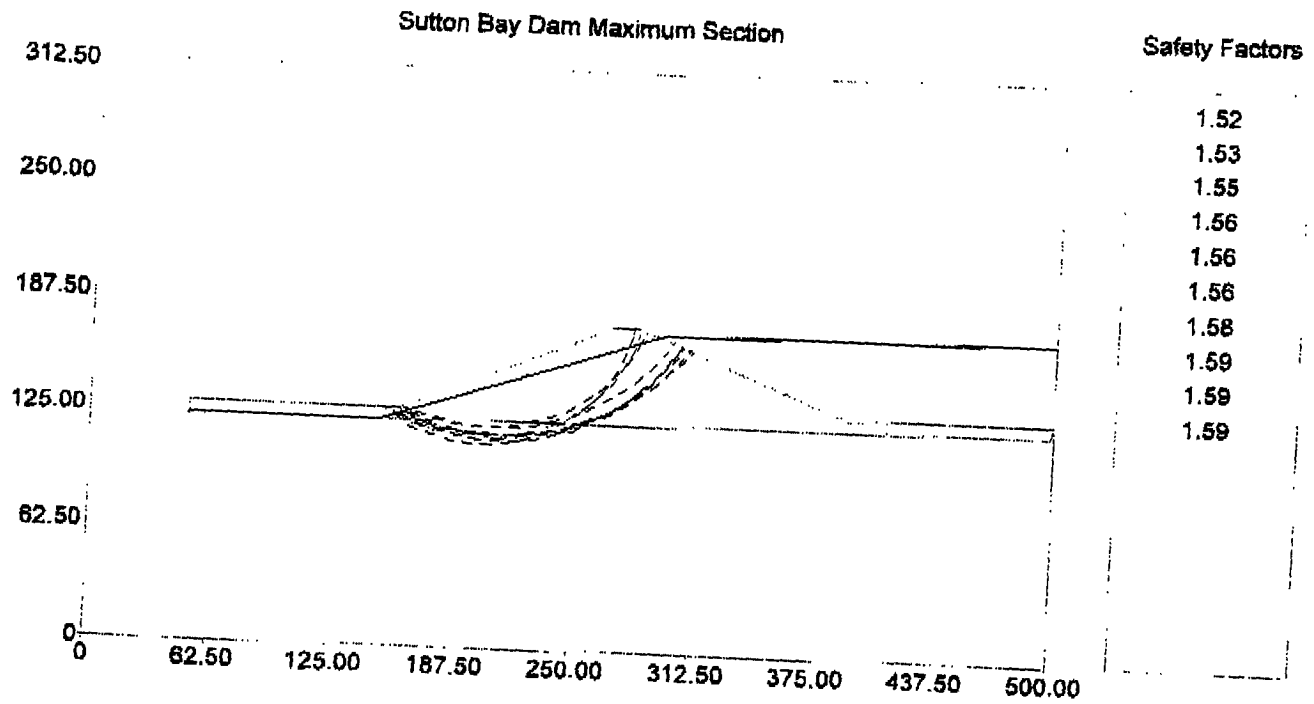
Local field stone can be used for all riprap areas on the dam and on primary spillway outlet.

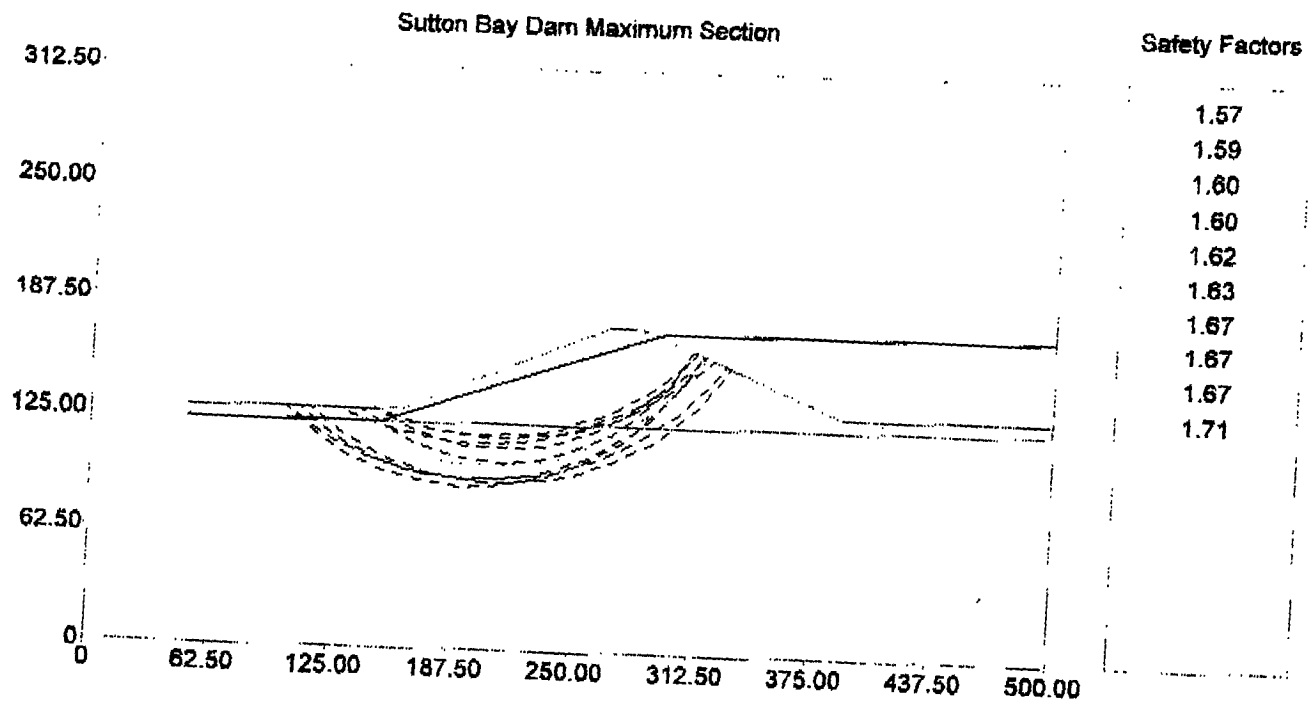


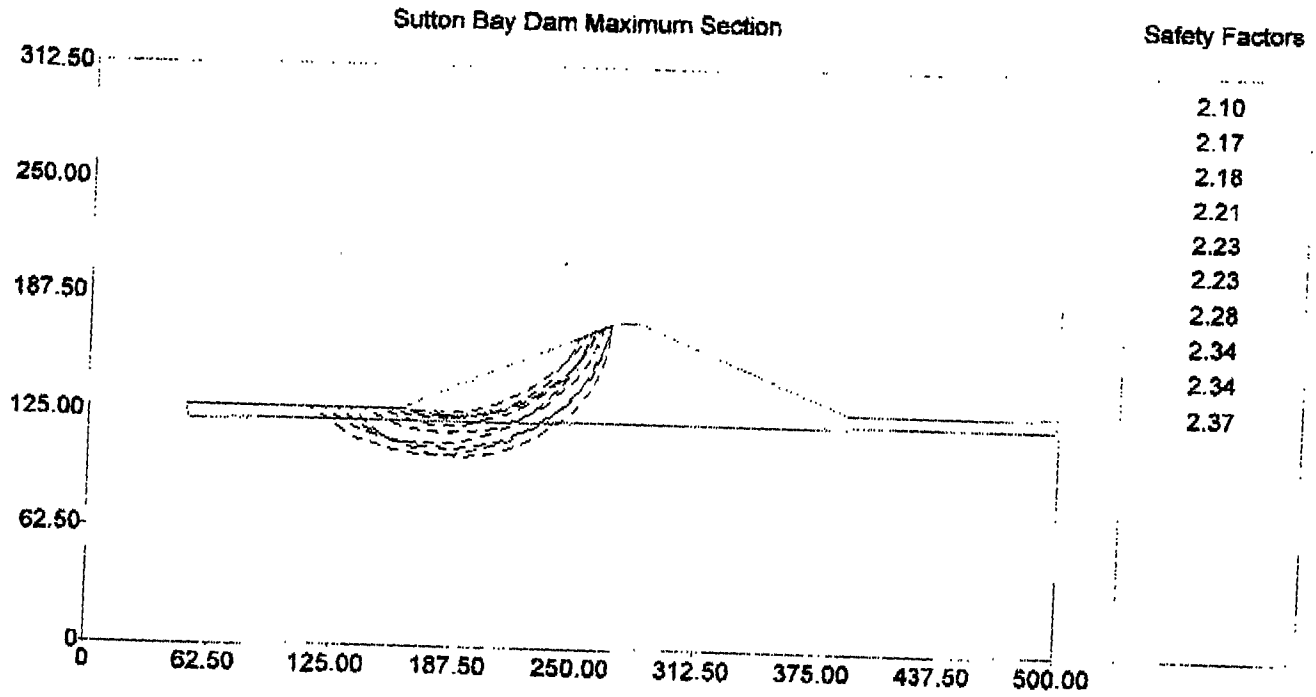
$$n = 0.012$$


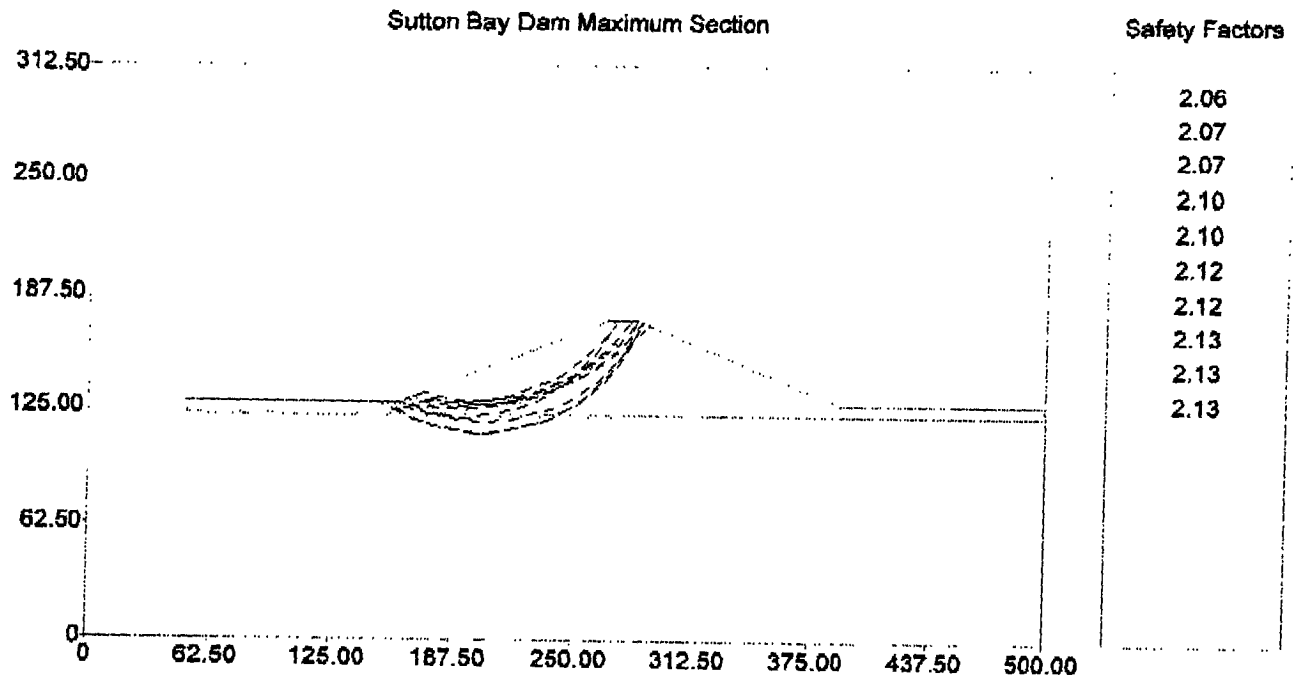


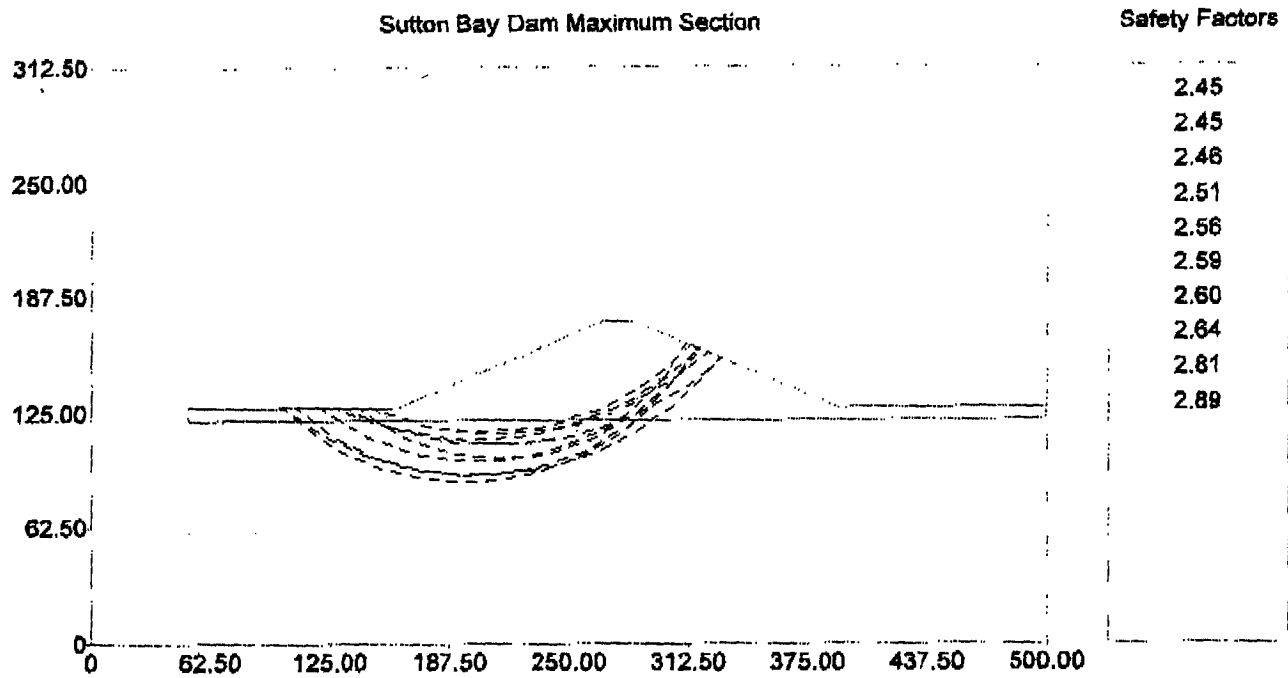
|                        |  |                   |              |
|------------------------|--|-------------------|--------------|
| Post-It® Fax Note 7671 |  | Date 10-8-02      | # of pages 6 |
| To SCOTT SCHWARTZ      |  | From ROBERT TENME |              |
| Co./Dept. BROSE        |  | Co. AET           |              |
| Phone # 224-1123       |  | Phone # 388-0029  |              |
| Fax # 224-0659         |  | Fax # 388-0064    |              |













3030 Airport Rd., Ste. A, Box 23  
Pierre, SD 57501  
Phone: (605)224-1123  
Fax: (605)224-0659

Registered in North Dakota, South Dakota, and Montana

October 15, 2002

Tim Schaal  
DENR  
523 E Capitol  
Pierre, SD 57501

02-203  
RECEIVED

OCT 15 2002

WATER RIGHTS  
PROGRAM

RE: SUTTON BAY DAM

Dear Mr. Schaal:

Attached are two copies of revised sheets 3 and 4 for the proposed Sutton Bay Dam in Sully County as per your comments in our telephone conversation. Also attached is a copy of the revised Capacity Chart showing the storage capacity at various elevations.

The primary outlet structure was not revised. We feel that the cost savings would be minor, and the current design prevents degrading of the secondary channel.

The Water Rights Permit application is being revised and will be resubmitted to Eric Gronlund as soon as it is signed and notarized.

If there is any additional information you need, please let us know.

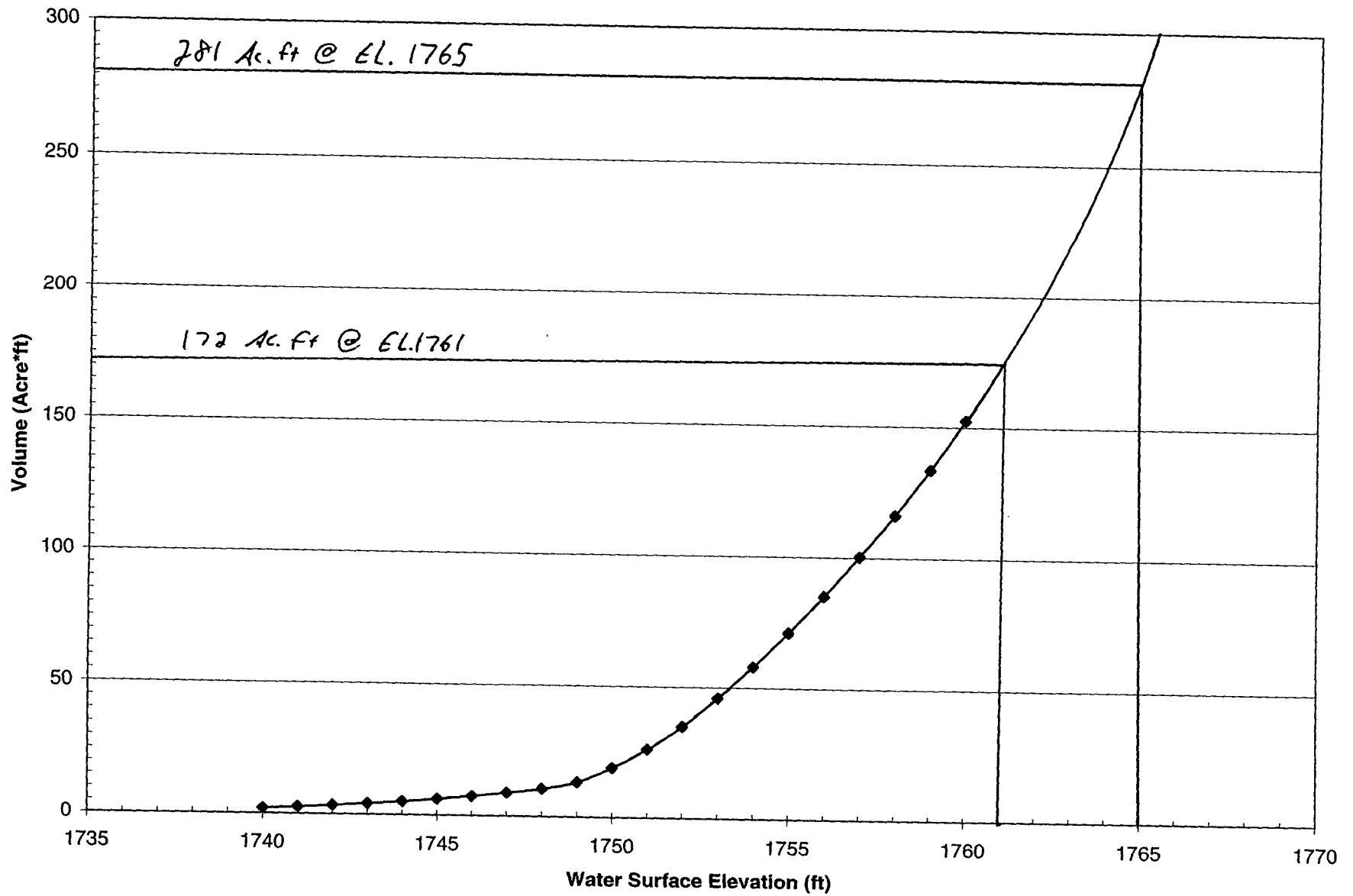
Sincerely,

A handwritten signature in cursive script, reading 'Laurie Schultz'.

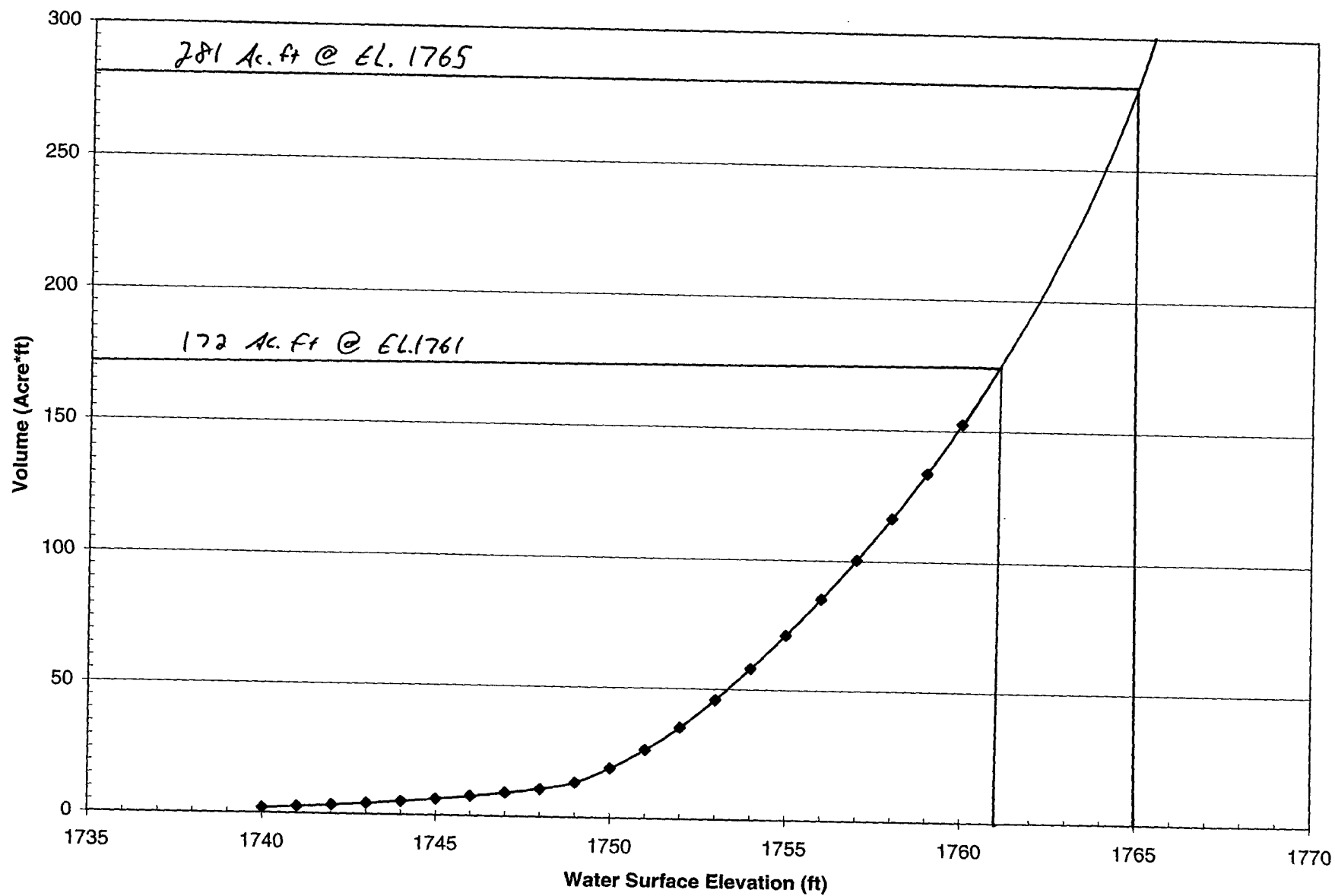
Laurie Schultz, PE  
Project Manager

Cc: Mark Amundson  
File S02-P592

Capacity Chart



Capacity Chart





3030 Airport Rd., Ste. A, Box 23  
Pierre, SD 57501  
Phone: (605)224-1123  
Fax: (605)224-0659

October 16, 2002

Eric Gronlund  
DENR  
523 E Capitol  
Pierre, SD 57501

RECEIVED

OCT 17 2002

WATER RIGHTS  
PROGRAM

RE: SUTTON BAY DAM

Dear Mr. Gronlund:

Attached are two copies of revised Application for Permit to Appropriate Water Within the State of South Dakota. This replaces the application dated August 21, 2002.

If there is any additional information you need, please let us know.

Sincerely,

A handwritten signature in cursive script, reading 'Laurie Schultz'.

Laurie Schultz, PE  
Project Manager

Cc: Mark Amundson  
File S02-P592

REPORT ON  
WATER PERMIT APPLICATION NO. 6366-3  
Mark Amundson  
October 18, 2002

Water Permit Application No. 6366-3 has been filed by Mark Amundson to impound 100 acre-feet of runoff and Missouri River water by constructing a dam located in the NW 1/4 SW 1/4 of Section 3-T116N-R79W, in Sully County. This application proposes to utilize the existing diversion works from the Missouri River authorized by Water Permit No. 6269-3 to fill and maintain the dam as needed. Water Permit No. 6269-3 appropriates 3.12 cfs from the Missouri River for irrigation of a 100 acre golf course. The application also requests impoundment of sufficient water to maintain water at the outlet elevation. The water will be used for fish and wildlife production and recreation use.

Discussion:

The dam will be classified as a small size, Category 3, Low Hazard dam. Brosz Engineering, Inc. has designed the dam. The plans and specifications have been reviewed and will be approved.

The Sutton Bay Dam will be 37 feet high with a normal storage capacity of 100 acre-feet with a reservoir level at the primary spillway elevation, and a maximum storage capacity of 281 acre-feet with a reservoir level at the top of dam elevation. A dam of this size and hazard classification is required to have a minimum spillway design capable of passing a 50-year frequency event.

The dam has a drainage area of 194 acres or 0.30 square miles. A 50-year frequency event for this drainage area produces a peak runoff of approximately 447 cfs. A 100-year frequency event produces a peak of approximately 575 cfs. The dam was designed to have an 84 inch diameter concrete riser with a 60 inch SRMP pipe with 7 feet of available freeboard as the primary spillway, and a 60 foot wide earthcut spillway with 4.0 feet of available freeboard as the secondary spillway. The 60 foot wide earthcut spillway has a capacity of approximately 1250 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 4 acre-feet. The annual yield with a 50 percent chance of occurrence, or 1 out of 2 years, is expected to be 10 acre-feet and the annual yield with a 10 percent chance, or 1 out of 10 years, is expected to be 40 acre-feet.

The Sutton Bay Dam will be located in the NW 1/4 SW 1/4 of Section 3-T116N-R79W on an unnamed tributary to Artichoke Creek, about 0.5 miles upstream of the confluence of the unnamed tributary and Artichoke Creek; and about 1.5 miles upstream of the confluence of Artichoke Creek and Lake Oahe on the Missouri River. There are no other Water Permits/Rights located on the unnamed tributary or Artichoke Creek between the proposed dam and Lake Oahe.

Page 2

Application No. 6366-3

Mark Amundson

Conclusions:

1. Water Permit Application No. 6366-3 should be approved since unappropriated water is available and approval should not have an adverse effect on existing Water Permits/Rights.
2. If approved, the low flow bypass requirement for downstream domestic use and existing prior Water Permits/Rights should be a qualification on Water Permit Application No. 6366-3.

*for Eric Humlund*  
Timothy G. Schaal, P.E.  
Natural Resources Engineer Specialist

Approved by:

*Gale N. Selken*  
Gale N. Selken, P.E.  
Natural Resources Engineer Director



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[www.state.sd.us/denr](http://www.state.sd.us/denr)

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT  
APPLICATION NO. 6366-3, Mark Amundson**

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. 6366-3, Mark Amundson, dba Sutton Bay Golf, LLC, 6829 W. Honeysuckle Court, Sioux Falls SD 57106.

The Chief Engineer is recommending APPROVAL of Application No. 6366-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) it is in the public interest with the following qualifications:

1. Water Permit No. 6366-3 authorizes storage of 100 acre feet of water in dam. The lake may be filled one or more times per year.
2. Pumping from the Missouri River into the dam is authorized to the primary outlet elevation of 1757.0 feet mean sea level.
3. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.

See report on application for additional information.

Garland Erbele, Chief Engineer  
October 23, 2002



**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[www.state.sd.us/denr](http://www.state.sd.us/denr)

October 23, 2002

Mark Amundson  
Sutton Bay Golf, LLC  
6829 W. Honeysuckle Court  
Sioux Falls, SD 57106

Dear Mr. Amundson:

We have reviewed the plans and specifications for your dam project located in the SW 1/4 of Section 3-T116N-R79W, in Sully County. The plans and specifications as submitted 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.6366-3 is approved.

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

The Sutton Bay Dam will be classified as a small size Category 3, Low Hazard Dam with a dam height of 37 feet and a normal storage capacity of 100 acre-feet and a maximum storage capacity of 281 acre-feet.

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

Sincerely,

Gale N. Selken, P.E.  
Natural Resources Engineer Director  
for Garland Erbele, Chief Engineer  
Water Rights Program  
(605) 773-3352

c: Laurie Schultz, P.E., Brosz Engineering, Inc.

# **NOTICE OF APPLICATION NO. 6366-3**

## **to Appropriate Water**

### **PROOF OF PUBLICATION**

STATE OF SOUTH DAKOTA )

County of Sully ) SS

I, Alice Olson

certify that the attached printed Notice was taken

from the Onida Watchman

printed and published in Onida

County of Sully and

state of South Dakota. The notice was published

in the newspaper on the following two dates:

Thursday, Nov. 7, 2002

Thursday, Nov. 14, 2002

Cost of Printing \$ 42.10

Alice Olson

(Signature)

Publisher

(Title)

11-25-02

(Date Signed)

Notice is given that Mark Amundson, Sutton Bay, 6829 West Honeysuckle Court, Sioux Falls, SD 57106 has filed an application for a water permit to impound 100 acre-feet of water from runoff and Missouri River diversions by constructing a dam located in the NE ¼ SW ¼ Section 3 with water impounded in the NE ¼ SW ¼, W ½ SE ¼ Section 3; all in T116N-R79W. This application proposes to utilize the existing diversion works from the Missouri River authorized by Water Permit No. 6269-3 to fill and maintain the dam as needed. Water Permit No. 6269-3 appropriates 3.12 cubic feet of water per second from the Missouri River located in the NE ¼ SW ¼ Section 33-T117N-R79W and the SE ¼ SW ¼ Section 4-T116N-R79W for the irrigation of a 100 acre golf course. This application request impoundment of sufficient water to maintain water to the outlet elevation 1757 feet mean sea level. The water is for fish, and wildlife propagation and recreation purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6366-3 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 the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E. Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by November 25, 2002.

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. Pimer, Secretary  
Department of Environment  
and Natural Resources  
45-46

RECEIVED

DEC 02 2002

WATER RIGHTS  
PROGRAM

**NOTICE OF APPLICATION NO.****6366-3 to Appropriate Water**

Notice is given that Mark Amundson, Sutton Bay, 6829 West Honeysuckle Court, Sioux Falls SD 57106 has filed an application for a water permit to impound 100 acre-feet of water from runoff and Missouri River diversions by constructing a dam located in the NE1/4 SW1/4 Section 3 with water impounded in the NE1/4 SW1/4, W1/2 SE1/4 Section 3; all in T116N-R79W. This application proposes to utilize the existing diversion works from the Missouri River authorized by Water Permit No. 6269-3 to fill and maintain the dam as needed. Water Permit No. 6269-3 appropriates 3.12 cubic feet of water per second from the Missouri River located in the NE1/4 SW1/4 Section 33-T117N-R79W and the SE1/4 SW1/4 Section 4-T116N-R79W for the irrigation of a 100 acre golf course. This application request impoundment of sufficient water to maintain water to the outlet elevation 1757 feet mean sea level. The water is for fish and wildlife propagation and recreation purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6366-3 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 the application, as recommended, unless a petition is filed opposing the application of the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting the 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 November 18, 2002.

The petition may be informal, but must include a statement describing the petitioner 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.

# Affidavit of Publication

STATE OF SOUTH DAKOTA,  
COUNTY OF POTTER, ss.

DAVID B. CLAUSEN being first duly sworn, on oath says, that he is the publisher of the POTTER COUNTY NEWS, a weekly newspaper published in Gettysburg, County of Potter, and has full and personal knowledge of all the facts herein stated; that said newspaper is a legal newspaper and has a bonafide circulation of at least two hundred copies weekly, and has been published within said county for fifty-two successive weeks next prior to the publication of the notice herein mentioned; that the

*Notice of Application No.  
6366-3 to Appropriate  
Water*

a printed copy of which, taken from the paper in which same was published, is attached to this sheet, and is made a part of this Affidavit, was published in said

newspaper at least once each week for 2 successive weeks, on the day of each week on which said newspaper was regularly published, to-wit:

*Oct. 31 and Nov. 7, 2002*

that the full amount of the fees for the publication

of the annexed notice is \$ 45.05

*David Clausen*

Subscribed and sworn to before me this 7th

day of November, 20 02

*Carol D. Clausen*

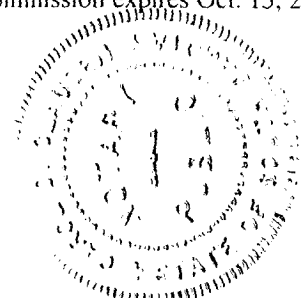
Carol D. Clausen, Notary Public  
State of South Dakota

My commission expires Oct. 15, 2004

RECEIVED

NOV 12 2002

WATER RIGHTS  
PROGRAM





**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[www.state.sd.us/denr](http://www.state.sd.us/denr)

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

October 23, 2002

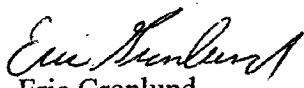
Mark Amundson  
Sutton Bay  
6829 West Honeysuckle Court  
Sioux Falls SD 57106

Dear Mr. Amundson:

Water Permit Application No. 6366-3 for fish and willidfe propagation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice of hearing has been sent to the Publisher of the Onida Watchman printed at Onida, SD (Ph # 605-258-2604) and the Potter Co. News printed at Gettysburg, SD (Ph # 605-765-2464). You will need to contact the newspapers and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and a report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspapers to authorize publication of your Notice of Hearing and to arrange for payment. Early contact with the papers can eliminate delays. Upon receiving authorization, the publisher has been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. The newspapers have 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

cc: Laurie Schultz, Brosz Engineering

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

Instruction to Newspaper - Publish first Notice on October 31, 2002 with the second publication 7 days later. The applicant is responsible for payment.

---

### NOTICE OF APPLICATION NO. 6366-3 to Appropriate Water

Notice is given that Mark Amundson, Sutton Bay, 6829 West Honeysuckle Court, Sioux Falls SD 57106 has filed an application for a water permit to impound 100 acre-feet of water from runoff and Missouri River diversions by constructing a dam located in the NE  $\frac{1}{4}$  SW  $\frac{1}{4}$  Section 3 with water impounded in the NE  $\frac{1}{4}$  SW  $\frac{1}{4}$ , W  $\frac{1}{2}$  SE  $\frac{1}{4}$  Section 3; all in T116N-R79W. This application proposes to utilize the existing diversion works from the Missouri River authorized by Water Permit No. 6269-3 to fill and maintain the dam as needed. Water Permit No. 6269-3 appropriates 3.12 cubic feet of water per second from the Missouri River located in the NE  $\frac{1}{4}$  SW  $\frac{1}{4}$  Section 33-T117N-R79W and the SE  $\frac{1}{4}$  SW  $\frac{1}{4}$  Section 4-T116N-R79W for the irrigation of a 100 acre golf course. This application request impoundment of sufficient water to maintain water to the outlet elevation 1757 feet mean sea level. The water is for fish and wildlife propagation and recreation purposes.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 6366-3 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 the application, as recommended, unless a petition is filed opposing the application or the applicant files a petition contesting the Chief Engineer's recommendation. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled and the Water Management Board will consider the application. Notice of the hearing will be given to the applicant and any person filing a petition.

Any person interested in opposing or supporting this application or recommendation must file a written petition with BOTH the applicant and Chief Engineer. The applicant must file a petition if contesting the Chief Engineer's recommendation. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by November 18, 2002.

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



DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES

JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[www.state.sd.us/denr](http://www.state.sd.us/denr)

October 23, 2002

Onida Watchman  
PO Box 245  
Onida SD 57564-0245

ATTENTION: Legal Public Notice

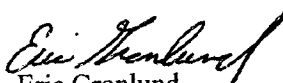
Enclosed is a Notice of Hearing on Application No. 6366-3 to Appropriate Water to be published twice. Please publish the first notice on October 31, 2002 with the second publication 7 days later.

The applicant must verify to you that the notice is to be published, before you make the first publication **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Mark Amundson, Sutton Bay, 6829 West Honeysuckle Court, Sioux Falls, SD 57106 (Ph # 605-361-9412).

**Please send the Water Rights Program the first publication immediately.** The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

  
Eric Gronlund  
Natural Resources Engineer  
605 773-3352

enclosures

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

No. 6366-3

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

Date \_\_\_\_\_

We are in receipt of your letter of October 23, 2002 enclosing Notice of Hearing to Appropriate Water by Application No. 6366-3 which was first published in our issue of \_\_\_\_\_. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

\_\_\_\_\_  
Name

\_\_\_\_\_  
Newspaper



DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES

JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[www.state.sd.us/denr](http://www.state.sd.us/denr)

October 23, 2002

Potter Co. News  
PO Box 190  
Gettysburg, SD 57442-0190

ATTENTION: Legal Public Notice

Enclosed is a Notice of Hearing on Application No. 6366-3 to Appropriate Water to be published twice. Please publish the first notice on October 31, 2002 with the second publication 7 days later.

The applicant must verify to you that the notice is to be published, before you make the first publication **Please BILL the APPLICANT for the cost of publication.** The APPLICANT is Mark Amundson, Sutton Bay, 6829 West Honeysuckle Court, Sioux Falls, SD 57106 (Ph # 605-361-9412).

**Please send the Water Rights Program the first publication immediately.** The publication is checked for accuracy so any corrections can be made in the second publication. You may use the form below or fax a copy of the first publication. Any fax should be sent to the attention of Karen Schlaak at (605) 773-4068. Publication errors can invalidate the public notice.

After the second publication, **please send us an affidavit or use the enclosed Proof of Publication form.** The applicant pays the cost of publication, but the Water Rights Program records require an affidavit or Proof of Publication. Delays in receiving the affidavit can be costly to the applicant.

Sincerely,

  
Eric Gronlund  
Natural Resources Engineer  
605 773-3352

enclosures

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

No. 6366-3

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

Date \_\_\_\_\_

We are in receipt of your letter of October 23, 2002 enclosing Notice of Hearing to Appropriate Water by Application No. 6366-3 which was first published in our issue of \_\_\_\_\_. **ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.**

\_\_\_\_\_  
Name

\_\_\_\_\_  
Newspaper



JAN 15 2003

**DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES**

JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
[www.state.sd.us/denr](http://www.state.sd.us/denr)

Mark Amundson  
Sutton Bay  
6829 West Honeysuckle Court  
Sioux Falls SD 57106

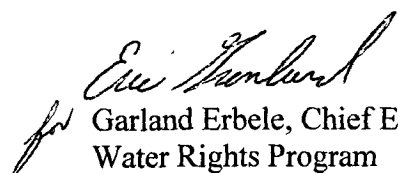
Dear Mr. Amundson:

Enclosed is Water Permit No. 6366-3 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,

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

enclosures

**Water Permit No. 6366-3**  
**Missouri River - Water District**

**Report of Examination of Works and/or Application of Water to Beneficial Use**

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

I have this day, April 7, 2015, made a thorough examination of the water use system constructed by Sutton Bay Golf LLC of 28950 Sutton Bay Trail, Agar, SD 57520 holder of Permit No. 6366-3, bearing the priority of October 17, 2002 authorizing the storage of 100 acre-feet of water of the Missouri River and Run-off for Fish and Wildlife Propagation, and Recreation purposes, in Sully County.

Inspection contact & relationship     **Don Smith**  
to permit holder, if applicable:

**A. Dam Information:**

- 1) Height to crest 37 feet
- 2) Height to primary spillway 29 feet
- 3) Height to secondary spillway 33 ft
- 4) Crest width 15 feet
- 5) Crest length 425 feet
- 6) Spillway width 60 feet
- 7) Approx. storage 100 ac-ft
- 8) Approx. storage to crest 281 ac-ft

**B. Compliance with Permit Requirements:**

- 1) Permit qualifications being abided by Y
- 2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period NA
- 3) Exceptions to compliance are: None

The system is in Good condition with the point(s) of diversion located as follows:

**Dam**

**Approximately 2,990 feet north and 2,195 feet east of the SW corner of Section 3-T116N-R79W**  
**(N 44.88959, W -100.33767) (NE ¼ SW ¼)**

**Dugout - Water Permit No. 6269-3**

**Approximately 435 feet south and 905 feet west of the NE corner of Section 5-T116N-R79W**  
**(N 44.89660, W -100.36982) (NE ¼ NE ¼)**

**Report of Examination of Works**

Permit No. 6366-3

The works are capable of storing 100 acre-feet of water which is to be used for **Fish and Wildlife Propagation, and Recreation.**

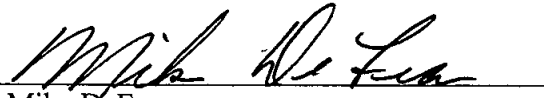
The license should be issued for 100 acre-feet of storage.

All structures, wells and lands on map Y

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

Water Permit No. 6366-3 authorizes impoundment of 100 acre-feet of water from natural run-off into the dam and utilize diversion works from the Missouri River authorized by Water Permit No. 6269-3 to fill and maintain the dam as needed.

This dam relies primarily on run-off into the dam. However, pumps and pipe are in place to divert water from the dugout authorized by Permit No. 6269-3 to the dam if needed.



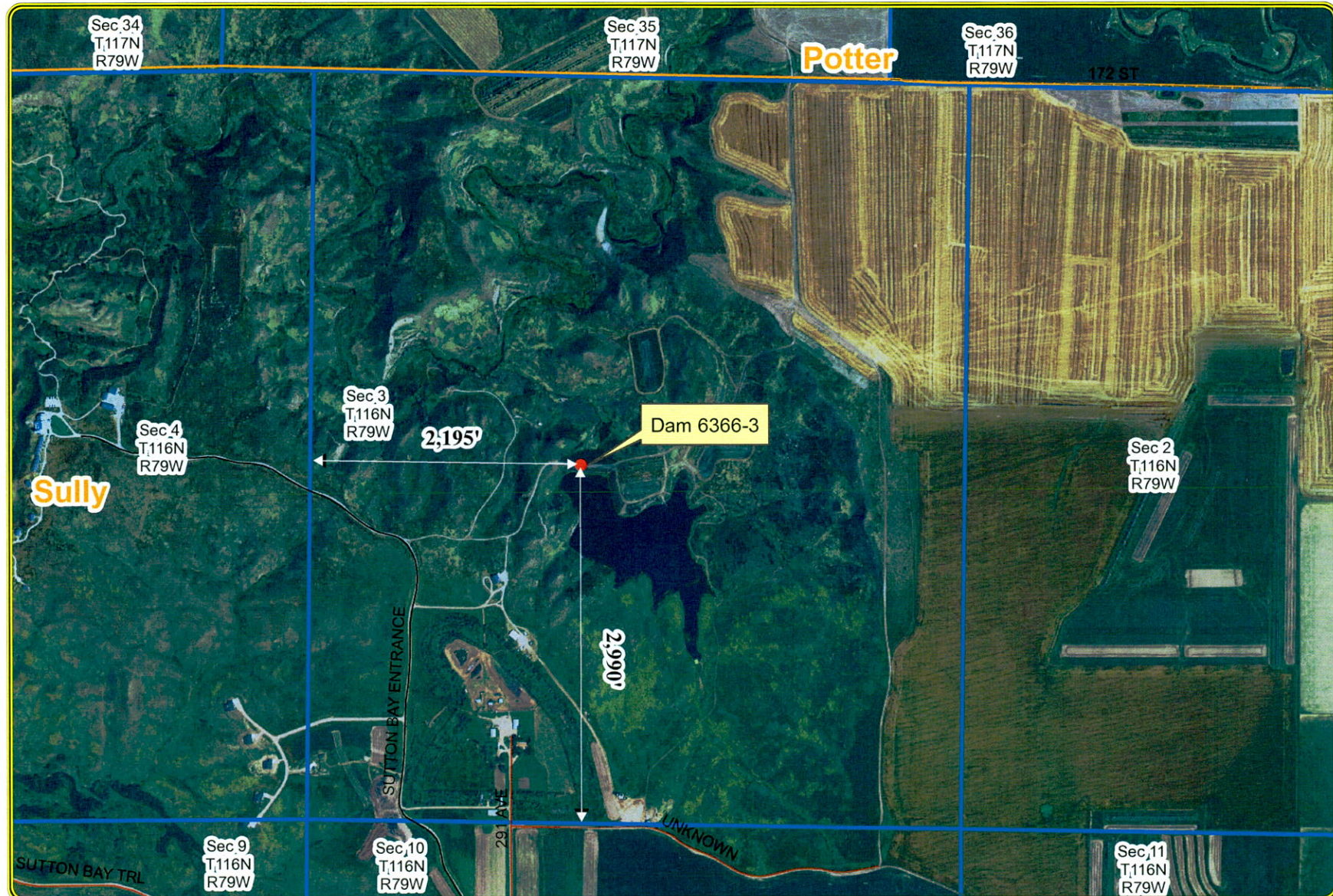
Mike DeFea

Natural Resources Engineer II  
DENR, Water Rights Program

Date report completed: **May 21, 2015**

# Sutton Bay Golf, LLC

Water Permit No. 6366-3



*Mike DeFea*

Mike DeFea  
Natural Resources Engineer  
DENR, Water Rights Program  
May 15, 2015





DEPARTMENT of ENVIRONMENT  
and NATURAL RESOURCES

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

denr.sd.gov

**MAY 28 2015**

6366-3

Don Smith  
Sutton Bay Golf LLC  
28950 Sutton Bay Trail  
Agar SD 57520

Dear Mr. Smith:

Enclosed is Water License No. 6366-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

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

Sincerely,

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

enclosures

# STATE OF SOUTH DAKOTA

## WATER LICENSE NO. 6366-3

(1) Sutton Bay Golf LLC, 28950 Sutton Bay Trail, Agar SD 57520 made Application No. 6366-3, October 17, 2002 for a water permit to impound 100 acre feet of water from the Missouri River and runoff, Sully County, South Dakota for fish & wildlife propagation and recreational purposes. Permit No. 6366-3, with a priority date of October 17, 2002 was approved November 25, 2002 and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before November 25, 2007 and for the application to beneficial use of said water on or before November 25, 2011.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the storage dam and is entitled to impound 100 acre feet of water for beneficial use.

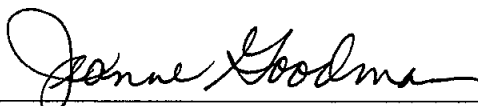
The location of the storage dam is: approximately 2,990 feet north and 2,195 feet east of the SW corner of Section 3, T116N, R79W (NE ¼ SW ¼). The permit utilizes the existing diversion works from the Missouri River authorized by Water Right No. 6269-3 to fill and maintain the dam as needed.

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

(4) Pursuant to South Dakota Water Law 46-5-30.1 Sutton Bay Golf LLC, 28950 Sutton Bay Trail, Agar SD 57520 the holder and/or owner of Water Right No. 6366-3 is issued a license to appropriate water, the right to impound 100 acre feet of water from the Missouri River and runoff with a priority date of October 17, 2002 from the location specified in (2) of this license for fish & wildlife propagation and recreational purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 6366-3 and subject to the following qualifications:

- Water Right No. 6366-3 authorizes storage of 100 acre feet of water in the dam. The lake may be filled one or more times per year.
- Pumping from the Missouri River into the dam is authorized to the primary outlet elevation of 1757.0 feet mean sea level.
- Low flows as needed for downstream domestic use, including livestock water and prior water rights must be bypassed.



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

MAY 28 2015

date

