

VESTED RIGHT

1. Considered: April 14, 19 83 Water Right No. 4944-3
2. Name of Applicant S.D. Department of Game, Fish and Parks
3. Post Office Address Pierre, S.D.
4. Amount of Water Claimed _____ maximum acre feet 540 acre feet annually
5. Source of Water Supply Swan Lake
6. Water to be used for REC acres to be irrigated _____
7. County Turner about 3/4W 3 1/2 miles north of Viborg
8. PROOF OF PUBLICATION: Received N/A Not Received _____
 APPLICATION: Approved April 14, 1983 Subject to 540 AFA & outlet elevation
 Not Approved _____ Action Deferred _____

PRIORITY 1954 Dated Received 3/4/83 Application complete-yes x no _____ FEE n/a
 Remarks _____

1954 - Turkey Creek
1889
natural drainage
 WATER 1000
 QUALITY acres
 Corrected Application received _____ Period of Annual Use 1/1 thru 12/31
 Received yes _____ no _____ APPROVED/CONDITIONAL (Circle one)
 WI-1 Description same as application-yes _____ no _____ Remarks _____

Disapproved _____ Returned _____

Diversion Point _____
E 1/2 Sec. 16 and W 1/2 Sec. 15-97N-53W

Land to be irrigated _____

WELL LOG Driller _____ Licensed - yes _____ no _____
 Depth _____
 Remarks _____

MAP Map No. 4944-3 Map located in Water Right x Map file _____
 Type of Map aerial-not a good map Prepared by _____
 Map not signed as this is for a vested right

REVIEWED This Application was received within 30 days of the date received, accepted as complete, Number assigned and written up for advertisement before the Board on:

3/9/83

BW-KL
 (Signed)

PROTESTS Letters/Petitions in File - yes _____ no _____ Remarks _____

REMARKS Date
 F.F. & C. Final Decision, including F.F. & C. of Law were adopted _____
 OF LAW, Date
 FINAL Final Decision mailed to parties and/or parties notified that Final Decision was
 DECISIONS adopted _____
 ETC. Remarks _____

No. 4944-3

Map No. 4944-3 Water Division No. 3 VERMILLION RIVER District
V/R Above for Office Use 10170102
VESTED RIGHT

Above for Office Use 10170102
VESTED RIGHT
ATION FOR PERMIT



APPLICATION FOR PERMIT
To Appropriate Water within the State of South Dakota

Check one of the following:

New _____ Vested Right X Future Use _____

Change in Diversion N/A Additional Diversion _____

Change in Acreage N/A Additional Acreage _____

1. Name of Applicant South Dakota Dept. of Game, Fish & Parks Phone No. 605/773-3384
 Post Office Address 445 E. Capitol Ave. Pierre State South Dakota
 (Street, Rm. or Box) (Town) (Zip Code)
 If a corporation show date and place of incorporation _____

Post Office Address 445 E. Capitol Ave. Pierre State South Dakota
(Street, R.R. or Box) (Town) (Zip Code)

If a corporation show date and place of incorporation _____

2. Method of accomplishing work (contract, employment of others, or by direct labor) N/A

3. Name of diversion work Swan Lake - Turner County

4. Amount of water claimed (cubic feet per second) 1080 acre ft/year - 180 ac. lake ave 6'

5. Source of water supply Turkey Ridge Creek - diversion structure ^{OR AS REQUIRED TO FILL LA} TO OUTLET ELEVATION

6. Location of point of diversion S15, T97N, R53W on Turkey Ridge Creek (1252.4 FEET MSL)
Swan Lake is located in S15 & 16, T97N, R53W. (3/9/83 PER PHONE CALL)
(STEFFEN TO HANTEN) BW

Swan Lake is located in S15 & 16, T97N, R53W.

County Turner

7. Annual period or periods during which water is to be used Continuous

8. Use to be made of water, (irrigation, industrial, municipal, commercial, recreation, etc.) Public recreational purposes

9. For irrigation use, Total number of acres to be irrigated _____

List below each forty acre subdivision, or lot, or fraction thereof and show number of acres to be irrigated in each.

Land Description	No. Acres Irr.

Land Description	No. Acres Irr.

Attach sheet if more space is needed

10. Time required to complete construction of water supply system _____ years. Additional time required to complete application of water to the proposed beneficial use 0 years.

11. Choice of county newspaper for publication of Notice of Intent to Appropriate Water Parker.

12. Principal Features of the Proposed Water Supply System.

A. Works proposed to divert water from its natural source.

B. Works proposed to transport water to place of use.

C. Works proposed to apply water to beneficial use.

Public recreation

Estimated Total Cost \$ None

Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map. (see instructions concerning preparation.)

STATE OF SOUTH DAKOTA)
)ss.

County of Hughes)
 Jack Merwin, Secretary
 Dept. of Game, Fish & Parks

1, Jack Melwin, Secretary
Dept. of Game, Fish & Parks the applicant, certify that I have read the foregoing application and have examined the attached map and that the matters therein stated are true and that I intend, and am able to complete the necessary construction.

Signed [Signature]

Subscribed and sworn to before me this 2nd day of March, 1983

Harvey H. Lieb
Notary Public (or other qualified officer)

my Comm. expires 2-11-84

$3\frac{1}{4}$ u $3\frac{1}{2}$ u Unten

WATER RIGHT APPLICATION APPROVAL

The Water Management Board hereby approves Water Right Application No.

4944-3

S.D. Dept. of Game, Fish & Parks

Anderson Building

(Applicant)

(Post Office Address)

Pierre, South Dakota

(State)

With the following qualifications.

That Vested Right 4944-3 be recognized For an annual recharge of 540 acre feet of water or as required to fill the lake and that the outlet structure elevation be set at 1252.4 feet msl.

Date of first receipt of application March 4, 1983

Date of return to applicant for correction, amendments or changes required _____, 19__

Date of receipt of corrected application _____, 19__

Approved April 14, 1983, Recorded in Book _____ Page _____

WATER RIGHT PERMIT NO. 4944-3

The Water Management Board hereby ~~grants and issues this~~ ^{recognizes} Water Right Permit No. 4944-3 authorizing the ~~construction of the water use system and the putting of water to~~ beneficial use as stated in the Application and as qualified in the Water Right Application approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is Turkey Creek Diversion 1954
2. The equivalent of at least one-fifth of the work above specified is to be completed on or before Natural Drainage 1889
3. The whole of said work is to be completed on or before _____, 19__
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is Completed, 19__
5. The water appropriated shall be used for the purpose of Recreation

6. The prior right of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be injuriously affected by this appropriation.

7. The amount of the appropriation herein granted shall not exceed 540 ac. ft. Annually ~~neither shall it exceed the capacity of the above described water supply system, nor shall it exceed the amount of water needed for beneficial uses served, and if for irrigation purposes said appropriation must be limited to not more than 2 acre feet per acre per year and be limited to not more than one-seventieth (1/70) of one cubic foot of water per second of time for each acre of land to which water is actually and beneficially applied~~

for ^{public recreation} ~~irrigation~~ on or before this date, 19__; said water to be used during the following described annual period: January 1 - December 31

Witness my hand this 22nd day of April, 1983

THE WATER MANAGEMENT BOARD

By:

Chief Engineer, Water Rights

Certificate of Construction Issued April 26, 1983

Water License Issued April 26, 1983

SWAN LAKE - Turner County

D Well Information

N/A

- (1) Drill Hole, Diameter _____, Depth _____
- (2) Casing, Type _____, Diameter _____, Thickness _____
(wood, concrete, steel, etc)
- (3) Screen, Type _____, Diameter _____, Length _____
- (4) Gravel Pack, Thickness _____, Length of gravel pack _____

E. Dugout Information or Estimates

- (1) Surface dimensions, _____, Depth _____

F. Fill out for Either a Well or a Dugout.

- (1) Water Bearing Materials. (Attach a copy of test well log)

Depth to top of water bearing material _____

Depth to bottom of water bearing material _____

Depth to water (ground surface to water level) _____

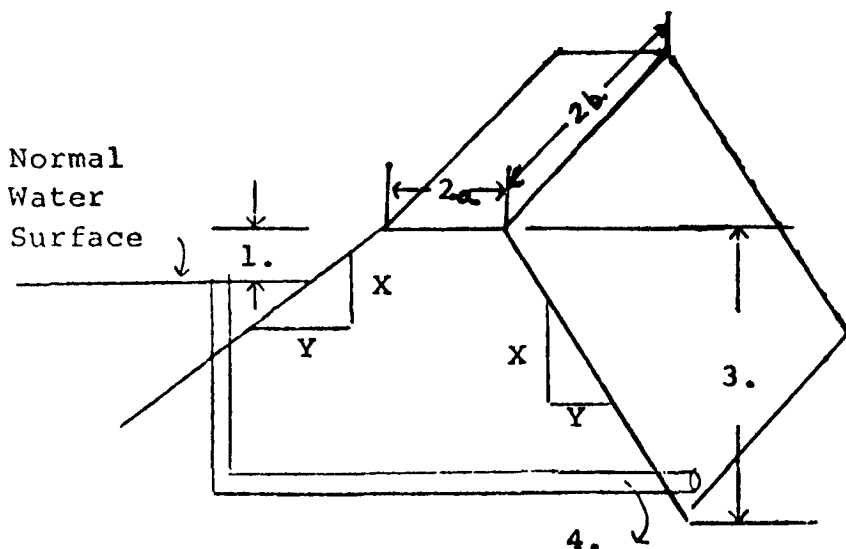
- (2) Distance to nearest existing household or livestock watering well.

On same owner's property _____ rds.

On property owned by others _____ rds.

G Water Storage Dams

If the proposed water use system contains one or more water storage dams, please show in the space below, the height, length, maximum water depth, surface area, drainage area, storage capacity, dam slope, dimensions, location and size of outlet works, of each storage dam. The location of each water storage dam should be shown on the water right map.



1. Freeboard 1.25'
- 2a Crest width b. length
3. Height of Dam 5.5'
4. Outlet dimensions:
Pipe diameter 3-43" x 27" corrugated arch pipe
Spillway width _____
- X & Y slope:
Upstream None
Downstream 1' to 100'
Surface area of impoundment 182 acres
Drainage area above dam 3 sections plus a diversion Ditch from Turkey Creek

Jack McLean
Signature of Applicant

NOTE: This Form is supplemental to Form 2, and is to be used when an affidavit pertaining to construction and water use, already completed, is needed.

**AFFIDAVIT OF CONSTRUCTION OF WATER USE
SYSTEM AND APPLICATION OF WATER TO BENEFICIAL USE**

Name of Applicant (Same as Form 2) South Dakota Dept. of Game, Fish & Parks
 Post Office Address 445 E. Capitol Ave. Pierre, State South Dakota
Anderson Bldg.
 If a Corporation show date and place of incorporation _____

13. Notice of Appropriation (If available)
 Date of Posting _____ Date of Recording _____
 Recording Data _____
14. Date of start of construction of water supply system 1954
15. Date that water was first applied to beneficial use Natural Lake
16. Name of owner of original water supply system State of South Dakota
17. Amount of water originally applied to beneficial use _____ c. f. s.
18. Present Use of Water
 Amount of water now being used 540 ~~1080~~ ac.ft. 2-7-83 BW
 Date that this amount of water was first used Natural Lake
19. Chronological History of Water Use

SWAN LAKE in Turner County is a natural - meandered lake and as such has been continually used for public recreation. In 1954 a concrete outlet control structure was constructed by the Department of Game, Fish & Parks. The lake was dredged to its present depth by Game, Fish and Parks in 1974-75. It has been managed for public recreation since South Dakota became a state in 1889.

Attach to this Form 2B. any copies of notices, postings, filings, publications, affidavits, or other records that apply. You may also attach any written statement by you, or by others, that you deem pertinent.

STATE OF SOUTH DAKOTA)
) ss.
 County of Hughes)

Jack Merwin, Secretary

I, Dept. of Game, Fish & Parks, the applicant, certify that I have read the foregoing and that the matters therein stated are true.

Signed Jack Merwin

Subscribed and sworn to before me this 2nd day of March, 19 83

Harvey H. Piet
 (Notary Public or other qualified Officer)

my Comm. expires 2-11-84

I, the undersigned, do hereby certify that I know about the water use system described above that I have read the foregoing and that the matters therein stated are true.

SEC. X-X

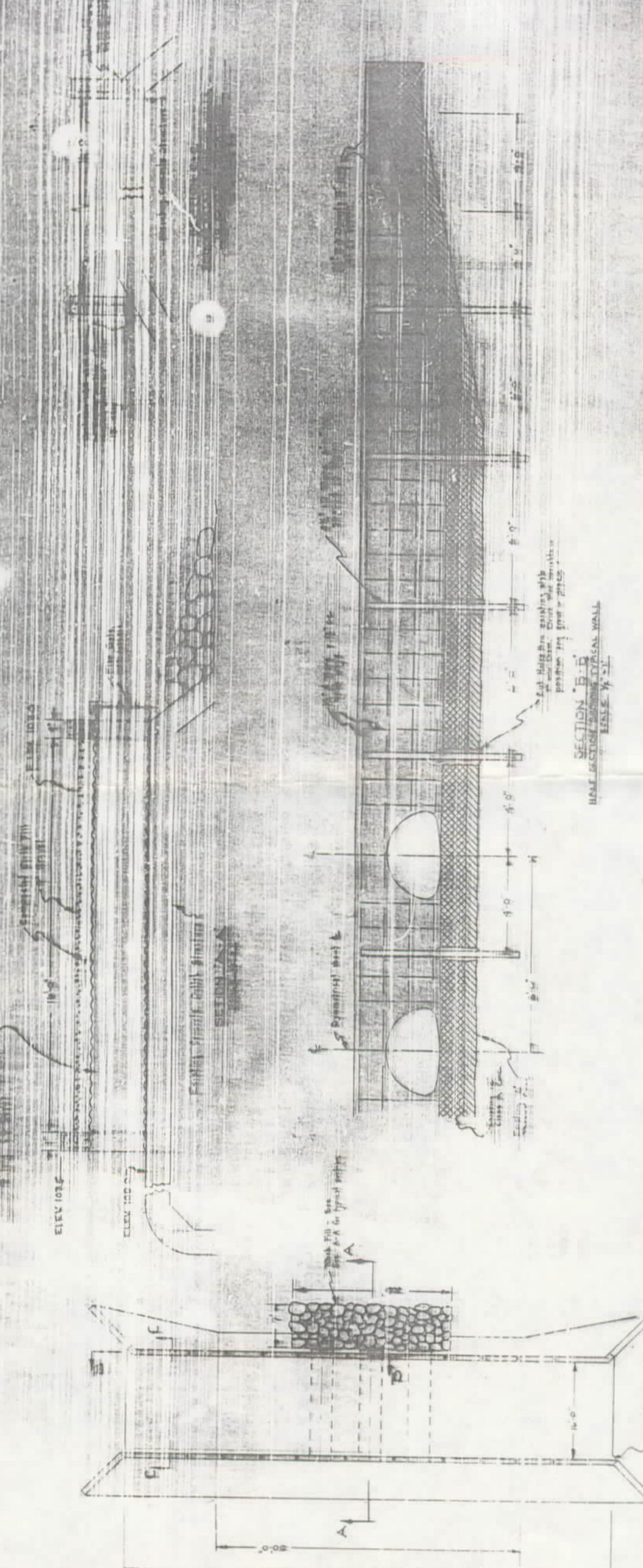
SEC. C-C
SCALE 1/2" = 1'

SEC. D-D
SCALE 1/2" = 1'

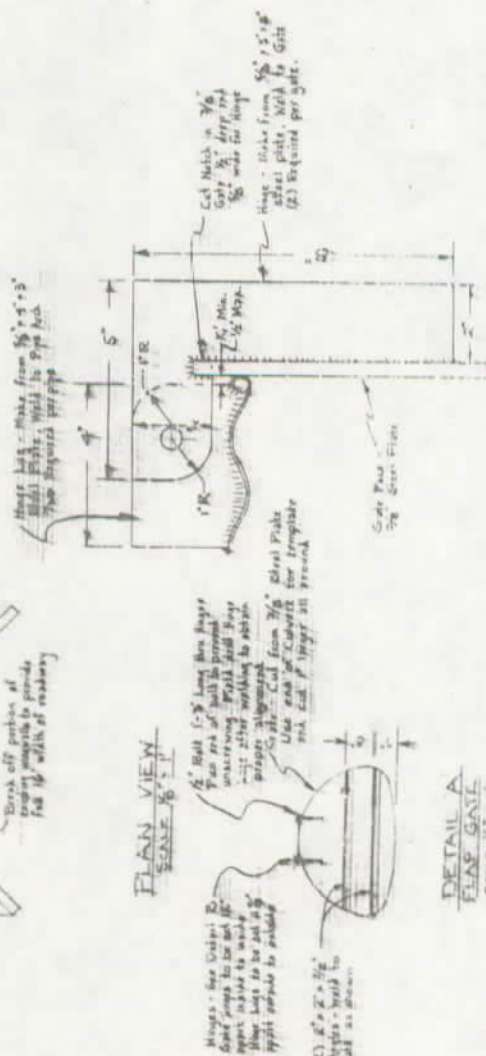
JAN 1951

DIVISION OF
WATER RIGHTS
FARM, SD

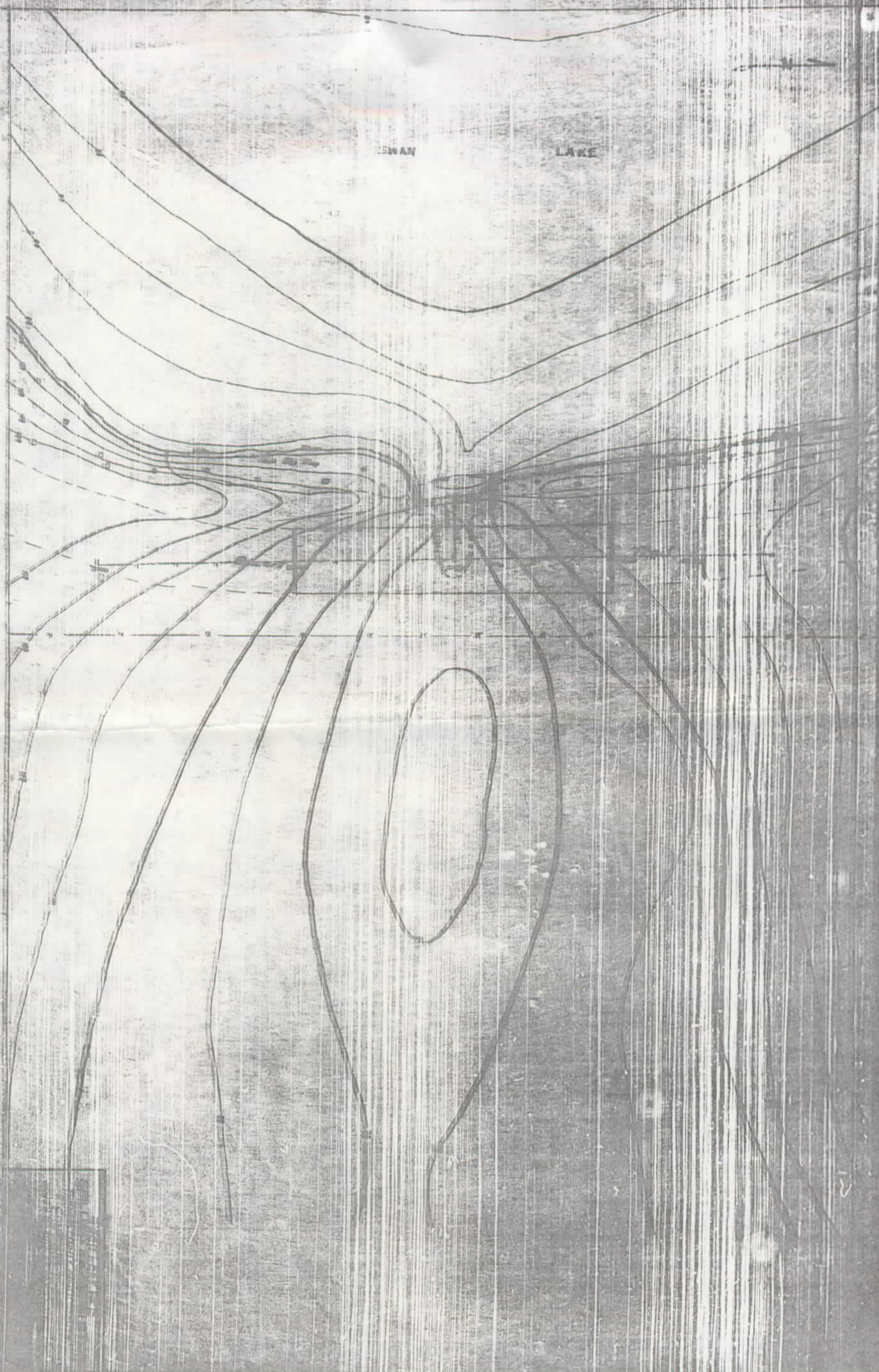
SPILLWAY RECONSTRUCTION
FARM, SOUTH DAKOTA
CHAS. S. BROWN, CIVIL
ENGINEER
SIOUX FALLS, S.D.
1948

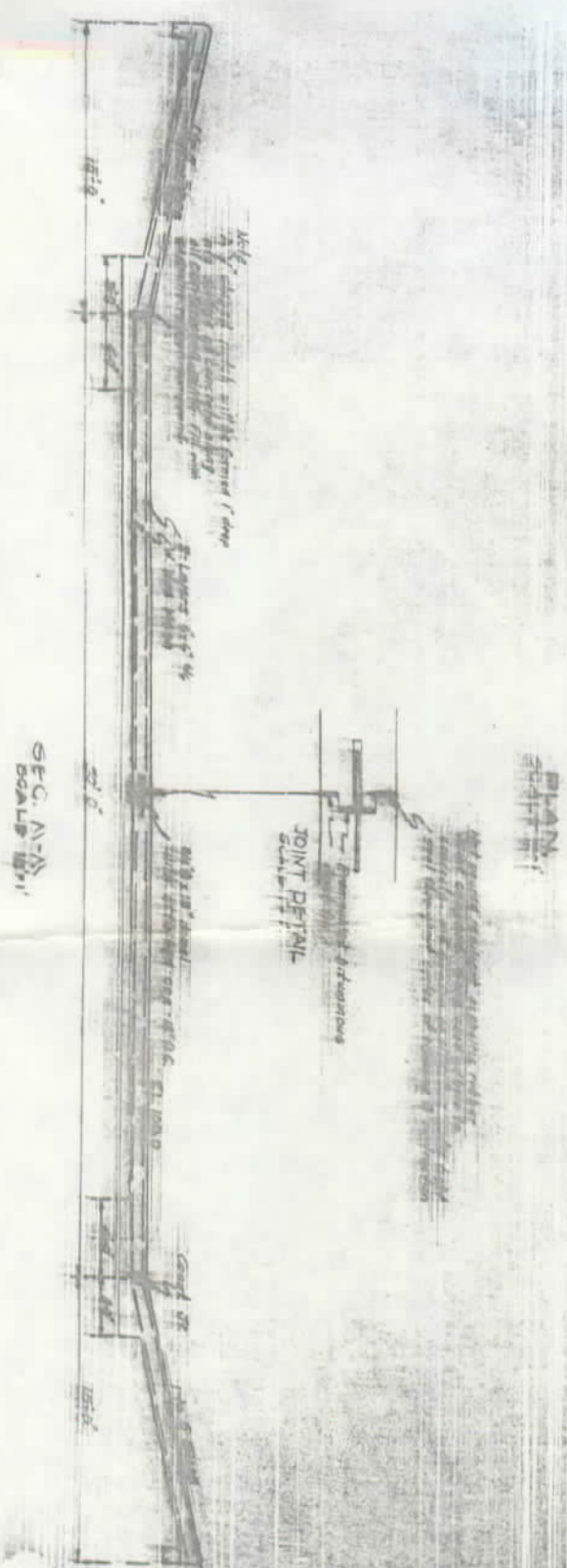
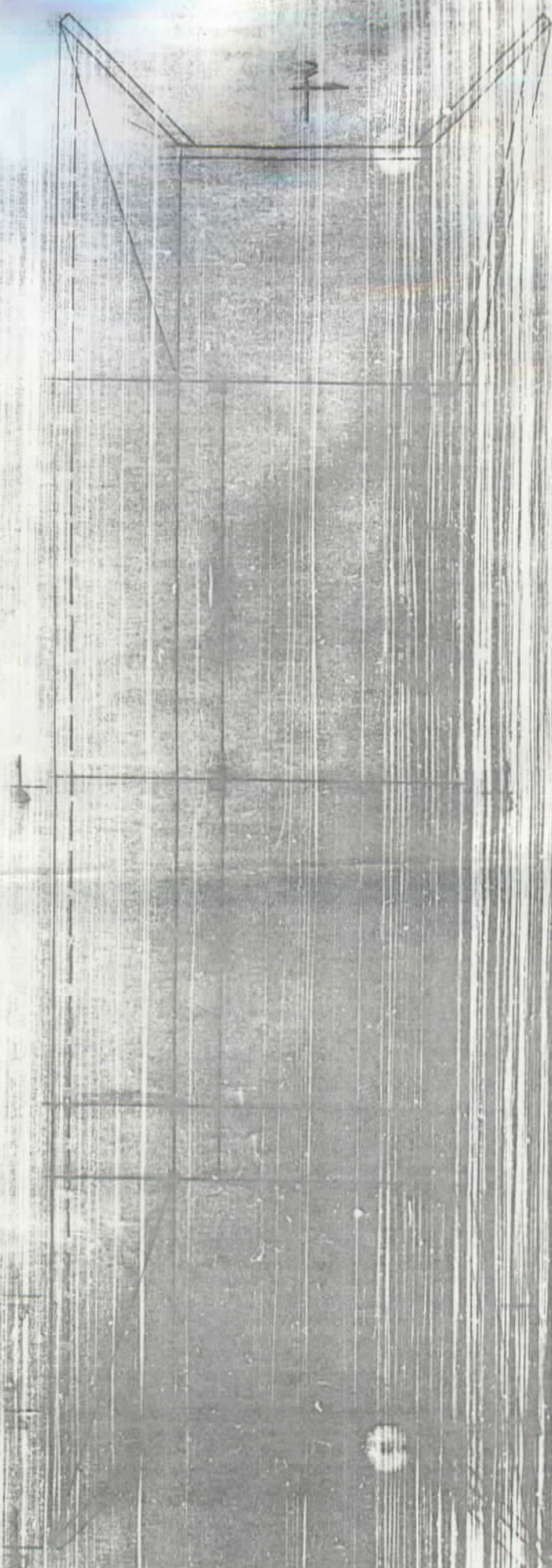


PROJECT NO. 6B SWAN LAKE OUTLET RECONSTRUCTION TURNER COUNTY SOUTH DAKOTA DEPT. OF GAME, FISH AND PARKS



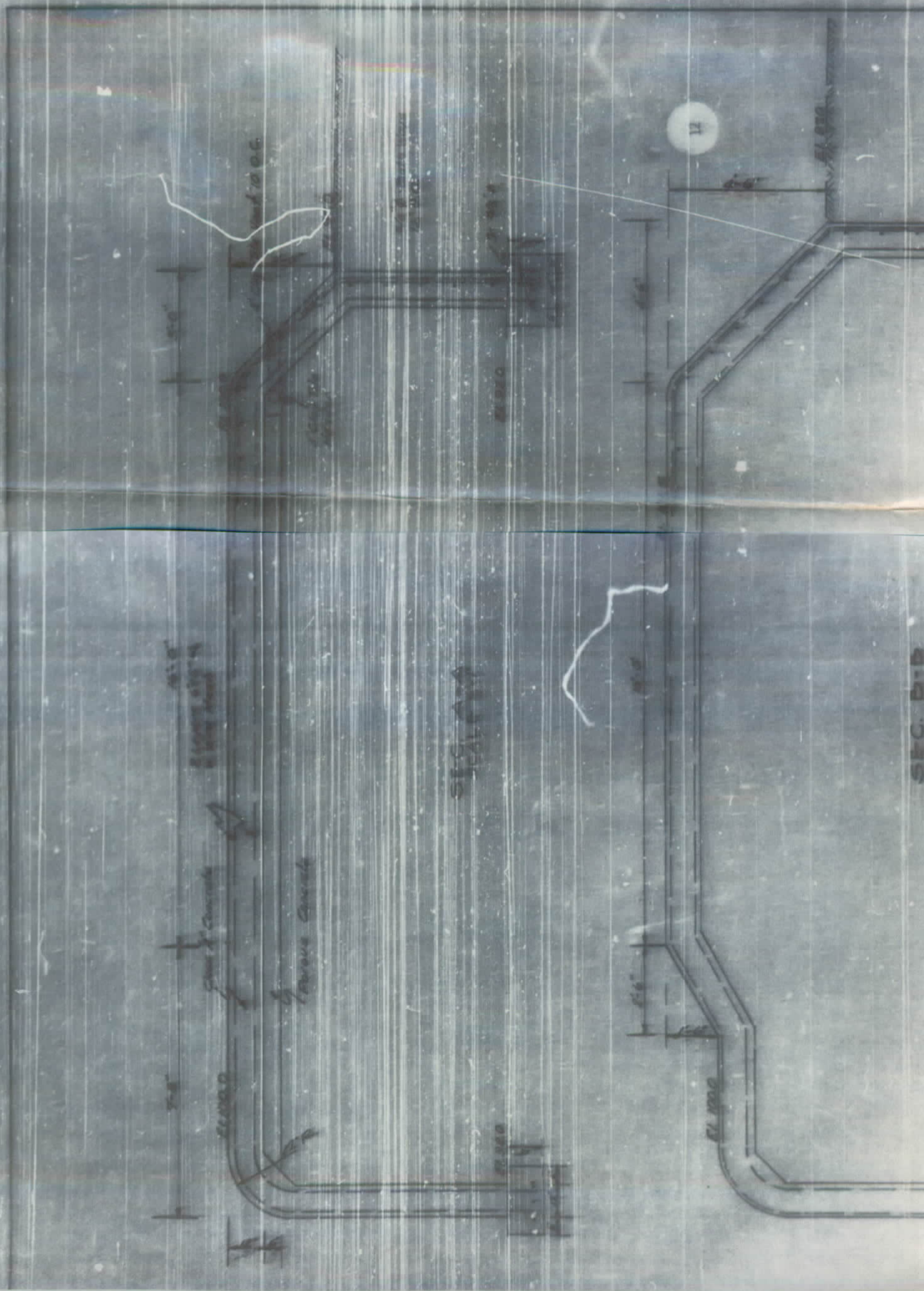
original not plotted
presumed to be 1954





dated on microfilm

97b1



document
undated
presumed to be
1954

43' x 27" Corrugated Pipe Arch
10' long (8' span)

Compacted Earth Fill

4" Gravel

ELEV. 103.0

14'-0"

9"

ELEV. 103.5

Flap Gate
See Detail

ELEV. 100.0

Existing Concrete Outlet Structure

SECTION "A-A"
SCALE 1/2" = 1'

Symmetrical about C

1/2" Bars @ 12" cc
both ways

2 1/2" I.D. Pipes 6'
spaced @ 6' show

Rock Fill - See
Sec. A-A for typical section

A

The Swan Lake Improvement Association

INCORPORATED

OFFICE OF SECRETARY

DIRECTORS:

J. B. THOMSON, CENTERVILLE
J. C. GILBERT, HURLEY
D. C. WARD, HURLEY
S. M. GOODHOPE, VIBORG
FRED C. FLYGER, VIBORG

VIBORG, SOUTH DAKOTA, November 28th, 1914

H. S. Hedrick, State Game Warden

Pierre, S. D.

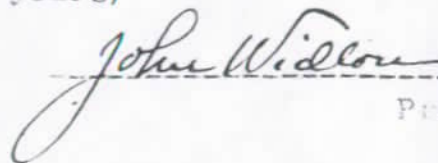
Dear Sir:-Your letter received a few days ago, but I have been too busy to answer sooner. In regard to the Swan Lake project will say that we are working right along, and will prepare a statement in a few days showing what it has cost us up to date. We have put in a ditch connecting Turkey Ridge Creek with the lake and water is flowing in right along. We have constructed a dirt dam at the outlet of the lake and are having stone hauled every day and are having it strengthened with stone. On the east side is a lot of low land that is liable to be damage by water from the lake, and we are now having a dike graded to prevent the lake from flooding this land. We are using a traction engine and a New Era road grader for this work and will have it completed in a few days if the weather permits.

The dam in the creek has not been started yet because it is not safe to start concrete work late in the fall but will commence on that in the spring as soon as it is safe. ~~in the spring.~~

The people are very enthusiastic about this work.

Mr. George Nelson expects to be in Pierre in a few days when he will call at your office when he can explain the matter more fully. I will see you in January, during the session of the legislature.

Respectfully yours,



President.

August 27, 1951

Memorandum

To: Elmer Peterson, Director

Re: Project No. 68, Swan Lake, Turner County

On August 22, 1951 an inspection of Swan Lake was made with R. Elliott and warden Sundling.

They reported that the dam and spillway was functioning satisfactorily.

A diversion system, reportedly constructed in 1913, between the lake and Turkey Ridge Creek was inspected.

This diversion system consists of a dam, approximately three feet high, in the creek, a ditch leading from the creek above the dam to the lake about 500 feet long and a dike with a 30" culvert and gate across the ditch located about 100 feet from the creek.

The ditch has eroded some since being constructed and a proposal has been made to lay a 30" tile from the creek to the lake and cover it to prevent the eroded ditch from washing into the lake. However, it is estimated approximately $\frac{1}{2}$ acre of land four feet deep has been washed from the ditch. As this would result in a deposit of silt in the lake of about $\frac{1}{25}$ of an inch, it does not seem worth the cost.

Another proposal was to put a pipe, or bulkhead at the creek side of the ditch in such a manner that the entrance could be screened to prevent the passage of fish and so that the higher less silt laden water would be taken from the creek to the lake. Because of previous experiences with screens clogging by this Department, and because the effect of such a control of the silt and water level elevations would probably be too small to be of benefit, this is not recommended.

It was reported that during times of large floods, the water ran around the ends of the dike. One such flood would put more silt into the lake, than would be deposited by years of

water running through the culvert in the dike.

If this flood water could be prevented from running into the lake by extending the dike, it is so recommended. A small survey is necessary to check the elevations in the area. An easement to construct the dike and borrow the dirt would be necessary.

November 2, 1960

It is also recommended the gate on the existing culvert be kept closed at all times except when the lake is at a low level.

Sincerely,

Donald Driscoll
Engineer

DD:deo

You are requested to advise the State of Michigan that the gate at Swan Lake is closed at all times except when the lake is at a low level.

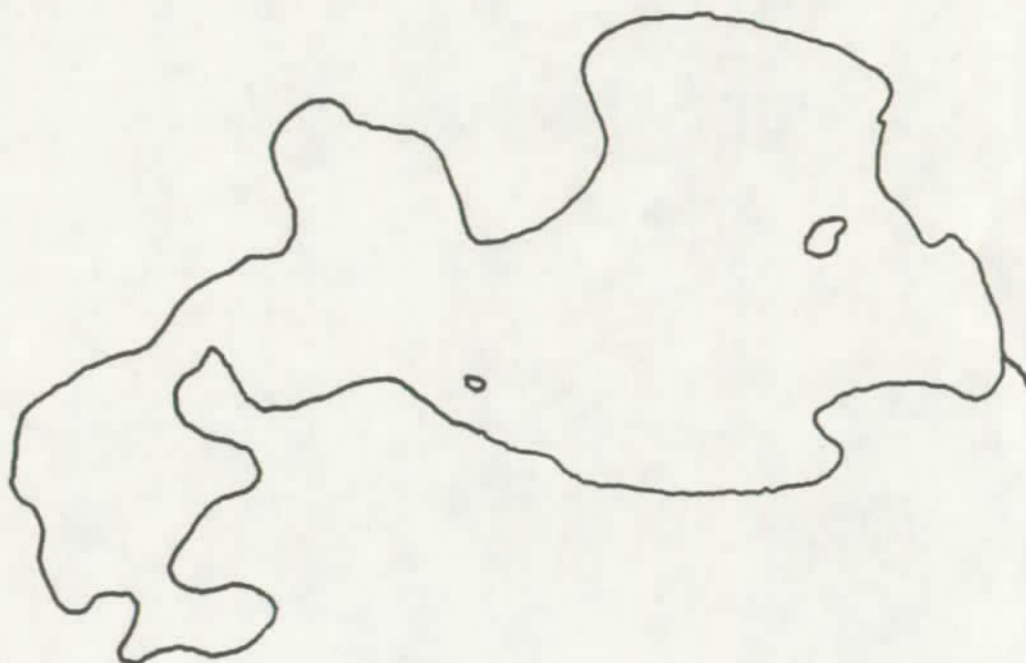
Very truly yours,

Donald Driscoll, Engineer
State of Michigan, East and Parks

ORDINARY HIGH WATER MARK

INVESTIGATION FOR

SWAN LAKE



TURNER
COUNTY



Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501

March, 1983

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SWAN LAKE

ABSTRACT

This report contains the results of an investigation performed to determine the Ordinary High Water Mark (OHWM) for Swan Lake in Turner County. The primary factors involved in calculating the OHWM were: Swan Lake's hydrological characteristics and elevations of erosion lines and trees found at the upper limit of its lake bed.

Based on the findings in this report, the OHWM for Swan Lake has been determined to have been established at an elevation of 1252.9 feet mean sea level (msl).

INTRODUCTION

Authority and Administrator

The Water Management Board is mandated by Law, SDCL 43-17-21, to establish the Ordinary High Water Mark on public lakes in South Dakota. The Board is to perform this in accordance with SDCL 43-17-1 thru 43-17-3; 43-17-20 thru 43-17-26, and Board Rules ARSD 74:02:03:11 and 74:02:03:12. This report contains the results of the investigation conducted by the Department of Water and Natural Resources, Water Rights Division to determine the elevation of the OHWM and outlet structure for Swan Lake.

Explanation of OHWM

The ordinary high water mark is coordinated with the upper limits of the bed of a lake. The determination of the OHWM is derived from the examination of the upper limits of the bed of the lake. This examination is conducted to ascertain where the continuous presence and action of the water has left a distinct mark; either by erosion, destruction of terrestrial vegetation, or some other easily recognized characteristic. In examining a lake for the determination of this level, it is necessary to consider the size, watershed, topography, soil and general characteristics of the lake (refer to Appendix A).

Date of Investigation

The principal field investigation for this report was conducted in August 1982. The examination of the shoreline, banks, and vegetation of Swan Lake was performed. The shoreline areas selected for study were those least affected by individuals.

INVESTIGATION

Location

Swan Lake is located in Turner County within Sections 15 and 16 of T97N, R53W (see Appendix A).

Lake Characteristics

Swan Lake is located in the Turkey Ridge Creek Watershed. It has a surface area of 180 acres, a maximum depth of 6 feet, and an average depth of 4.5 feet. The lake has very limited connection with any major aquifer. There is 50 to 80 feet of glacial till below the lake bed and this above an 80 to 100 foot thick aquifer. Swan Lake receives most of its recharge water from surface runoff.

The watershed area for Swan Lake is only 1,000 acres. The lake has been directly connected with Turkey Ridge Creek via a diversion channel. This has helped stabilize water levels, but increased sedimentation. (for further data see Appendix A)

Elevation References

Elevations in this report are referenced to a United States Geological Survey bench mark. The bench mark is located 560 feet north and 35 feet east of the crossroad at the corners of sections 19, 20, 29, and 30 of T97N, R53W. It is a standard brass tablet at a field drive 10 feet north of the field entrance at the fence corner. The bench mark is stamped "20 CDL 1966" and set at an elevation of 1294.622 feet msl.

OHWM Indicators

A. Shoreline Trees

Trees, which are the largest and most permanent expression of upland growth, are used to determine a relationship between the growth characteristics of the trees at various elevations and OHWM elevation. Records of ordinary high water levels are reflected in the well established trees growing along the upper limits of a lake's bed. Cottonwood, ash, and willow are the most predominant trees that grow along the shores of South Dakota's lakes. Experimentation and research have shown that most trees will not survive if water levels exceed one half to one tree diameter below the base elevation of the tree for more than 25% of the growing season. Consideration must be given to the characteristics of the soil, slope of the ground, and the effects of water and ice on the shoreline and bank.

B. Tree Categories

The trees along the shoreline of Swan Lake are divided into three categories:

1. The first category of trees are those where their lakeside base elevation (the elevation where the soil meets the trunk of the lakeside of the tree) is below the OHWM (see Appendix B). This is apparent in the erosion of the soil and the destruction and decay of the tree. The

destruction and decay is caused by the zone of soil saturation smothering part of the root system. These trees survive because part of their root system is above the zone of saturation.

2. The second category of trees are those where their lakeside base elevation is from zero to one half foot above the OHWM (see Appendix C). These trees show signs of butt swell and erosion. The root system is surfacely exposed and growing away from the lake.
3. The third category of trees are those with a lakeside base elevation approximately one foot above the OHWM (see Appendix D). These trees show lesser degrees of butt swell, little or no root erosion, and some surface roots.

C. Erosion Marks

Erosion and Water Marks were found between the elevations of 1252.7 and 1252.9. Between these elevations there was an apparent change in soil characteristics and types of vegetation. Examples of water and erosion marks, and destruction of terrestrial vegetation can be observed in the photos in appendices B through D.

Outlet Structures

The outlet structure is located in the southeast corner of the lake. The outlet consists of three oval shaped corrugated metal pipes, 3.5 feet wide and 2.3 feet high. The overflow elevation for Swan Lake is 1252.4 feet msl.

Water Level

There are no water level records available for Swan Lake. At the time of the investigation the water level was 1252.3 feet msl.

Water Rights

The Department of Game, Fish and Parks is presently applying for a "Vested" Water Right Consideration. This application is for the annual replacement of the evaporative water losses. This is calculated by multiplying the surface area (180 acres) times the annual evaporation rate (3 feet per year). Thus the Department of Game, Fish and Parks is applying for the annual recharge of 540 acre-feet or as required to fill the lake to outlet elevation (1252.4 feet msl).

There are two priority dates associated with Vested Right No. 4944-3. The first date is 1889 for the annual recharge of 540 acre-feet or as required to fill to outlet elevation. The second priority date is 1954 for the diversion of water from Turkey Ridge Creek.

CONCLUSIONS

Based on the study of Swan Lake's hydrological characteristics and elevations of erosion lines and trees found at the upper limits of its lake bed, the Ordinary High Water Mark has been determined to be at an elevation of 1252.9 feet msl.

The present OHWM indicates that the outlet structure has been maintained at an elevation of 1252.4 feet msl.

RECOMMENDATIONS

The Water Rights Division recommends to the Water Management Board:

1. That the Ordinary High Water Mark for Swan Lake in Turner County established at an elevation of 1252.9 feet msl.
2. That Vested Right No. 4944-3 be recognized to allow for the annual recharge of 540 acre-feet of water or as required to fill the lake to outlet level, 1252.4 feet msl.

Jerry E. Steffen, Natural Resources Engineer
Water Rights Division
Department of Water and Natural Resources

For information regarding OHWM bench marks established at Swan Lake, contact the Department of Water and Natural Resources, Water Rights Division, Pierre, South Dakota 57501.

APPENDICES

Appendix A.....	Swan Lake Data County Map Topographic Map Watershed Map
Appendix B.....	Trees Growing Below the OHWM
Appendix C	Trees Growing At Or Above The OHWM
Appendix D.....	Water Marks

Appendix A

Swan Lake Data

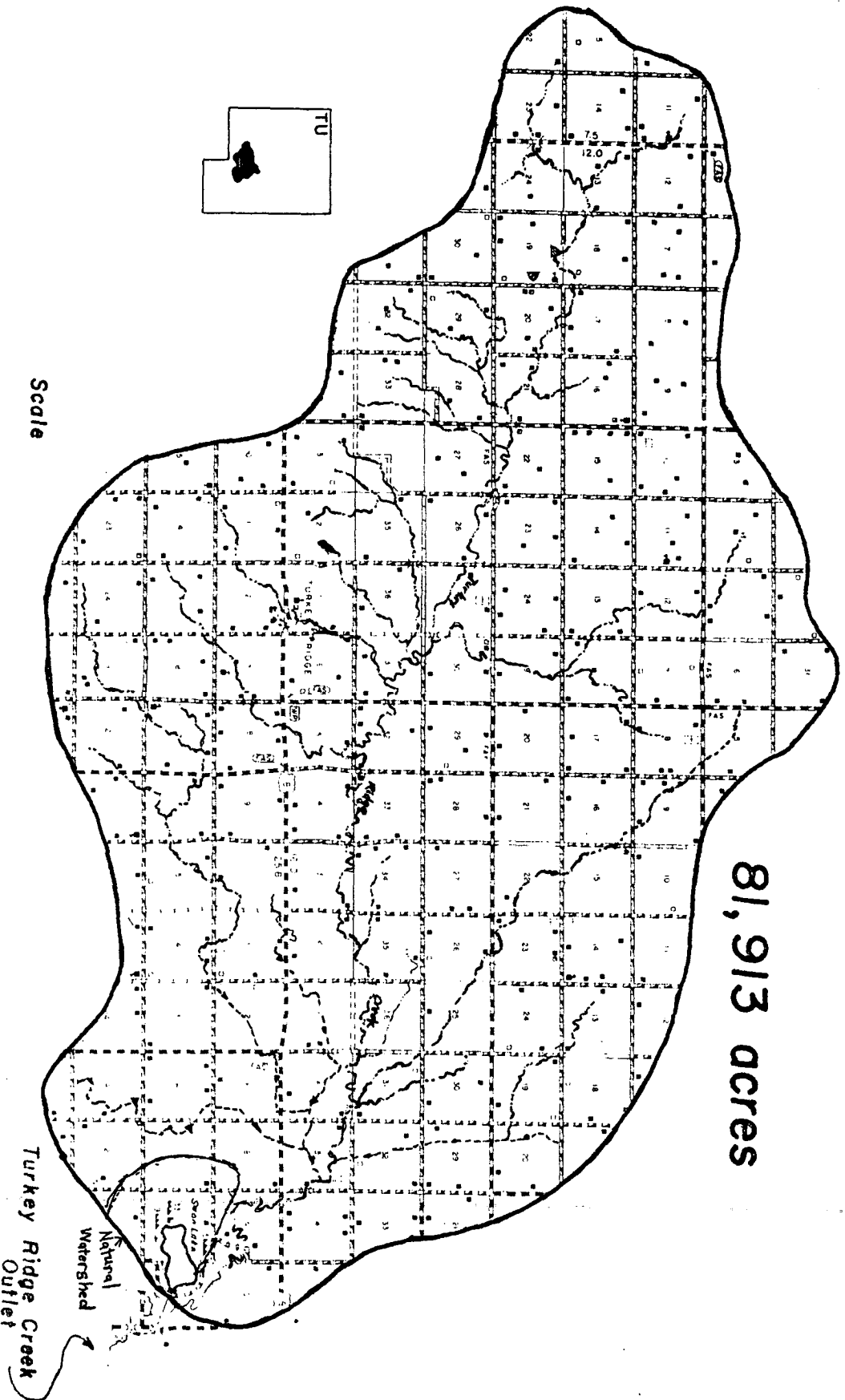
Surface Area.....180 acres¹
Watershed Area.....1,000 acres¹ originally,
81,000 acres from Diversion
Maximum Depth.....6 feet¹
Mean Depth.....4.5 feet¹
Volume.....810 acre feet¹
Aquifer Connection.....Limited
Outlet Elevation.....1252.4 feet msl
OHWM Elevation.....1252.9 feet msl
Water Right.....No. 4944-3
Claimed by Game, Fish and Parks
Dept., for the annual recharge
of 540 acre-feet, or as
required to fill to outlet
elevation: priority 1889
and 1954, 1954 priority date is
for the diversion from Turkey
Ridge Creek.

BIBLIOGRAPHY

- ¹Ronald M. Koth, South Dakota Lakes Classification and Inventory, South Dakota Department of Water and Natural Resources, Office of Water Quality, July 1, 1981, pp 88-93.

Swan Lake

81,913 acres



Scale



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

97°07'30"
43°15'

653000m E

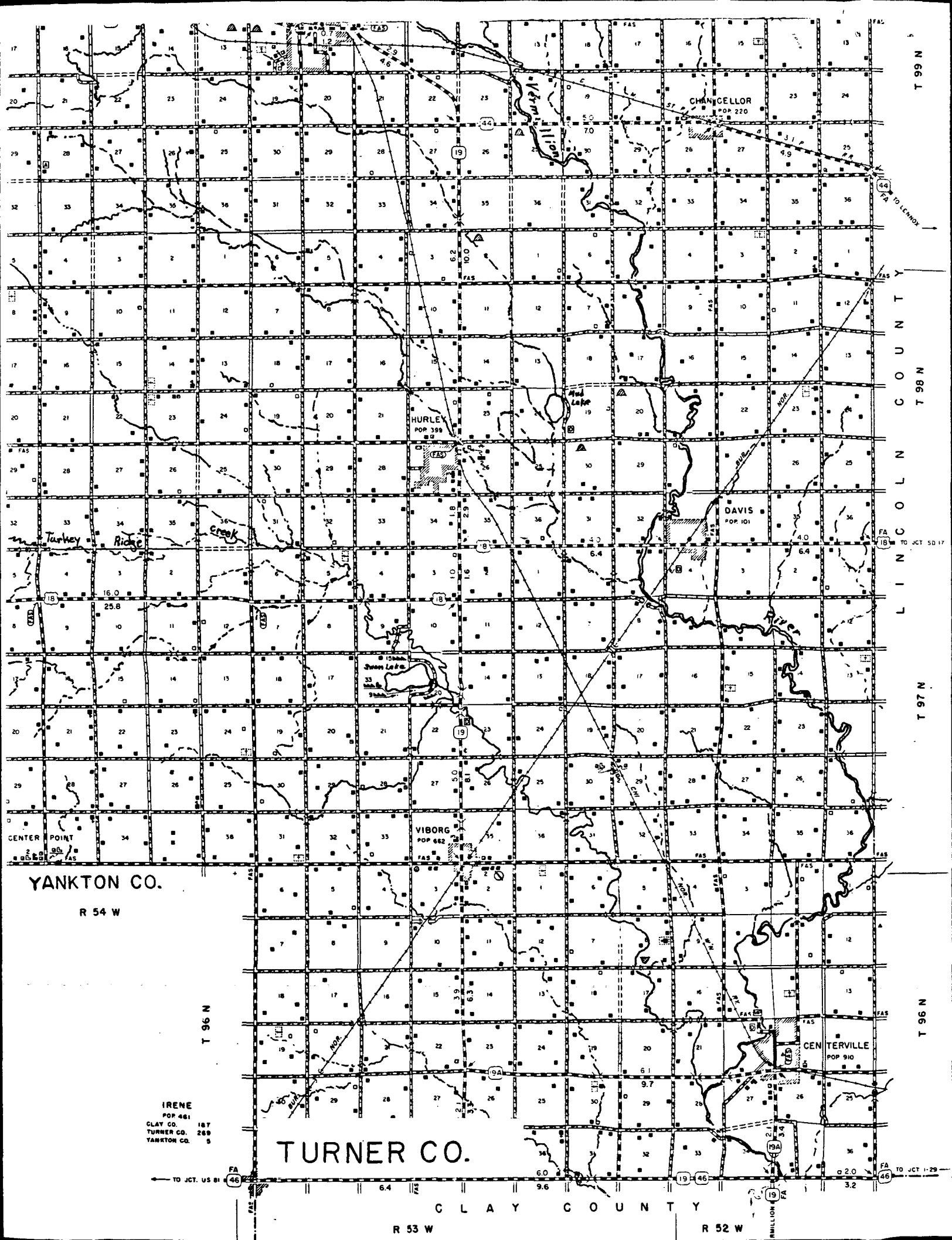
654

655

5'

PARKER 12 MI.
HURLEY (VIA S. DAK. 19) 2.5 MI.





YANKTON CO.

R 54 W

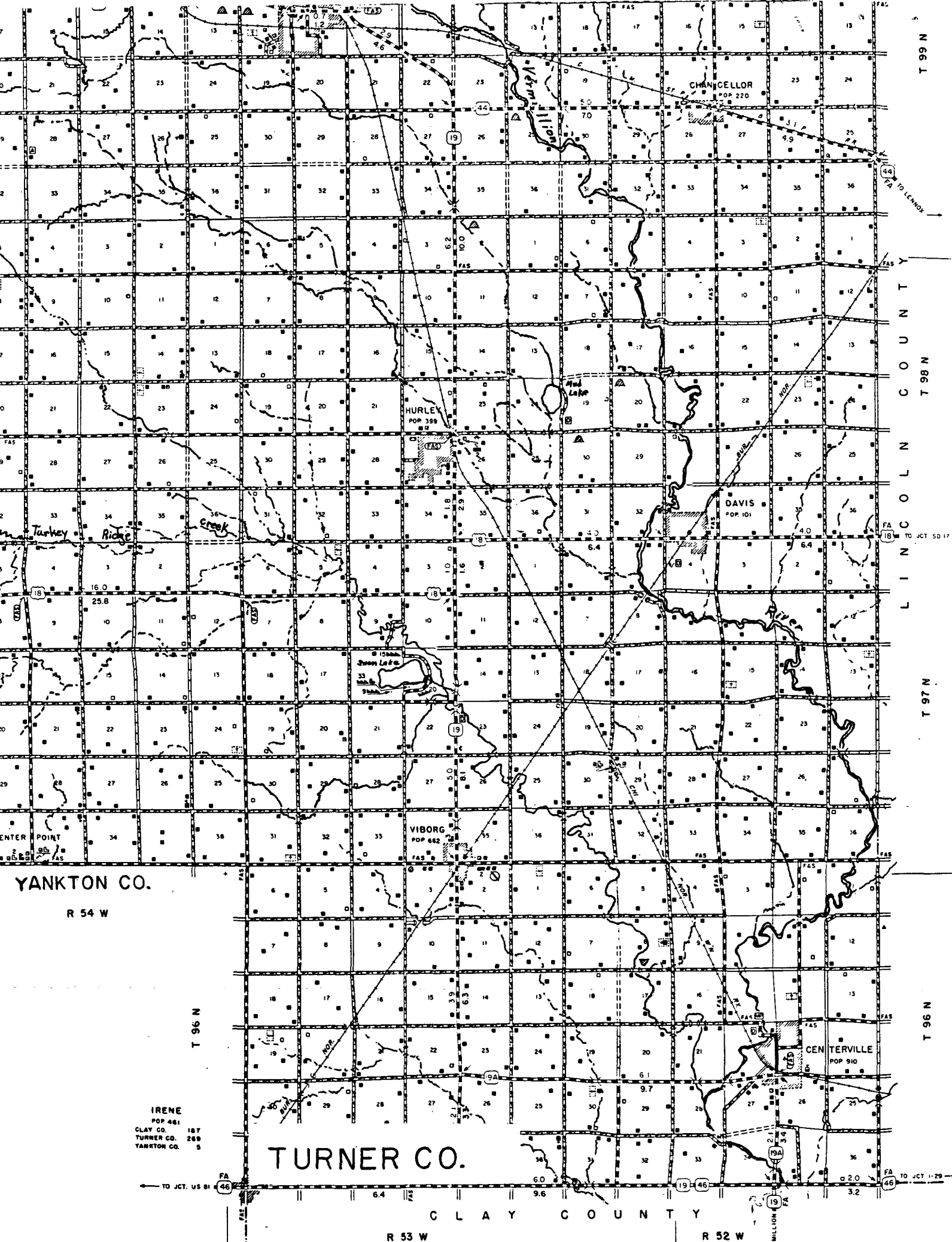
TURNER CO.

CLAY COUNTY

R 53 W

R 52 W

IRENE
POP 461
CLAY CO. 187
TURNER CO. 269
YANKTON CO. 5



APPENDIX B

Trees Growing Below the OHWM



PHOTO NO. 1 Destruction Line Elevation----1252.7
 (camp area)



PHOTO NO. 2 Destruction Line on Cottonwood (camp area)
Elevation---1252.7



PHOTO NO. 3 Destruction Line Elevation----1252.8

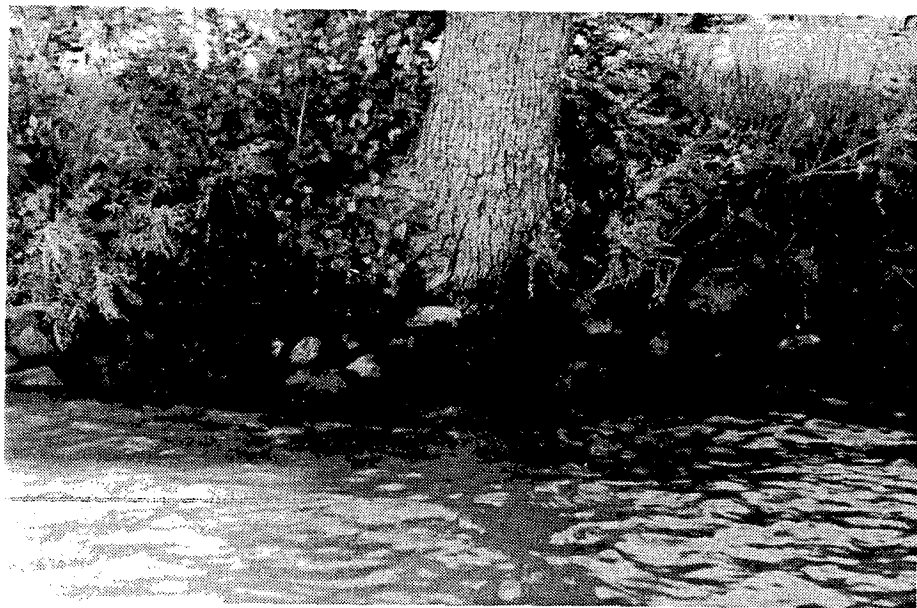


PHOTO NO. 4 Destruction Line on Cottonwood (south shore)
Elevation---1252.8



PHOTO NO. 5 Tree on Island
Destruction Line Elevation---1252.9

APPENDIX C

Trees Growing At Or Above the OHWM



PHOTO NO. 6 Cottonwood
Base Elevation: Lakeside----1252.9

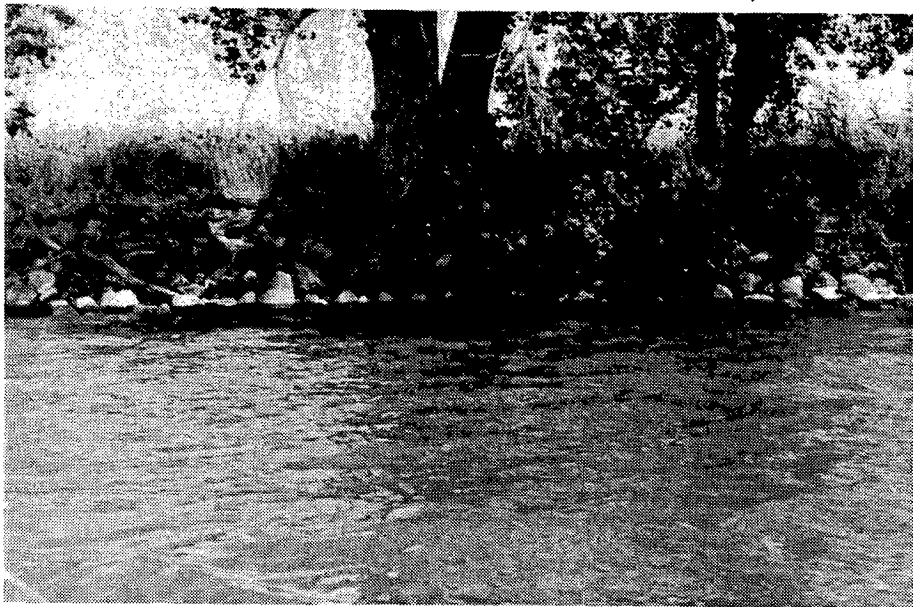


PHOTO NO. 7 North Shore
Base Elevation: Lakeside----1253.2

APPENDIX D

Water Marks



PHOTO NO. 8 White line on rocks (infront of outlet structure)
Elevation----1252.9

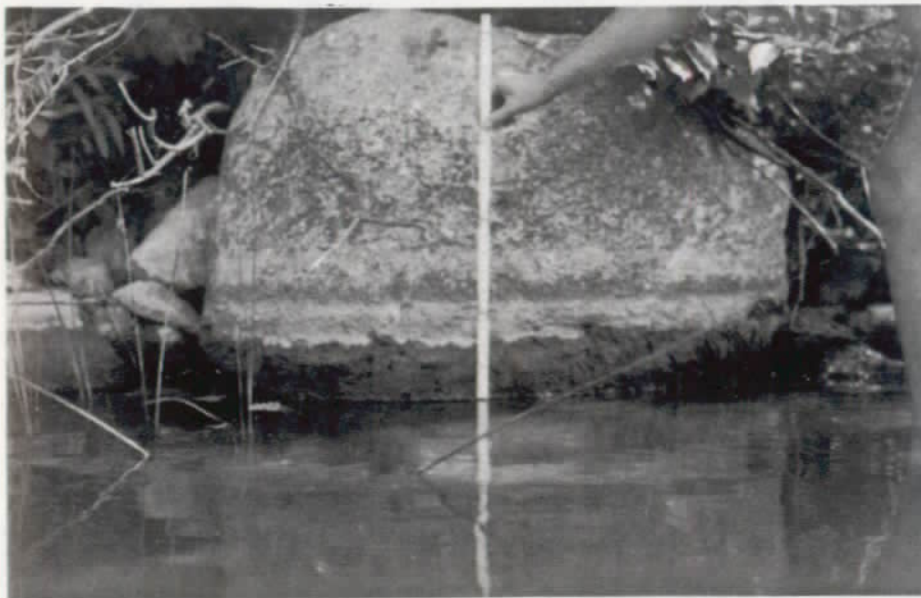


PHOTO NO. 9 Rock Erosion Line (camp area)
Elevation----1252.9

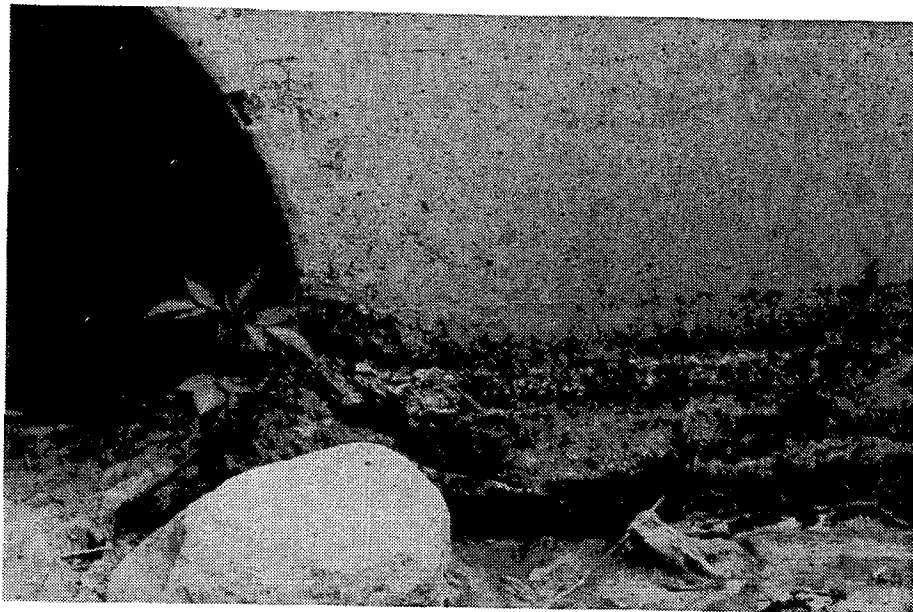


PHOTO NO. 10 White Mark on outlet structure
Elevation----1252.9



No. 4944-3

Department of Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501

WATER RIGHTS DIVISION
(605) 773-3352

April 26, 1983

Game, Fish & Parks
Anderson Building
Pierre, South Dakota 57501

Dear Sir:

Enclosed herewith are your Vested Right ~~Permit~~, Water License No. 4944-3.
This Water License is the final water right document completing your
process of obtaining a vested water right.

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

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Division

JH: ms

enclosures

WATER LICENSE NO. 4944-3

(1) WHEREAS, On the 4th day of March A. D. 1983

South Dakota Department of Game, Fish & Parks

made Water Right Application No. 4944-3 for a Vested Right permit to use 540 acre feet annually of the waters of Swan Lake

County of Turner, State of South Dakota, for public recreational purposes; and

(2) WHEREAS, On the 14th day of April A. D. 1983

Vested Right Permit No. 4944-3, with a date of priority of 1954 for Turkey Ridge Diversion and 1889 for Natural Drainage was issued to said applicant for the diversion of said water, and provided for the completion of construction of the water supply system therein described on or before the day of A. D. 1983 and for the application to beneficial use of said water on or before the day of A. D. 1983

and;

(3) WHEREAS, It is hereby certified that the applicant has complied with the provisions of the laws of the State of South Dakota relating to completion of the construction of the water supply system and is entitled to divert 540 acre feet annually of water for beneficial use and,

(4) WHEREAS, It is hereby certified that the applicant has complied with the provisions of the laws of the State of South Dakota relating to the application of water to beneficial use of the following extent,
to be used in place for public recreation

(5) NOW, THEREFORE. By the virtue of the authority vested in us by the laws of the State of South Dakota, We hereby grant and confirm to the South Dakota Department of Game, Fish & Parks

_____ of Anderson Building, Pierre, South Dakota 57501
the holder _____ and owner _____ of said Vested Right 4944-3 permit No. _____ a water right, dating from 1954 for Turkey Creek Diversion
and 1889 for Natural Drainage to use of 540 acre feet annually ~~cubic feet per second~~ of the waters
of Swan Lake

in the County of Turner and State of South Dakota, or so much thereof as may be necessary for the
purposes hereinbelow mentioned, to be diverted ~~at~~ from Turkey Ridge Creek in NE $\frac{1}{4}$ NW $\frac{1}{4}$ and natural
drainage in the W $\frac{1}{2}$ of Section 15, T97N, R53W

and ~~conducted to and upon~~ Stored in place

for the purpose of public recreation recognized
This Water License No. 4944-3 is based on a Vested Right Claim filed by the
Water Management Board.

Subject to any limitations listed in Water Right Permit No. 4944-3 and subject to the laws of the State of South Dakota.

WITNESS, My hand and seal of our office at Pierre, South Dakota
this 26th day of April A. D.
Nineteen Hundred and Eighty-Three

WATER MANAGEMENT BOARD

By:

John Hatch
Chief Engineer, Executive Officer
JOHN HATCH

4944-3

SOUTH DAKOTA
Department of
Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

September 21, 1988

Richard Beringson, Secretary
Department of Game, Fish and Parks
Anderson Building
445 E Capitol
Pierre SD 57501

Dear Mr. Beringson:

I am writing to notify you that pursuant to the Notice of Intent to Validate Vested Water Right Claims dated June 20, 1988 that I intend to oppose validation of all Department of Game, Fish and Parks Vested Water Right Claims for lakes for the following reasons:

1. Until the outlet elevation for each lake is surveyed and the outlet elevation is set by the Water Management Board.
2. To allow the Vested Water Right Claim to be amended, if necessary, as follows:
 - a) Include the outlet elevation;
 - b) To correct the amount of water claimed;
 - c) To add the qualification that a vested claim is subject where necessary to installation of a concrete outlet structure to assure retention of the outlet as the established elevation; and
 - d) To add any amendments and qualifications necessary to clarify a Vested Right Claim.

Also, that I intend to oppose validation of all Department of Game, Fish and Parks Vested Water Right Claims for dams to allow the Vested Water Right Claim to be amended, if necessary, as follows:

1. To include the spillway elevation;
2. To correct the amount of water claimed; and
3. To add any amendments and qualifications necessary to clarify a Vested Right Claim.

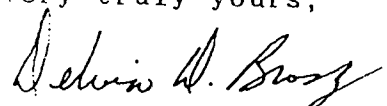


September 21, 1988
Richard Beringson, Secretary
Page 2

We will be working with your staff on these validations. We have already discussed setting outlet elevations before validating claims for lakes. Although the work necessary to complete the validation process will take several years to complete, the results should be of benefit to the public and to your Department. As the work is completed to validate each claim, the claim will be presented to the Water Management Board for validation.

Please advise if you have any questions.

Very truly yours,


for JOHN HATCH, Chief Engineer
Water Rights Division
605 773-3352

cc: Ron Koth, Department of Game, Fish and Parks



DEPARTMENT OF GAME, FISH AND PARKS

Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

GREAT FACES. GREAT PLACES.

January 3, 1991



Mr. John Hatch, Chief Engineer
Division of Water Rights
S.D. Department of Water & Natural Resources
Foss Building
Pierre, SD 57501

Dear Mr. Hatch:

Recently it has become evident that some clarification is needed in regard to the Department of Game, Fish and Park's vested water right for Swan Lake in Turner County. Discussions with David Brown and Eric Gronlund of your staff regarding the appropriateness of the priority dates listed on our vested right (No. 4944-3) for Swan Lake have raised some questions which we feel should be addressed prior to the upcoming validation of the vested right.

Additional information gathered suggests that the priority date for the Turkey Ridge Creek diversion should be 1913 or 1914. A 1951 departmental memo states that the diversion was "reportedly constructed in 1913". A 1914 letter from the Swan Lake Improvement Association to our department also discusses the construction of a diversion ditch from Turkey Ridge Creek to the lake.

Our records indicate that the present spillway (1252.4 feet msl outlet elevation) was constructed in 1954. However, the engineering drawings indicate that the culvert spillway tubes were installed immediately on top of an existing concrete spillway which was constructed in 1946. Consequently, a priority date of 1946 for storage in Swan Lake to an elevation of 1252.4 feet msl can be established.

I have enclosed copies of the above referenced documents and a revised Affidavit of Water Use. If you have any questions regarding these matters please call me at 773-6208.

Sincerely,

Timothy J. Olson
Water Permits Coordinator

CONTRACT

This AGREEMENT, made by and between the State of South Dakota through its Department of Game, Fish and Parks, party of the first part, and

J. C. Sorenson

OF Trent, South Dakota,

party of the second part, hereinafter called the Contractor.

WITNESSETH, that the said Contractor has agreed and by these presents does agree, for and in consideration of the covenants herein contained and payments to be made as hereinafter provided, to furnish all the materials, appliances, tools, food, and labor of every kind and to construct in the most substantial and workmanlike manner and in accordance with the plans and specifications therefor, the various items of work awarded the

said Contractor on the 19 Day of Sept. 1946, located in Turner County, South Dakota known as Swan Lake Project No. 68

The following is a description and location of the work:

Reconstruction of Dam and Spillway at Swan Lake located in
Sec. 15, T. 97N., R. 53 W., 5th P.M. in Turner County
South Dakota

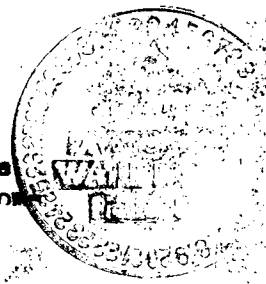
The said work shall be performed in accordance with the true intent and meaning of the plans and specifications therefor, including the Special Provisions, which plans and specifications including the special provisions are hereby referred to and made an essential part of this contract as fully and to the same effect as if the same had been set forth and shown at length in the bid of this contract. The party of the first part, however, reserves the right to make such alterations, additions or deductions as are in said specifications provided for and this contract shall in no way be invalidated thereby.

It

It is mutually agreed by and between the parties to this contract that the notice to contractors, the foregoing proposal and and the contract bond, shall be bound herewith and are hereby made a part of this contract.

The said Contractor further agrees to pay all just claims for materials, supplies, food, tools, appliances, and labor, and all other just claims incurred by him or any of his subcontractors in carrying out the provisions of this contract, and further agrees that the contract bond shall be held to cover all such claims.

It is further understood and agreed by and between the parties to this contract that the work under this contract shall be completed within



unless such date of completion be set at a later date as specifically provided for in the specifications, and that the time of completion is of the essence of this contract.

In consideration of the faithful performance of the work embraced under this contract, according to the terms hereof and to the satisfaction of the party of the first part, said party of the first part agrees to pay the Contractor, such unit or lump sum prices for the work actually done as are set forth in the proposal accompanying this contract, and in the manner and subject to the conditions as set forth in the said specifications.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed on the

19 Sept 1946

STATE OF SOUTH DAKOTA

Acting by and through its
DEPARTMENT OF GAME, FISH AND PARKS

A. M. M. Kay
Director

James B. Mearns
Director

J. P. Sullivan
Contractor

By _____

PROPOSAL

September 10 19 46

Proposal of J. C. Sorenson
(Name of bidder is to appear here, but

Trent, South Dakota
full signature must be at end of this proposal.)

for Reconstruction of Swan Lake Dam and Spillway
known as the

The following is the description and location of the work
for which this proposal is made: Reconstruction of Dam and Spillway
at Swan Lake located in Section 15, T.97 N., R.53 W., 5th P.M. in
Turner County, South Dakota

The plans are composed of drawings identified as follows:
"Swan Lake Dam and Spillway Reconstruction" in 4 sheets and 1 cover sheet.

To The South Dakota State Game, Fish and Parks Commission:
Gentlemen:

The following proposal is made on behalf of the under-
signed and no others. It is in all respects fair and is made
without collusion on the part of any other person, firm or
corporation not appearing in the signature to this proposal.

The undersigned certifies that he has carefully examined
the plans listed herein, the Specifications hereinbefore re-
ferred to and the form of contract, which are attached hereto.
The undersigned further certifies that he has personally inspected
the actual location of the work, together with the local sources
of supply and that he understands the conditions under which
the work is to be performed, or, that if he has not so inspected
the actual location of the work, that he waives all right to
plead any misunderstanding regarding the location of the work

or the conditions peculiar to the same.

On the basis of the plans, specifications and form of contract proposed for use, the undersigned proposes to furnish all necessary machinery, tools, apparatus and other means of construction to do all the work and furnish all the materials in the manner specified to finish the entire project within

and to accept as full compensation therefor the amount of the summation of the products of the actual quantities as finally determined, multiplied by the unit prices bid.

The undersigned understands that the quantities mentioned below are subject to increase or decrease and hereby proposes to perform all quantities of work, as increased or decreased, in accordance with the provisions of the specifications, and at the unit prices bid.

Item No.	Approx. Quant.	Items with unit price written in words	Unit Bid Price	Amount Bid
			Dollars Cents	Dollars Cents

(See Sheet 2A)

TOTAL OR GROSS SUM BID \$ 9,940.10

The undersigned understands that the "Total or Gross Sum Bid" as immediately hereinbefore set forth is not the final sum which will be paid if this proposal is accepted and the work done, but that such sum is computed for the purpose of comparison of the bids submitted and the determination of the amount of the contract bond.

The undersigned further proposes to perform all extra work that may be required on the basis provided in the specifications and to give such personal attention in order to see that it is economically performed,

The undersigned further proposes to both execute the contract agreement and to furnish a satisfactory bond, in accordance with the terms of the specifications, within twenty (20) days after the receipt of notice from the Game, Fish and Parks Department that this proposal has been accepted.

Accompanying this proposal, as a guaranty that the undersigned will execute the contract agreement and furnish a satisfactory contract bond in accordance with the terms and requirements of the specifications, is a certified check or checks for Five Hundred Dollars (\$ 500.00)Dollars,

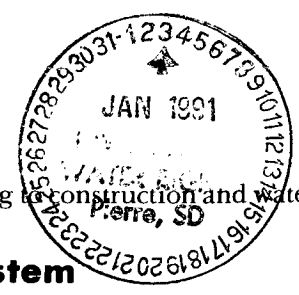
It is hereby agreed that in case of failure of the undersigned to either execute the contract agreement or furnish a satisfactory bond within twenty (20) days after receipt of notice of award the amount of this proposal guaranty will be retained by the State of South Dakota as liquidated damages arising out of the failure of the undersigned to either execute the contract agree-

J. C. Sorenson (Signed)
By *J. C. Sorenson*

Affidavit of Water Use

No. _____

(Type or Print in Ink)



Note: This Form is supplemental to Form 2 and is to be used when an affidavit pertaining to construction and water use already constructed is needed, primarily with vested right claims.

Affidavit Of Construction Of Water Use System
And Application Of Water To Beneficial Use

Name of Applicant (Same as Form 2) South Dakota Department of Game, Fish & Parks

Post Office Address Foss Building, 523 E. Capitol Ave., Pierre, South Dakota 57501
(Street, RR or Box) (State) (Zip Code)

A. Notice of Appropriation _____ Date of Posting _____

Date of recording _____ Recording date _____
Where Book Page

B. Date of start of construction of water supply system 1914 - Turkey Ridge Creek diversion, 1946 spillway.

C. Date that water was first applied to beneficial use November 2, 1889 - natural lake

D. Name of owner of original water supply system State of South Dakota

E. Amount of water originally applied to beneficial use Natural lake level - unknown elevation

F. Present Use of Water - Amount of water now being used Storage in lake to elevation 1251.4 ft. msl.

Date that this water was first used 1946

G. Chronological History of Water Use

Swan Lake in Turner County is a natural meandered lake and as such has been continually used and managed for public recreation since South Dakota became a state in 1889. Records indicate that a diversion from Turkey Ridge Creek was in place by 1914. The present outlet elevation of 1252.4 feet msl was established in 1946 when the Department of Game, Fish and Parks constructed a concrete spillway.

Attach to this Form 2B any copies of notices, postings, filings, publications, affidavits, or other records that apply. You may also attach any written statement by you, or by others, that you deem pertinent.

State of South Dakota)
County of Turner) ss

I, Richard Beringson, Secretary, Dept. of Game, Fish & Parks, the applicant, certify that I have read the foregoing and that the matters therein stated are true.

Signed Richard Beringson

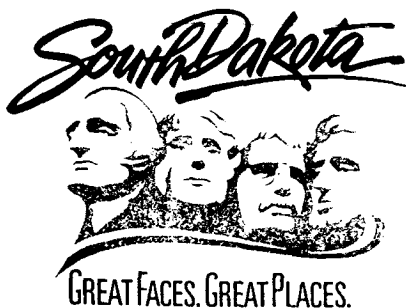
Subscribed and sworn to before me Jaydra K. Hummel, 1991

January 3
Notary Public or other qualified officer

I, the undersigned do hereby certify that I know about the water use system described above, that I have read the foregoing, and that the matters therein stated are true.

(Print name) 19____

(Print name) 19____



DEPARTMENT OF WATER & NATURAL RESOURCES

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

January 3, 1991

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

Richard Beringson, Secretary
Dept of Game, Fish & Parks
523 E. Capitol
Pierre SD 57501

Dear Mr. Beringson:

Enclosed are the notices of intent to validate Vested Right Claim Nos. 4944-3 (Swan Lake) and 5073-3 (Silver Lake) to be published in Hutchinson and Turner Counties. A notice of intent to validate has been sent to the Publishers of the New Era and the Courier printed at Parker and Freeman SD. Please review the notices 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 Intent to Appropriate Water and to arrange for payment. Early contact with the papers can eliminate delays. The publishers have 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. We must receive Proof of Publication before the application can be considered by the Water Management Board.

Sincerely,

Eric Gronlund
Natural Resources Engineer
605 773-3352

enclosures

Instruction to Newspaper - Publish first Notice on January 10, 1991 with 2nd publication 7 days later. The applicant is responsible for payment.

Readvertisement of the NOTICE OF INTENT to Validate
Vested Water Right Claim Nos. 4944-3 and 5073-3

Notice is given that the following Vested Water Right Claim Nos. 4944-3 and 5073-3 filed by the South Dakota Department of Game, Fish & Parks, Joe Foss Building, 523 E. Capitol, Pierre, SD 57501 are eligible for validation by the Water Management Board pursuant to SDCL 46-2A-17 without a hearing unless a petition to oppose a validation is filed pursuant to SDCL 46-2A-16. This is a readvertisement of the Notice of Intent to Validate Vested Water Right Claim Nos. 4944-3 and 5073-3 which was published June 23 and 30, 1988 in The New Era. This readvertisement is necessary because of deficiencies in the original notice.

Vested Water Right Claim No. 4944-3 was filed for Swan Lake on March 4, 1983. Swan Lake is located in Sections 15 and 16 T97N-R53W in Turner County. The outlet structure is located in the NE1/4 SW1/4 Section 15 T97N-R53W. This claim is for sufficient surface water runoff from the Swan Lake drainage basin and diversion from Turkey Ridge Creek to fill the lake annually to the outlet elevation 1252.4 feet mean sea level with a claimed priority date of November 2, 1889 from natural drainage, January 1, 1914 from the Turkey Ridge Creek diversion in the NE1/4 NW1/4 of Section 15 T97N-R53W and September 30, 1946 from the outlet structure. The water impounded in place in the lake is for recreational uses.

Vested Water Right Claim No. 5073-3 was filed for Silver Lake on August 22, 1985. Silver Lake is primarily located in Sections 25 T100N-R56W in Hutchinson County and a portion of the lake may also be located in Section 26 and 36 T100N-R56W in Hutchinson County and Section 30 T100N-R55W in Turner County. The concrete inlet/outlet structure is located in the SE1/4 NE1/4 of Section 25 T100N-R56W. This claim is for sufficient surface water runoff from the Silver Lake drainage basin to fill the lake annually to the inlet/outlet elevation of 1435.34 feet mean sea level with a claimed priority date of January 1, 1917. A map of the Silver Lake drainage basin was included with the application. The water impounded in place in the lake is for wildlife production and recreational uses.

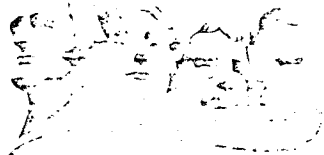
Any person who wishes to oppose validation of any vested right claim shall, prior to April 18, 1991, file a petition of intent to oppose the validation with the Chief Engineer, Water Rights Division, Department of Water and Natural Resources, Joe Foss Building, 523 East Capitol, Pierre, SD 57501 and with the Department of Game, Fish & Parks at the address listed above. The petition may be informal, but it must include a statement describing the petitioner's opposition to the claim, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained.

If a petition of intent to oppose the validation of a vested water right claim is filed, the Chief Engineer will schedule a hearing before the Water Management Board. The parties will be notified of the time and place of the hearing. If no person opposes validation of a vested water right claim pursuant to SDCL 46-2A-16, the Water Management Board will issue an order pursuant to SDCL 46-2A-17, validating the vested water right claims.

The validations are made pursuant to the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-14; 46-2-3.1, 46-2-9, 46-2-11, 46-2-17; 46-2A-16 thru 46-2A-18; 46-5-1 thru 46-5-6.1, 46-5-8.2, 46-5-13 thru 46-5-15, 46-5-30.2 thru 46-5-37.1, 46-5-46, 46-5-49; 46-7-1 thru 46-7-5.3, 46-7-12, 46-7-14, 46-7-15 and Board Rules ARSD 74:02:01:01 thru 74:02:01:05.03 and 74:02:01:20 thru 74:02:01:22.

Any person wishing to assure access to the hearing by the handicapped (if a hearing is held), further information on the claim, a copy of the applications and a map of the Swan Lake or Silver Lake drainage basin, the vested water right claim list for another county or a summary of South Dakota Water Law and Water Rights Information can contact the Chief Engineer, Water Rights Division, Joe Foss Building, 523 East Capitol, Pierre, SD 57501, (605 773-3352).

South Dakota



GREAT FACES. GREAT PLACES.

DEPARTMENT OF WATER & NATURAL RESOURCES

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

January 7, 1991

NOTICE

TO: Water Right and Water Permit Holders
Turner County

FROM: John Hatch, Chief Engineer
Water Rights Division
605 773-3352

SUBJECT: Notice of Intent to Validate Vested Water Right Claims

Enclosed is a Notice of Intent to Validate Vested Water Right Claim Nos. 4944-3, Swan Lake and 5073-3, Silver Lake, South Dakota Department of Game, Fish & Parks. State Statute 46-2A-16 requires that a copy of the notice of intent to validate a vested right claim filed prior to July 1, 1986 be mailed to all known water right or water permit holders in that county. This notice will also be published for two consecutive weeks in the New Era newspaper.

Validation is a legal procedure where those vested water right claims established prior to 1907 or between 1907 and 1955 without publication and notice, may be quantified, validated and have official legal status.

If you have questions, please contact the Water Rights Division, Department of Water and Natural Resources, Joe Foss Building, 523 East Capitol, Pierre, SD 57501-3181, (605) 773-3352.

enclosure

Instruction to Newspaper - Publish first Notice on January 10, 1991 with 2nd publication 7 days later. The applicant is responsible for payment.

Readvertisement of the NOTICE OF INTENT to Validate
Vested Water Right Claim Nos. 4944-3, Swan Lake
and 5073-3, Silver Lake

Notice is given that the following Vested Water Right Claim Nos. 4944-3, Swan Lake and 5073-3, Silver Lake filed by the South Dakota Department of Game, Fish & Parks, Joe Foss Building, 523 E. Capitol, Pierre, SD 57501 are eligible for validation by the Water Management Board pursuant to SDCL 46-2A-17 without a hearing unless a petition to oppose a validation is filed pursuant to SDCL 46-2A-16. This is a readvertisement of the Notice of Intent to Validate Vested Water Right Claim Nos. 4944-3 and 5073-3 which was published June 23 and 30, 1988 in The New Era. This readvertisement is necessary because of deficiencies in the original notice.

Vested Water Right Claim No. 4944-3 was filed for Swan Lake on March 4, 1983. Swan Lake is located in Sections 15 and 16 T97N-R53W in Turner County. The outlet structure is located in the NE1/4 SW1/4 Section 15 T97N-R53W. This claim is for sufficient surface water runoff from the Swan Lake drainage basin and diversion from Turkey Ridge Creek to fill the lake annually to the outlet elevation 1252.4 feet mean sea level with a claimed priority date of November 2, 1889 from natural drainage, January 1, 1914 from the Turkey Ridge Creek diversion in the NE1/4 NW1/4 of Section 15 T97N-R53W and September 30, 1946 for the constructed outlet structure. The water impounded in place in the lake is for recreational uses.

Vested Water Right Claim No. 5073-3 was filed for Silver Lake on August 22, 1985. Silver Lake is primarily located in Section 25 T100N-R56W in Hutchinson County and a portion of the lake may also be located in Sections 26 and 36 T100N-R56W in Hutchinson County and Section 30 T100N-R55W in Turner County. The concrete inlet/outlet structure is located in the SE1/4 NE1/4 of Section 25 T100N-R56W. This claim is for sufficient surface water runoff from the Silver Lake drainage basin to fill the lake annually to the inlet/outlet elevation of 1435.34 feet mean sea level with a claimed priority date of January 1, 1917. A map of the Silver Lake drainage basin was included with the application. The water impounded in place in the lake is for wildlife production and recreational uses.

Any person who wishes to oppose validation of any vested right claim shall, prior to April 18, 1991, file a petition of intent to oppose the validation with the Chief Engineer, Water Rights Division, Department of Water and Natural Resources, Joe Foss Building, 523 East Capitol, Pierre, SD 57501 and with the Department of Game, Fish & Parks at the address listed above. The petition may be informal, but it must include a statement describing the petitioner's opposition to the claim, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained.

If a petition of intent to oppose the validation of a vested water right claim is filed, the Chief Engineer will schedule a hearing before the Water Management Board. The parties will be notified of the time and place of the hearing. If no person opposes validation of a vested water right claim pursuant to SDCL 46-2A-16, the Water Management Board will issue an order pursuant to SDCL 46-2A-17, validating the vested water right claims.

The validations are made pursuant to the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-14; 46-2-3.1, 46-2-9, 46-2-11, 46-2-17; 46-2A-16 thru 46-2A-18; 46-5-1 thru 46-5-6.1, 46-5-8.2, 46-5-13 thru 46-5-15, 46-5-30.2 thru 46-5-37.1, 46-5-46, 46-5-49; 46-7-1 thru 46-7-5.3, 46-7-12, 46-7-14, 46-7-15 and Board Rules ARSD 74:02:01:01 thru 74:02:01:05.03 and 74:02:01:20 thru 74:02:01:22.

Any person wishing to assure access to the hearing by the handicapped (if a hearing is held), further information on the claim, a copy of the applications and a map of the Swan Lake or Silver Lake drainage basin, the vested water right claim list for another county or a summary of South Dakota Water Law and Water Rights Information can contact the Chief Engineer, Water Rights Division, Joe Foss Building, 523 East Capitol, Pierre, SD 57501, (605 773-3352).



DEPARTMENT OF WATER & NATURAL RESOURCES

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

January 8, 1991

Mr. Michael Marlow
Brady, Reade and Johnson
200 West Third
P.O. Box 735
Yankton, SD 57078

Dear Mr. Marlow:

Recently I sent you and your clients Ted and Murray Waltner copies of the notice of intent to validate Vested Right Claim No. 5073-3, Silver Lake. These notices are scheduled for publication in Hutchinson and Turner Counties. Enclosed are copies of these notices with minor changes that have been made prior to publication.

If you have any questions regarding the public notice process, feel free to contact this office.

Sincerely,

Eric Gronlund
Eric Gronlund
Water Rights Division
605 773-3352

enclosure

cc: Ted and Murray Waltner

**READVERTISEMENT OF THE
NOTICE OF INTENT TO
VALIDATE VESTED WATER RIGHT
CLAIM NOS. 4944-3, SWAN LAKE,
and 5073-3, SILVER LAKE**

Notice is given that the following Vested Water Right Claim Nos. 4944-3, Swan Lake, and 5073-3, Silver Lake, filed by the South Dakota Department of Game, Fish & Parks, Joe Foss Building, 523 E. Capitol, Pierre, SD 57501 are eligible for validation by the Water Management Board pursuant to SDCL 46-2A-17 without a hearing unless a petition to oppose a validation is filed pursuant to SDCL 46-2A-16. This is a readvertisement of the Notice of Intent to Validate Vested Water Right Claim Nos. 4944-3 and 5073-3 which was published June 23 and 30, 1988 in The New Era. This readvertisement is necessary because of deficiencies in the original notice.

Vested Water Right Claim No. 4944-3 was filed for Swan Lake on March 4, 1983. Swan Lake is located in Sections 15 and 16 T97N-R53W in Turner County. The outlet structure is located in the NE1/4 SW1/4 Section 15 T97N-R53W. This claim is for sufficient surface water runoff from the Swan Lake drainage basin and diversion from Turkey Ridge Creek to fill the lake annually to the outlet elevation 1252.4 feet mean sea level with a claimed priority date of November 2, 1889 from natural drainage, January 1, 1914 from the Turkey Ridge Creek diversion in the NE1/4 NW1/4 of Section 15 T97N-R53W and September 30, 1946 for the constructed outlet structure. The water impounded in place in the lake is for recreational uses.

Vested Water Right Claim No. 5073-3 was filed for Silver Lake on August 22, 1985. Silver Lake is primarily located in Section 25 T100N-R56W in Hutchinson County and a portion of the lake may also be located in Sections 26 and 36 T100N-R56W in Hutchinson County and Section 30 T100N-R55W in Turner County. The concrete inlet/outlet structure is located in the SE1/4 NE1/4 of Section 25 T100N-R56W. This claim is for sufficient surface water runoff from the Silver Lake drainage basin to fill the lake annually to the inlet/outlet elevation of 1435.34 feet mean sea level with a claimed priority date of January 1, 1917. A map of the Silver Lake drainage basin was included with the application. The water impounded in place in the lake is for wildlife production and recreational uses.

Any person who wishes to oppose validation of any vested right claim shall, prior to April 18, 1991, file a petition of intent to oppose the validation with the Chief Engineer, Water Rights Division, Department of Water and Natural Resources, Joe Foss Building, 523 East Capitol, Pierre, SD 57501 and with the Department of Game, Fish & Parks at the address listed above. The petition may be informal, but it must include a statement describing the petitioner's opposition to the claim, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained.

If a petition of intent to oppose the validation of a vested water right claim is filed, the Chief Engineer will schedule a hearing before the Water Management Board. The parties will be notified of the time and place of the hearing. If no person

opposes validation of a vested water right claim pursuant to SDCL 46-2A-16, the Water Management Board will issue an order pursuant to SDCL 46-2A-17, validating the vested water right claims.

The validations are made pursuant to the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-14; 46-2-3.1, 46-2-9, 46-2-11, 46-2-17; 46-2A-16 thru 46-2A-18; 46-5-1 thru 46-5-6.1, 46-5-8.2, 46-5-13 thru 46-5-15, 46-5-30.2 thru 46-5-37.1, 46-5-46, 46-5-49; 46-7-1 thru 46-7-5.3, 46-7-12, 46-7-14, 46-7-15 and Board Rules ARSD 74:02:01:01 thru 74:02:01:05.03 and 74:02:01:20 thru 74:02:01:22.

Any person wishing to assure access to the hearing by the handicapped (if a hearing is held), further information on the claim, a copy of the applications and a map of the Swan Lake or Silver Lake drainage basin, the vested water right claim list for another county or a summary of South Dakota Water Law and Water Rights Information can contact the Chief Engineer, Water Rights Division, Joe Foss Building, 523 East Capitol, Pierre, SD 57501, (605 773-3352).

(Publish January 10 & 17, 1991)



FIRST TRANSMITTAL NOTICE

No. 49443 + 5073-3

Date 1/10/91

We are in receipt of your letter of Jan 3, 91 enclosing Notice of Hearing to Appropriate Water by Application No. 49443 + 5073-3 which was first published in our issue of January 10, 1991. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

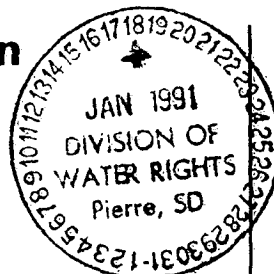
Bruce Berman
Name

The New Era, Pierre, SD.
Newspaper

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

Affidavit of Publication

STATE OF SOUTH DAKOTA }
COUNTY OF TURNER } ss.



Bruce J. Bormann of the City of Parker, County of Turner, State of South Dakota, being first duly sworn on oath, deposes and says:

The New Era is a weekly legal newspaper of general circulation, printed and published in the City of Parker, in said County of Turner, by The New Era, Bruce J. Bormann or Brenda L. Bormann, publishers, and has been such legal newspaper during the times hereinafter mentioned; that the said newspaper has been in existence as such legal newspaper for more than one year prior to the publication of the notice hereunto attached, and has during all of said time had, and now has, more than 200 bona fide subscribers; that the under-

signed, the affiant, is the Publisher of the said newspaper, in charge of the advertising department thereof and has personal knowledge of

all the facts stated in this affidavit and the advertisement headed _____

Claim #s 4944-3 + 5073-3
Readvertisement of Notice of Intent to Validate Vested Water Rights
printed copy of which hereunto attached, was printed and published in the

said newspaper for two successive weeks, once each week and on the same day of the week, on the following dates, to-wit:

On Thursday, the 10th day of January, 1991;
On Thursday, the 17th day of January, 1991;
On _____, the _____ day of _____, 19____;
On _____, the _____ day of _____, 19____;
On _____, the _____ day of _____, 19____;
On _____, the _____ day of _____, 19____;
On _____, the _____ day of _____, 19____;

That \$ 48.26 being the full amount of the fees for publication of the attached notice insures solely for the benefit of the publishers of the said newspaper; that no arrangement or understanding for a division thereof has been made with any other person and that no part thereof has been agreed to be paid to any other person whomsoever.

Bruce J. Bormann
Subscribed and sworn to before me this 17th
day of January, 1991.

Wm. T. [Signature]
Notary Public, Turner County, South Dakota.

My Commission Expires Sept. 20, 1998

READVERTISEMENT OF THE NOTICE OF INTENT TO VALIDATE VESTED WATER RIGHT CLAIM NOS. 4944-3, SWAN LAKE, and 5073-3, SILVER LAKE

Notice is given that the following Vested Water Right Claim Nos. 4944-3, Swan Lake, and 5073-3, Silver Lake, filed by the South Dakota Department of Game, Fish & Parks, Joe Foss Building, 523 E. Capitol, Pierre, SD 57501 are eligible for validation by the Water Management Board pursuant to SDCL 46-2A-17 without a hearing unless a petition to oppose a validation is filed pursuant to SDCL 46-2A-16. This is a readvertisement of the Notice of Intent to Validate Vested Water Right Claim Nos. 4944-3 and 5073-3 which was published June 23 and 30, 1988 in The New Era. This readvertisement is necessary because of deficiencies in the original notice.

Vested Water Right Claim No. 4944-3 was filed for Swan Lake on March 4, 1983. Swan Lake is located in Sections 15 and 16 T97N-R53W in Turner County. The outlet structure is located in the NE1/4 SW1/4 Section 15 T97N-R53W. This claim is for sufficient surface water runoff from the Swan Lake drainage basin and diversion from Turkey Ridge Creek to fill the lake annually to the outlet elevation 1252.4 feet mean sea level with a claimed priority date of November 2, 1889 from natural drainage, January 1, 1914 from the Turkey Ridge Creek diversion in the NE1/4 NW1/4 of Section 15 T97N-R53W and September 30, 1946 for the constructed outlet structure. The water impounded in place in the lake is for recreational uses.

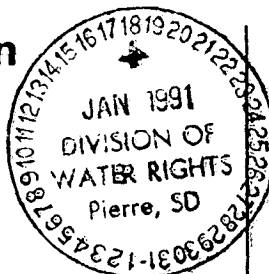
Vested Water Right Claim No. 5073-3 was filed for Silver Lake on August 22, 1985. Silver Lake is primarily located in Section 25 T100N-R56W in Hutchinson County and a portion of the lake may also be located in Sections 26 and 36 T100N-R56W in Hutchinson County and Section 30 T100N-R55W in Turner County. The concrete inlet/outlet structure is located in the SE1/4 NE1/4 of Section 25 T100N-R56W. This claim is for sufficient surface water runoff from the Silver Lake drainage basin to fill the lake annually to the inlet/outlet elevation of 1435.34 feet mean sea level with a claimed priority date of January 1, 1917. A map of the Silver Lake drainage basin was included with the application. The water impounded in place in the lake is for wildlife production and recreational uses.

Any person who wishes to oppose validation of any vested right claim shall, prior to April 18, 1991, file a petition of intent to oppose the validation with the Chief Engineer, Water Rights Division, Department of Water and Natural Resources, Joe Foss Building, 523 East Capitol, Pierre, SD 57501 and with the Department of Game, Fish & Parks at the address listed above. The petition may be informal, but it must include a statement describing the petitioner's opposition to the claim, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained.

If a petition of intent to oppose the validation of a vested water right claim is filed, the Chief Engineer will schedule a hearing before the Water Management Board. The parties will be notified of the time and place of the hearing. If no person opposes validation of a vested water right claim pursuant to SDCL 46-2A-16, the Water Management Board will issue an

Affidavit of Publication

STATE OF SOUTH DAKOTA }
COUNTY OF TURNER } ss.



Bruce J. Bormann of the City of Parker, County of Turner, State of South Dakota, being first duly sworn on oath, deposes and says:

The New Era is a weekly legal newspaper of general circulation, printed and published in the City of Parker, in said County of Turner, by The New Era, Bruce J. Bormann or Brenda L. Bormann, publishers, and has been such legal newspaper during the times hereinafter mentioned; that the said newspaper has been in existence as such legal newspaper for more than one year prior to the publication of the notice hereunto attached, and has during all of said time had, and now has, more than 200 bona fide subscribers; that the under-

signed, the affiant, is the Publisher of the said newspaper, in charge of the advertising department thereof and has personal knowledge of

all the facts stated in this affidavit and the advertisement headed _____

Claim #s 4944-3 + 5073-3
Readvertisement of Notice of Intent to Validate Vested Water Rights
printed copy of which hereunto attached, was printed and published in the

said newspaper for two successive weeks, once each week and on the same day of the week, on the following dates, to-wit:

On Thursday the 16th day of January, 1991;
On Thursday the 17th day of January, 1991;
On _____ the _____ day of _____, 19____;
On _____ the _____ day of _____, 19____;
On _____ the _____ day of _____, 19____;
On _____ the _____ day of _____, 19____;
On _____ the _____ day of _____, 19____;

That \$ 48.26 being the full amount of the fees for publication of the attached notice insures solely for the benefit of the publishers of the said newspaper; that no arrangement or understanding for a division thereof has been made with any other person and that no part thereof has been agreed to be paid to any other person whomsoever.

Bruce J. Bormann
Subscribed and sworn to before me this 17th
day of January, 1991.

Baron T. Olson
Notary Public, Turner County, South Dakota.

READVERTISEMENT OF THE NOTICE OF INTENT TO VALIDATE VESTED WATER RIGHT CLAIM NOS. 4944-3, SWAN LAKE, and 5073-3, SILVER LAKE

Notice is given that the following Vested Water Right Claim Nos. 4944-3, Swan Lake, and 5073-3, Silver Lake, filed by the South Dakota Department of Game, Fish & Parks, Joe Foss Building, 523 E. Capitol, Pierre, SD 57501 are eligible for validation by the Water Management Board pursuant to SDCL 46-2A-17 without a hearing unless a petition to oppose a validation is filed pursuant to SDCL 46-2A-16. This is a readvertisement of the Notice of Intent to Validate Vested Water Right Claim Nos. 4944-3 and 5073-3 which was published June 23 and 30, 1988 in The New Era. This readvertisement is necessary because of deficiencies in the original notice.

Vested Water Right Claim No. 4944-3 was filed for Swan Lake on March 4, 1983. Swan Lake is located in Sections 15 and 16 T97N-R53W in Turner County. The outlet structure is located in the NE1/4 SW1/4 Section 15 T97N-R53W. This claim is for sufficient surface water runoff dating the vested water right claims.

The validations are made pursuant to the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-14; 46-2-3.1, 46-2-9, 46-2-11, 46-2-17; 46-2A-16 thru 46-2A-18; 46-5-1 thru 46-5-15, 46-5-8.2, 46-5-13 thru 46-5-15, 46-5-30.2 thru 46-5-37.1, 46-5-46, 46-5-49; 46-7-1 thru 46-7-5.3, 46-7-12, 46-7-14, 46-7-15 and Board Rules ARSD 74:02:01:01 thru 74:02:01:05.03 and 74:02:01:20 thru 74:02:01:22.

Any person wishing to assure access to the hearing by the handicapped (if a hearing is held), further information on the claim, a copy of the applications and a map of the Swan Lake or Silver Lake drainage basin, the vested water right claim list for another county or a summary of South Dakota Water Law and Water Rights Information can contact the Chief Engineer, Water Rights Division, Joe Foss Building, 523 East Capitol, Pierre, SD 57501, (605 773-3352).

(Publish January 10 & 17, 1991)



Publication Fees - - - \$ 48.26
Notary Fees - - - - - \$ _____
Total - - - - - \$ 48.26

Received Payment,



JUL 23 1991

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

4944-3

Richard Beringson
SD Department of Game, Fish & Parks
523 E Capitol Ave
Pierre, SD 57501

Dear Mr. Beringson:

Enclosed are your Validated Vested Water Right and Water License No. 4944-3. As long as you use the water beneficially, as stated in the Water License, the State Water Laws provide that you have a continuing right to use the water.

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Division
(605) 773-3352

enclosures

SOUTH DAKOTA

VESTED WATER RIGHT NO. 4944-3

Date of Receipt of Claim March 4, 1983.

Date of Validation May 1, 1991.

The Water Management Board validated Vested Water Right Claim No. 4944-3 for South Dakota Department of Game, Fish and Parks, 523 E. Capitol Ave., Pierre, SD 57501 with the following limitations, conditions and qualifications:

1. Vested Water Right No. 4944-3 is for sufficient surface water runoff from the Swan Lake drainage basin and diversion from Turkey Ridge Creek to fill Swan Lake annually to the outlet elevation 1252.4 feet mean sea level. Swan Lake is located in Section 15 and 16, T97N, R53W in Turner County. The outlet structure is located in the NE1/4 SW1/4 Section 15, T97N, R53W and the Turkey Ridge Creek Diversion is located in the NE1/4 NW1/4 of Section 15, T97N, R53W.
2. The appropriated water is used for filling Swan Lake and may not exceed the amount of water needed for beneficial use for recreational uses.
3. The water is to be used during the following annual period: January 1 - December 31.
4. The priority dates of the Vested Water Right are: November 2, 1889 from natural drainage, January 1, 1914 from Turkey Ridge Creek Diversion and September 30, 1946 from the constructed outlet structure.
5. The water use system has been constructed and water has been applied to beneficial use.
6. Water Rights obtained in compliance with the laws of the State of South Dakota must not be unlawfully impaired by this appropriation.

WATER MANAGEMENT BOARD

By: _____



Chief Engineer

Division of Water Rights

Dept. of Environment and Natural Resources

JUL 23 1991

_____ date

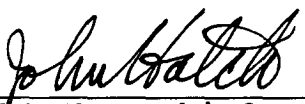
STATE OF SOUTH DAKOTA

VESTED WATER RIGHT LICENSE NO. 4944-3

(1) The South Dakota Department of Game, Fish & Parks of 523 E Capitol Ave, Pierre, SD 57501, made Application No. 4944-3, March 4, 1983 for validation of a vested right claim for storage of sufficient surface water runoff from the Swan Lake drainage basin and from Turkey Ridge Creek to fill Swan Lake in Turner County, South Dakota for recreational purposes. Vested Water Right No. 4944-3 was validated May 1, 1991 with priority dates of November 2, 1889 from natural drainage, January 1, 1914 from the Turkey Ridge Creek diversion and September 30, 1946 from the constructed outlet structure. Construction of the described water supply system and application of water to beneficial use has been completed and complies with applicable provisions of South Dakota Law.

(2) The applicant is entitled to store sufficient surface water runoff from Swan Lake drainage and diversion from Turkey Ridge Creek to fill Swan Lake annually to the outlet elevation of 1252.4 feet mean sea level. Swan Lake is located in Section 15 and 16, T97N, R53W. The outlet structure is located in the NE 1/4 SW 1/4 Section 15, T97N, R53W. The Turkey Ridge Creek diversion is located in the NE 1/4 NW 1/4 Section 15, T97N, R53W.

(3) Pursuant to Section 46-5-30.1 the South Dakota Department of Game, Fish & Parks, of 523 E Capitol Avenue, Pierre, SD 57501 the holder and owner of Vested Water Right No. 4944-3 is issued a license to store sufficient surface water runoff from the Swan Lake drainage basin and from Turkey Ridge Creek to fill Swan Lake annually to the outlet elevation of 1252.4 feet mean sea level. Vested Water Right No. 4944-3, is for recreational purposes and carries the following priority dates: November 2, 1889 from natural drainage, January 1, 1914 from Turkey Ridge Creek diversion and September 30, 1946, from the constructed outlet structure. This license is subject to any limitations, conditions or qualifications listed in Vested Water Right No. 4944-3 and subject to South Dakota State Law.



JOHN HATCH, Chief Engineer
Water Rights Division
Department of Environment & Natural Resources

JUL 23 1991

Date



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181

Date : April 25, 1997

To : Lois Carlson, President
Swan Lake Improvement Association
R.R. 3, Box 129
Beresford, South Dakota 57004

Subject : Resolution of the Diversion Ditch at Swan Lake

Dear Lois :

This letter is written in response to your letter dated April 20 (attachment #1) pertaining to the operation and repair of the inlet structure system which diverts water flows from Turkey Ridge Creek into Swan Lake. In your letter you stated that the Diagnostic Feasibility Study of Swan Lake stated that "eliminating Turkey Ridge Creek from the Swan Lake hydrologic system would stop the recharge the lake usually receives from ground water springs in the Winter and Fall". This statement is partially correct. The elimination of ground water input associated with Turkey Ridge Creek may reduce (not stop) the ground water recharge of Swan Lake. There are also in-lake hydrologic inputs from surficial aquifers. The DF study documented that there is a direct hydraulic connection between Swan Lake and its underlying surficial aquifer (map #1, charts 1 -7). During periods of high rainfall, the surficial aquifers will be recharged and the lake levels will naturally rise. This process will be reversed when there is a period of low rainfall. This will be dependent on hydraulic cycles and aquifer usage. This recharge process should have been enhanced by the dredging activities.

Your proposed solution of repair work, cleanout, riprap, fencing and management of the diversion structures is not in compliance with the Project Implementation Plan (PIP) dated 01/31/95. On page 7 of the PIP workplan (Objective 3, Task 1, Product 1), the following is stated:

Once the dredging is completed, the diversion structure will be **permanently closed**. If it is found that water input from the Turkey Ridge Creek watershed is needed in order to maintain adequate water level in the lake, then a water quality monitoring program to assess winter flows will be developed. This may lead to a 319 Turkey Ridge Creek Watershed Project. However, the diversion structure will remain closed until either the completion of a 319 Turkey Ridge Creek Watershed Project or the development of a DENR/EPA management plan for the diversion structure to insure that only high quality water is diverted into Swan Lake.

When EPA and the staff of DENR agreed to the use of federal and state funds for this project, it was mutually understood and agreed by all parties that the plan stated above was to be implemented. Therefore, in order to protect the investment of \$1,142,000 which the tax payers have put into this project, DENR will require that the diversion ditch connecting Turkey Ridge Creek and Swan Lake should be filled with a sand/gravel mixture, capped with top soil and graded to an elevation equal to the top of the two control structures by July 1, 1997. A workplan with milestones and cost estimation should be developed and submitted to DENR by May 15, 1997. This action will allow waters during high flow periods to enter Swan Lake after being filtered by the sand/gravel mixture and will assure that the impacts of activities implemented through this project will be long-term.

If you have any questions, please call me at 605-773-4254.


Tim Bjorn
Natural Resources Administrator
SDDENR/DFTA/WPP

cc - Kelly Wheeler, SDDENR
Steve Scholtes, SDDENR
David Rathke, EPA-Region VIII

Enclosures



May 8, 2000

Wayne Houtcooper
Department of Environment
and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

Dear Wayne:

RE: Diversion Ditch at Swan Lake

The agreement that we made in 1998 on the diversion ditch, was to fill in half of the ditch leading to the control structure with pea gravel and topped with filter fabric, soil and seeding to act as a filtering system for the water from Turkey Creek before it reached the control structure and eventually the lake. It was never our intent to STOP the flow of water from Turkey Creek to Swan Lake.

We need a different plan as the one we agreed to is not working. Instead of acting as a filter, the water is simply stopped.

To correct this problem, our proposed plan is attached. I estimate the cost of this plan to be \$1,000. The cost for this plan would be paid for by the Swan Lake Improvement Association.

I am also enclosing a water rights permit request, and a copy of a letter that I received from Tim Bjork dated April 25, 1997.

I will be waiting to hear from you, as we need to get some water into the lake as soon as possible. My home number is 605-253-2152 and our phone number at the cabin is 605-766-1070. Thank you.

Sincerely,

Lois Carlson, Dredge Coordinator
Swan Lake Improvement Association
46730 304th St.
Beresford, SD 57004

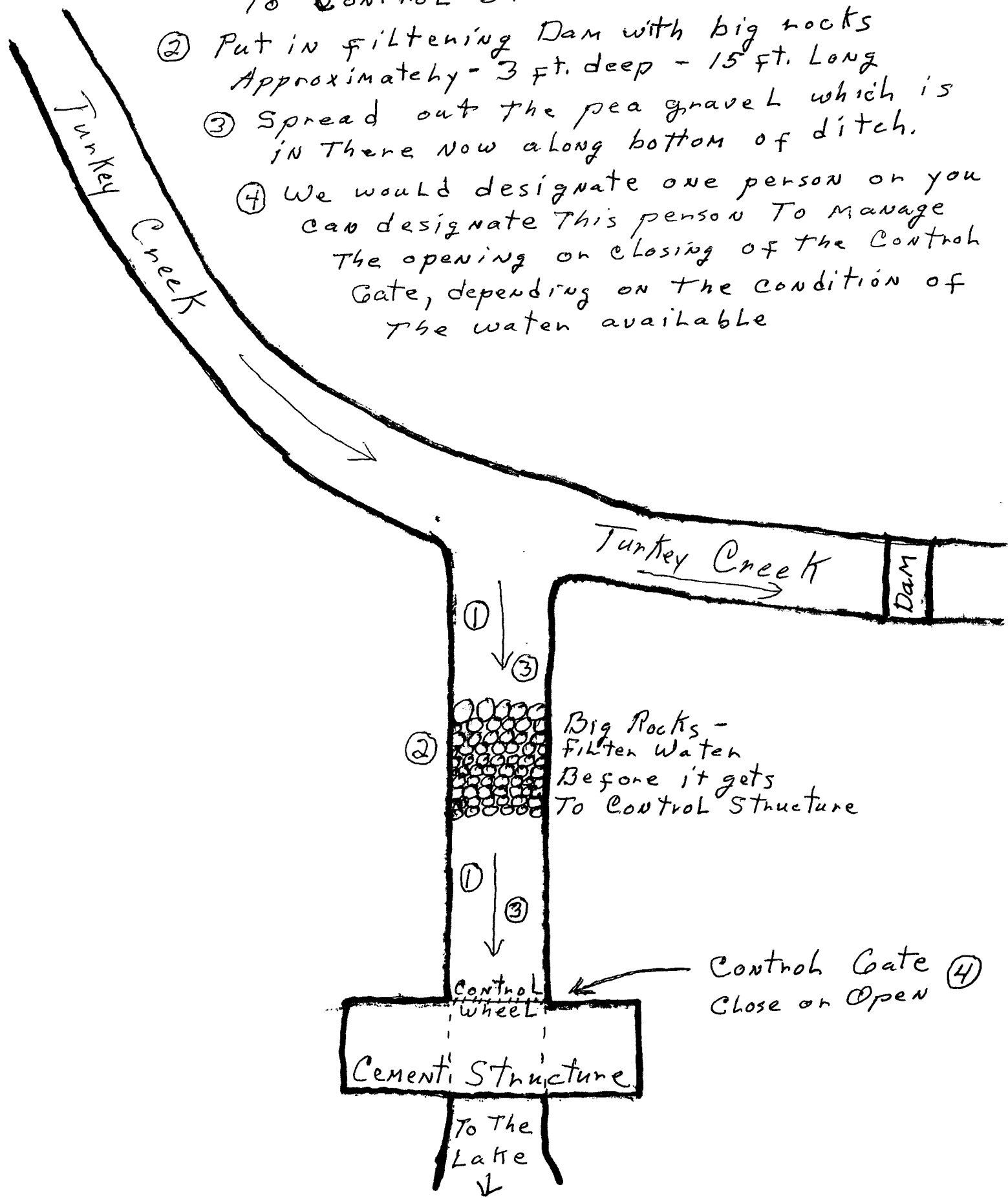
cc: Elma Carlson, President, SLIA

attached/enclosed

PLAN

This is our suggestion for Inlet - Swan Lake

- ① Clean out ditch from Turkey Creek To Control Structure.
- ② Put in filtering Dam with big rocks Approximately - 3 ft. deep - 15 ft. Long
- ③ Spread out the pea gravel which is in there now along bottom of ditch.
- ④ We would designate one person on you can designate This person To manage The opening on closing of the Control Gate, depending on the condition of The water available



REQUEST FOR TEMPORARY PERMIT
TO USE PUBLIC WATERS

TO: Department of Environment & Natural Resources
Division of Water Rights
523 E Capitol
Pierre, SD 57501-3181

1. Name and mailing address of company or person making the application for temporary permit Swan lake Improvement Association, Inc., % Lois Carlson 46730 304th St. Beresford, SD 57004.
2. Project or Projects on which water will be used Swan Lake Restoration Dredging project - Diversion Ditch.
3. Source of Water Turkey Creek to Swan Lake
4. Location of pumping station or stations. Give legal description of quarter section, or miles and direction from a town or landmark. Section 16, Township 97 N, Range 53 W, Turner County, SD.
5. Maximum total amount of water (in gallons) that will be used Millions of gallons - on-going (controlled).
6. Total daily withdrawal rate 450,000 gallons.
7. Date when water use will commence May 16, 2000.
8. Date when water use will cease N/A on-going (controlled).

Additional comments if necessary:


Signature/Date

Office use Only:
REVIEWED BY:
RECOMMENDATION:
DATE REVIEWED:

[illegible]

08/04/1982

cf: Vernon Arens; Arens Engineering, Yankton
Gober; US Fish and Wildlife Service, Pierre
Fletcher; US Environmental Protection Agency, Denver
Petersen; SD Game, Fish, and Parks, Pierre
Miller; SD Environment and Natrl Rsrcs, Pierre
Templeton; SD Environment and Natrl Rsrcs, Pierre
Peterson; Corps of Engineers (CENWO-PM-AE), Omaha
Vicuna; Natural Rsrcs Conservation Service, Huron
Miller; Natural Rsrcs Conservation Service, Parker

RECEIVED
JUN 28 2001
Division of Financial
& Technical Assistance

June 26, 2001

South Dakota Regulatory Office
28563 Powerhouse Road, Room 120
Pierre, South Dakota 57501

DA Permit
No. 199730134
Amendment No. 1

Swan Lake Improvement Association
Attn: Elma Carlson, Chair Person
908 Prairie Park Drive
Beresford, South Dakota 57004

Dear Ms. Carlson:

In accordance with your written request dated October 11, 2000, the authorization granted by US Department of the Army permit No. 199730134, on October 16, 1997, is hereby amended as follows:

a. Removal of the gravel fill filtering system from the Turkey Ridge Creek diversion channel in front of the existing water control structure.

b. Construction of an earthen dike at the start of the existing diversion channel, adjacent to Turkey Ridge Creek.

c. Installation of a 12 inch DIP diversion pipe with a 12 inch gate control valve through the dike.

d. Construction of a pre-sediment basin between the dike and the existing water control structure.

e. Annual maintenance dredging of the pre-sediment basin and the existing diversion channel sediment basin.

The original Department of the Army permit, No. 199730134, is hereby amended by inclusion of the above description of authorized work. The work will be completed in accordance with the plans/drawings, Sheets 1 through 4 of 4, attached hereto, which are incorporated in and made part of the permit.

In addition, the following Conditions shall be adhered to:

a. The existing Swan Lake Stream Inlet Project - Operational Plan shall be updated to include monitoring of Turkey Ridge Creek flows. The monitoring will include water depth, velocity and sediment load (type and amount of material transport) measurements at a location 100 feet upstream of the diversion channel inlet and 100 feet downstream of the Swan Lake outlet channel. The monitoring will begin prior to the construction of the new diversion inlet structure and continue weekly for a period of three (3) years.

b. The updated Operational Plan detailing the stream monitoring methods/procedures shall be submitted to the Corps of Engineers, South Dakota Regulatory Office, Pierre, South Dakota, for approval prior to the start of construction on the project.

c. Monitoring data shall be furnished to the South Dakota Department of Game, Fish & Parks and the South Dakota Department of Environment and Natural Resources, Pierre, South Dakota; the Turner County Natural Resources Conservation Service, Parker, South Dakota; and the Corps of Engineers, South Dakota Regulatory Office, on an annual basis (date to be determined by the agencies) with the final data submitted within one month of the last monitoring date. At the end of the three year period, the agencies will determine through consensus if further monitoring should be required or if the Operational Plan should be adjusted.

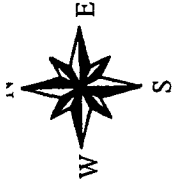
All other terms and conditions (General and Special) of the original permit remain in full force and effect.

BY THE AUTHORITY OF THE SECRETARY OF THE ARMY:

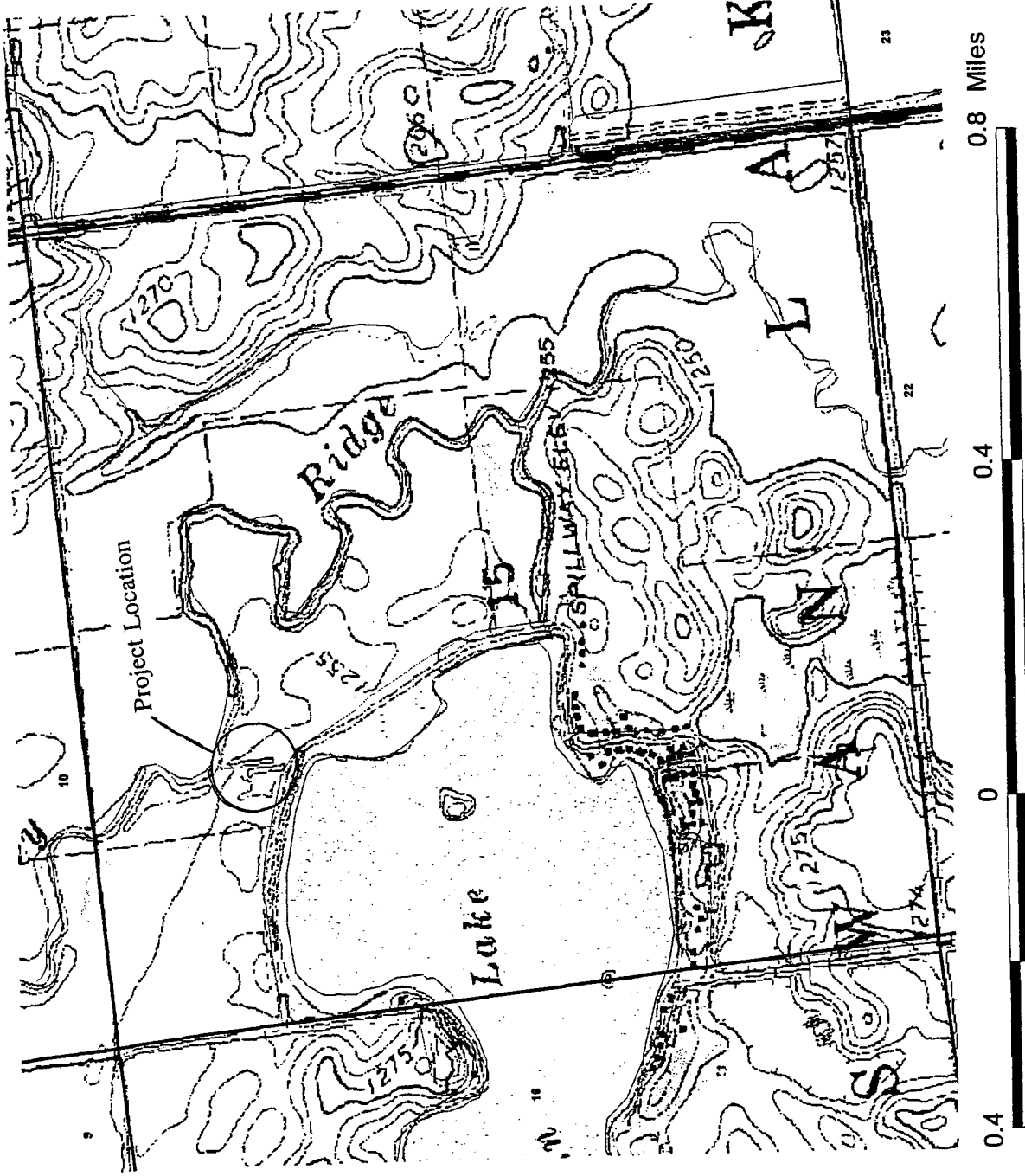
Mark E. Tillotson
Colonel, Corps of Engineers
District Engineer

By:

Steven E. Naylor
Regulatory Program Manager,
South Dakota



roads90 turner
hydro90 turner
plss_alb freeman



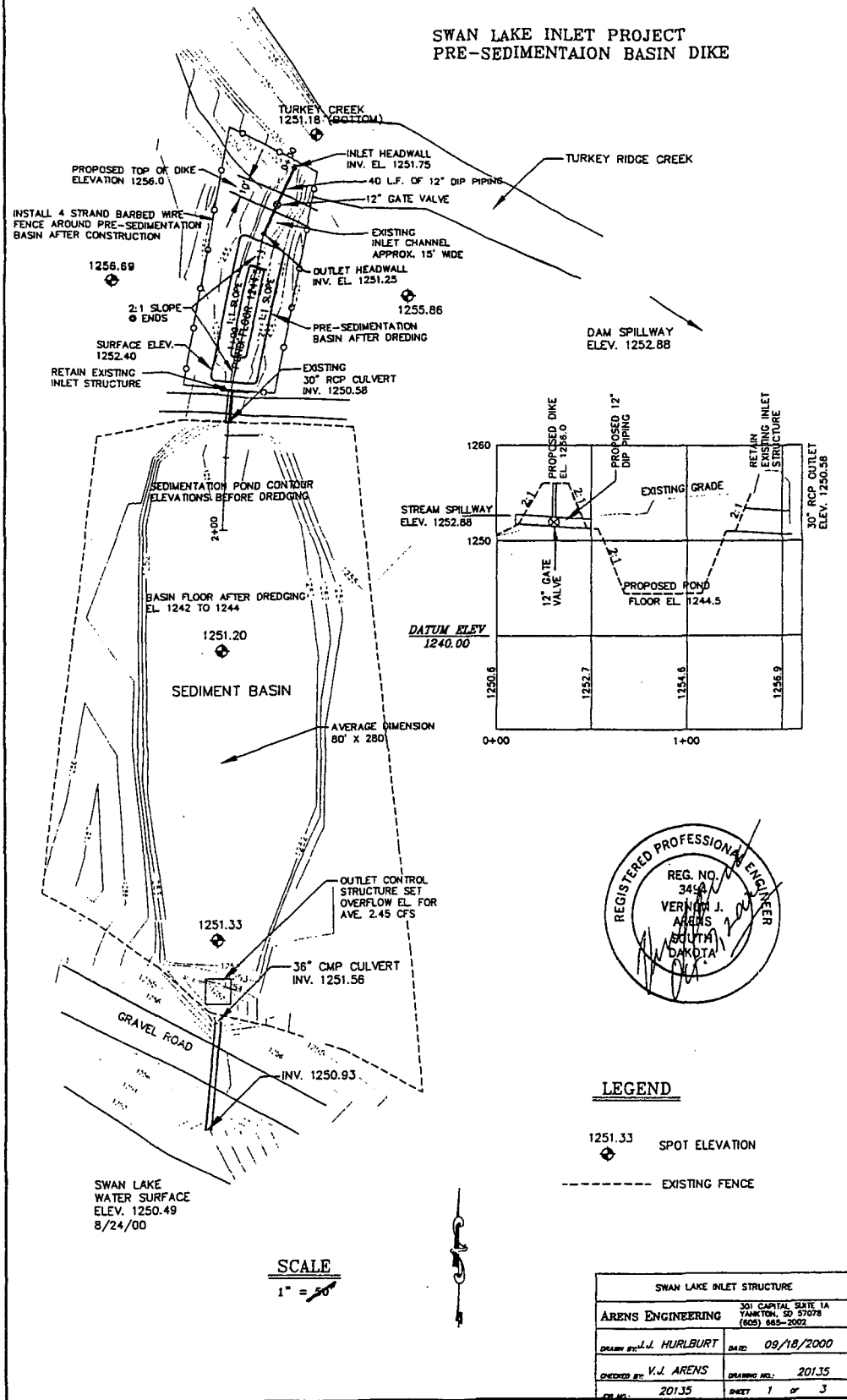
VICINITY MAP

PURPOSE: IN Turkey Ridge Creek/Swan Lake
Lake/Water Quality Improvement AT Sec. 15/T97N/R53W
COUNTY Turner

APPLICATION BY:
Swan Lake Improvement Association

DA Permit No. 199730134
Amendment No. 1
DATE 6/26/2001
SHEET 1 of 4

SWAN LAKE INLET PROJECT PRE-SEDIMENTATION BASIN DIKE



PURPOSE:
Lake/Water Quality Improvement

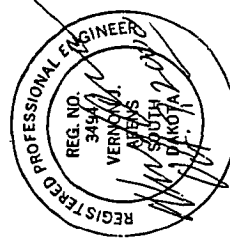
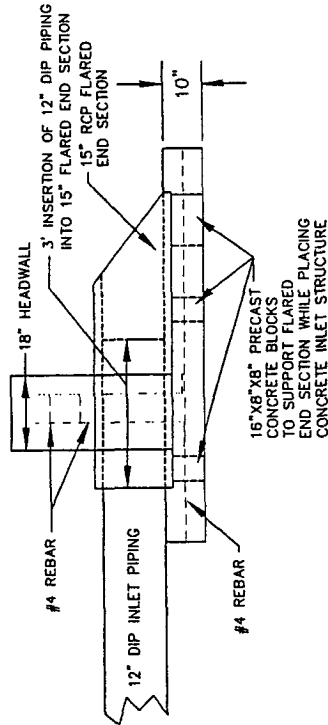
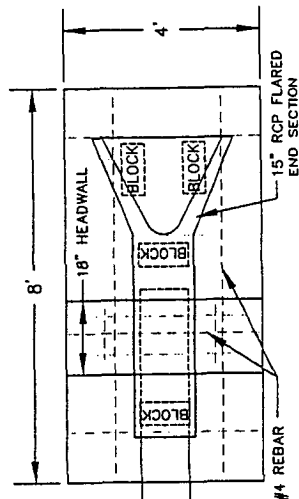
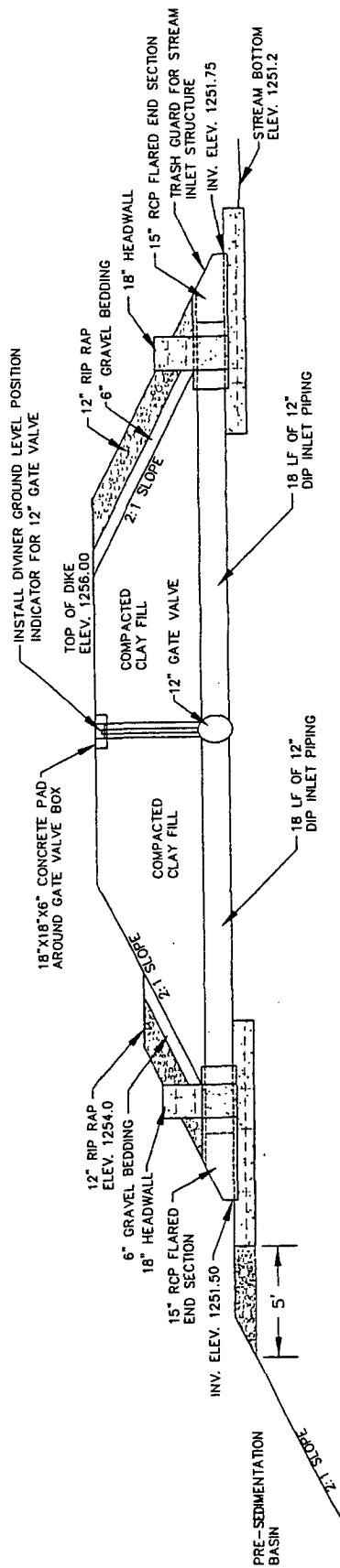
IN Turkey Ridge Creek/Swan Lake
AT Sec. 15/T97N/R53W
COUNTY Turner

APPLICATION BY:
Swan Lake Improvement Association

DA Permit No. 199730134
Amendment No. 1

DATE 6/26/2001
SHEET 2 of 4

SWAN LAKE INLET PROJECT PRE-SEDIMENTATION BASIN DIKE



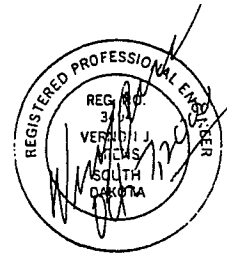
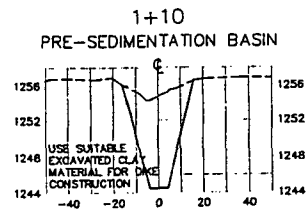
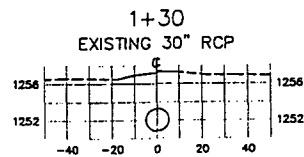
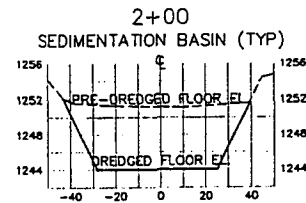
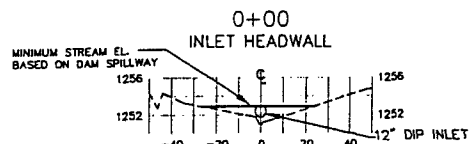
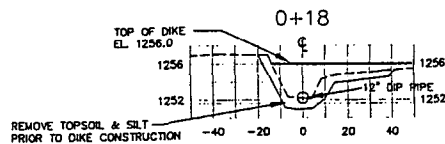
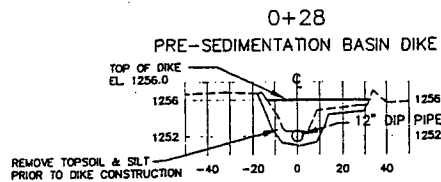
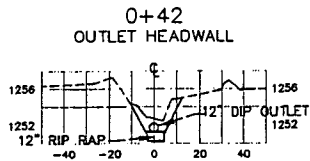
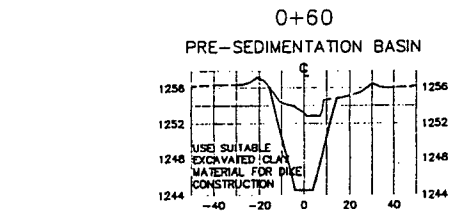
DRAWN BY: J.L. ARENS	DATE: 10/06/00
CHECKED BY: V.J. ARENS	DRAWING NO.: 20135-d
JOB NO.: 20135	SHEET 2 OF 3

PURPOSE: IN Turkey Ridge Creek/Swan Lake
Lake/Water Quality Improvement AT Sec. 15/T97N/R53W
COUNTY Turner

APPLICATION BY: Swan Lake Improvement Association

DATE 6/26/2001
SHEET 3 of 4

DA Permit No. 199730134
Amendment No. 1



PRE-SEDIMENTATION BASIN CROSS SECTIONS			
ARENS ENGINEERING		301 CAPITAL STATE 1A YANKTON, SD 57078 (605) 845-2002	
DRAWN BY: J.L. ARENS	DATE: 10/06/2000		
CHECKED BY: V.L. ARENS	DRAWING NO.: 20135		
FILE NO.: 20135	SHEET 3 OF 3		

PURPOSE:
Lake/Water Quality Improvement

IN Turkey Ridge Creek/Swan Lake
AT Sec. 15/T97N/R53W
COUNTY Turner

APPLICATION BY:
Swan Lake Improvement Association

DA Permit No. 199730134
Amendment No. 1

DATE 6/26/2001
SHEET 4 of 4



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

June 5, 2000

Lois Carlson
Swan Lake Improvement Association
46730 304th Street
Beresford, SD 57004

Dear Ms. Carlson:

The Swan Lake Improvement Association has requested a temporary permit to use public waters. This request is to reactivate the ditch to allow the diversion of water from Turkey Ridge Creek into Swan Lake.

Temporary permits for the use of public water are issued in South Dakota for short-term construction, testing or drilling purposes. Temporary permits expire at the end of each year and are not intended for continuous operation of a diversion ditch. A temporary permit can not be issued for the continuous operation of a control structure and diversion ditch.

The South Dakota Department of Game, Fish and Parks holds Vested Water Right No. 4944-3 for Swan Lake. The water right (copy enclosed) is for sufficient water annually to maintain the water level to the outlet elevation of Swan Lake. This water right includes authorization to operate the Turkey Ridge Creek diversion that dates back to 1914 and the outlet constructed in 1946.

The diversion ditch connecting Turkey Ridge Creek and Swan Lake was closed as part of the restoration project to reduce the sediment load entering the lake. The Department of Game, Fish and Parks concurred with closure of the ditch. In doing so, the Turkey Ridge Creek diversion component of the water right became subject to abandonment.

Tim Bjork's letter dated April 25, 1997, states that the diversion structure is to remain permanently closed. This stipulation was part of the project implementation plan agreed to by all parties. The conditions on the project implementation plan enabled the Association to secure federal and state funding for the project.

You indicate that the Association thought the obstruction in the diversion ditch would filter Turkey Ridge Creek water and allow water to enter during high flow periods. The Association alleges that this is not occurring and now seeks to reactivate the diversion ditch. Mr. Bjork's 1997 letter states:

"If it is found that water input from the Turkey Ridge Creek watershed is needed in order to maintain adequate water level in the lake, then a water quality monitoring program to assess winter flows be developed. This may then lead to a 319 Turkey Ridge Creek Watershed Project. However, the diversion structure will remain closed until either the completion of a 319 Turkey Ridge Creek Watershed Project or the development of a DENR/EPA management plan for the diversion structure to insure that only high quality water is diverted into Swan Lake."

The diversion ditch is to remain closed until the condition set forth in the Project Implementation Plan dated January 31, 1995 and agreed to by all parties is followed. I encourage you to contact Wayne Houtcooper with the Division of Financial and Technical Assistance at 605 773-4216 if your Association is interested in pursuing a water quality monitoring program.

Sincerely,

A handwritten signature in black ink, appearing to read "Garland Erbele". The signature is fluid and cursive, with the first name "Garland" written in a larger, more prominent script than the last name "Erbele".

Garland Erbele, Chief Engineer
Water Rights Program

Enclosure

C: Wayne Houtcooper, Division of Financial and technical Assistance
Tim Olson, Dept. of Game, Fish and Parks



August 24, 2000

The Honorable Tom Daschle
United States Senate
320 N. Main Avenue
Sioux Falls, SD 57104

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**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

The Honorable Tim Johnson
United States Senate
715 S. Minnesota Avenue
Sioux Falls, SD 57104

Dear Senators Daschle and Johnson:

Thank you for your letter regarding Swan Lake. The Department of Environment and Natural Resources agrees that Swan Lake is an important lake, and we share the same goal as the Swan Lake Improvement Association – to protect Swan Lake. Past projects show the state's commitment to protect the lake. State resources have been used twice (1975 and 1997) to dredge the lake. Over \$920,000 in state and federal funds were used for the 1997 lake improvements, to include dredging. However, public funds are limited and future funding for dredging is unlikely.

The diversion channel filtration system was installed during the 1997 project to keep excessive sediment out of Swan Lake. The department agrees the filtration system is not working as designed and has agreed to allow the association to design and construct a control structure (see enclosed letter). However, the control structure must be designed and constructed to keep sediment-laden floodwaters out of the lake. The department will work with the association and their consultant to expedite the design and construction project.

The association should be aware that even with a new diversion structure, Swan Lake levels will continue to fluctuate. Lake levels are dependent on precipitation. This year, the precipitation is about ten inches below normal. The enclosed chart shows lake levels fluctuated prior to the 1997 lake improvement project.

The department will also be pursuing a watershed assessment project with the Turner County Conservation District, and we hope you will support that project as well. The assessment project will document where problems are occurring in the Turkey Ridge Creek watershed. We will then work with the landowners on a voluntary basis to address these problems. The goal of this project is to improve Turkey Ridge Creek water quality. This will help protect Swan Lake.

If there are further questions, please contact David Templeton of my staff at (605) 773-4216. Thanks again for your inquiry.

Sincerely,

Steven M. Pirner
Secretary

Enclosures



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3181
www.state.sd.us/denr

August 16, 2000

Ms. Elma Carlson
908 Prairie Park Dr.
Beresford, SD 57004

Dear ~~Ms. Carlson:~~ *Elma*

This is in regard to the Swan Lake Association meeting on August 3, when we discussed the situation with the lake level at Swan Lake and the diversion channel from Turkey Ridge Creek. I have made the inquiries that the lake association requested and this is what I found out.

First of all, Swan Lake was dredged during the 1970s and the sediment trap was placed in the diversion channel at approximately this time. By the 1990s, the sediment trap was basically non-functional because of the accumulation of sediment through the diversion channel. The lake was dredged again during the mid-1990s and at that time, the plug/filter structure was placed in the diversion channel. The state placed the plug/filter structure in the diversion to prevent further degradation to the lake from excess sedimentation. The state position is still to prevent as much sediment from entering the lake as possible and will most likely remain so.

As I stated at the meeting, simple removal of the plug from the channel will be opposed by the DENR. If the association is interested in reconstruction or repair of the "filter structure" in the diversion channel between Turkey Ridge Creek and Swan Lake, the staff at DENR will review an engineering design for this activity. If you hire an engineer to develop a plan, it would enable us to determine the effects of whatever action might be taken. The exclusion of large storm flows and the accompanying sediment must be a key design element. You should also be aware that before any work may be done on the plug, a request for a water right may need to be made to the SD Board of Water Management. The Water Rights staff engineer responsible for this type of proposal is Eric Gronlund. Eric's phone number is (605) 773-4062. If we get to that point, Eric is the one that will assist you in the application process.

At your meeting, I was asked what permits, etc. would be required for cleaning out the sediment trap structure on the diversion channel. I have not been able to identify any state requirements for this activity if conducted on your own land. You should check

with the Army Corps of Engineers, as there may be Section 404 requirements. A good contact with the Corps is Steve Naylor in Pierre. His phone number is (605) 224-8531. If you do decide to work on the sediment trap, I would encourage you to consider exclusion of the cattle from the diversion area. This will help preserve any work that you do and may prevent future problems.

Lastly, I believe that any plans to do work on the old diversion channel will be much more acceptable if the Turner Conservation District is working on a project for Turkey Ridge Creek. While it is true that the base flows from the creek are quite clean during non-runoff periods, the runoff from Turkey Ridge does carry heavy loads of nutrients and sediment. We certainly don't want to see any action that increases the sediment or nutrient loads to Swan Lake. I would like to see your lake association encourage and work with the Turner Conservation District to clean up the creek. I will make myself available to attend a conservation district meeting upon their request.

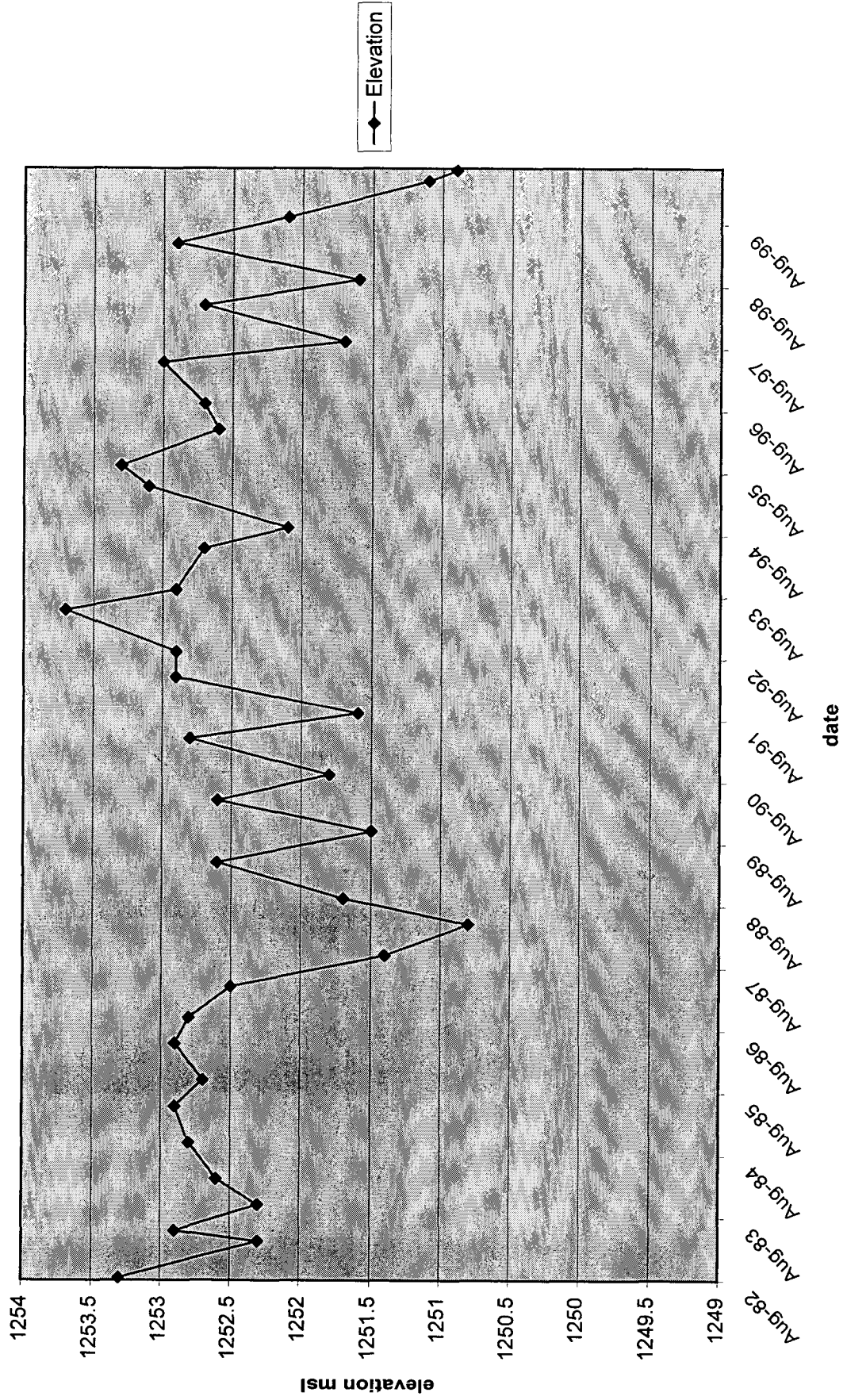
Sincerely,

A handwritten signature in cursive script that reads "William C. Stewart".

William C. Stewart, Environmental Senior Scientist
SD Department of Environment and Natural Resources

cc: Eric Gronlund
David Templeton
John Kirk
Turner Conservation District

Swan Lake Elevations August, 2000



United States Senate
WASHINGTON, DC 20510

August 10, 2000



Steve Pirner
Secretary
Department of Environment & Natural Resources
523 East Capitol Ave.
Pierre, SD 57501

Dear Secretary Pirner:

For the past several weeks, we have been in contact with Roscoe and Lois Carlson of Beresford, South Dakota regarding a matter involving the Department of Environment & Natural Resources (DENR). The Carlsons are board members of the Swan Lake Improvement Association (SWIA).

SWIA sponsored a dredge project on Swan Lake in Turner County which was completed last year. As part of the project, DENR required that a diversion channel between Turkey Ridge Creek and Swan Lake be reconstructed utilizing various filtration devices for the purpose of filtering sediment and preventing it from entering the lake. Since the construction of the diversion channel in 1914, Turkey Ridge Creek has been the primary source of water for Swan Lake.

Since the completion of the project, the filtration system has failed to perform to expectations and has become clogged, effectively acting as a dam structure and preventing Turkey Ridge Creek waters from entering the lake. As a result, the level of Swan Lake has dropped to an unprecedented low, rendering the lake useless for the many recreational activities that have attracted area residents for decades.

Bill Stewart of your office met on August 3 with members of the SWIA board to discuss alternatives. Among the groups and agencies represented at the meeting were the Natural Resource Conservation Service, Turner County Commission and the Vermillion Basin Water District. Also present were State Senator Joe Reedy, State Representative Junior Engbrecht, consulting engineer Vern Arens and Senator Daschle's staff member, Mark Gerhardt.

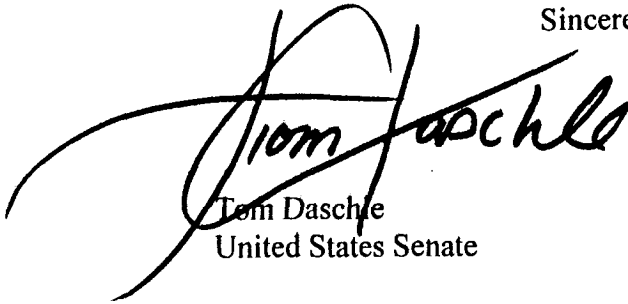
At that meeting, SWIA asked for permission to redesign and reconstruct the filtration system in the diversion channel. Mr. Stewart agreed to return to Pierre with that request and to provide an answer within two weeks.

We fully appreciate that the final decision on the SWIA request will appropriately be made according to the terms of the original agreement and department policy. We do hope, however, that to the extent you have discretion in this matter, you will seriously consider the request.

Roscoe and Lois Carlson
August 10, 2000
Page 2

Thank you in advance for your consideration of these circumstances. We look forward to learning of your decision in this matter. Please respond to Senator Daschle at 320 N. Main Ave., Sioux Falls, SD 57104 and Senator Johnson at 715 S. Minnesota Ave., Sioux Falls, SD 57104.

Sincerely,



Tom Daschle
United States Senate



Tim Johnson
United States Senate

1252.8

ARENS ENGINEERING**301 Capitol, Suite 1A****Yankton, SD 57078****605-665-2002**

November 8, 2000

Mr. Mark McIntire
Department of Environmental and Natural Resources
523 East Capitol Avenue
Pierre, SD 57501-3181

RE. Swan Lake Stream Inlet Project

Dear Mr. McIntire:

The Swan Lake Improvement Association agrees to accept responsibility for the operation and maintenance of the Turkey Ridge Creek Inlet Project. The Association will designate a inlet control person who will operate the Stream Inlet System in accordance with the approved Operational Plan. The Association initial stream inlet control person will be Ed Mansfield of Viborg, SD. The stream inlet control person will be responsible for controlling the gate valve operating wrench for the stream inlet 12" gate valve. The stream diversion will begin on or later than October 20th and conclude no later than February 28th. The inlet control person will 1) notify Turner County Conservation Service prior to the initiation of the inlet start-up in the Fall, 2) responsible for opening and setting the flow rate for the 12" stream inlet control gate valve, 3) over see the stream quality control testing, 4) monitoring the silt levels in the pre-sedimentation and sedimentation basins, 5) terminating the stream diversion no later than February 28th, 6) overseeing the stream inlet system maintenance, and 7) maintaining the system operational records. The Association designated inlet control person will be subject to the approval of the various State and Federal agencies involved with the Project.

The Swan Lake Improvements Association will perform the required annual maintenance for the Swan Lake Stream Inlet Project. The project maintenance will include 1) removal of debris from the stream inlet structure, 2) maintaining the dike erosion control features, 3) removal of silt from the inlet piping as necessary, 4) monitoring the silt level in the pre-sedimentation and sedimentation basins, 5) maintaining the sedimentation basin outlet control structure, 6) the up keep of the fences around the two basins, and 7) other maintenance items as may be required. The Association will schedule the silt removal from the pre-sedimentation and sedimentation basins when the silt level reaches 3 feet from the surface in order to maintain the basins' silt removal efficiencies.

Please feel free to contact me at 1-605-665-2002 with any questions or comments. Thank you.

Sincerely,

Accepted by Swan Lake Improvement Association


Vernon Arens, PE

Date:

SWAN LAKE STREAM INLET PROJECT

OPERATIONAL PLAN

PREPARED FOR:

SWAN LAKE IMPROVEMENT ASSOCIATION
ELMA CARLSON, CHAIRPERSON
908 PRAIRIE PARK DRIVE
BERESFORD, SD 57004

PREPARED BY:

ARENS ENGINEERING
301 CAPITOL, SUITE 1A
YANKTON, SD 57078
OCTOBER, 2000

PART 1 PURPOSE

- A. Develop an operational plan for the operation of the Turkey Ridge Creek Inlet to Swan Lake. The Turkey Ridge Creek inlet is designed for two primary purposes; 1) aid in maintaining a stable water level elevation for Swan Lake and 2) maintain a high water quality level for the Lake's water.

PART 2 BACKGROUND INFORMATION

- A. Swan Lake is a 180 acre natural lake located 3 miles north and 1 mile west of Viborg, Turner County in southeastern South Dakota. Swan Lake assumed characteristics of a reservoir when an inlet channel was installed from Turkey Ridge Creek in 1914. This increased the watershed for Swan Lake from approximately 1,000 acres to approximately 81,600 acres. With the small watershed, Swan Lake water level was mostly dependent upon the local ground water level. The stream inlet provided a mean to replenish summer evaporation losses and maintain a better year round water elevation. The stream inlet subjected the lake to degradation factors of run-off silt deposition and farm run-off nutrients. A Diagnostic/Feasibility Study was conducted for the lake by the South Dakota Clean Lakes Program in January, 1993. As a result of the Study, a Swan Lake Improvement project was implemented which included a dredging project for removing accumulated silt and increasing the depth of portions of the shallow natural lake.
- B. In 1914, the man made diversion ditch was installed from Turkey Ridge Creek to the northeast corner of Swan Lake. The diversion ditch consists of 120 foot channel to an shear gate inlet structure at the head of 30" RCP culvert approximately 20 feet in length. The shear gate structure is controlled by a wheel operated threaded metal shaft for opening and closing the shear gate, which controlled the stream diversion to Swan Lake. The 30" RCP culvert discharges to a 280 feet long sedimentation basin which provides for sediment removal prior to the stream diversion water entering the Lake. Finally, concrete structure with wooden stop planks controlled the discharge from the sedimentation basin effluent to Swan Lake, final flow occurring through a 60 feet long 36" CMP culvert.
- C. Turkey Ridge stream flow comes from two primary sources, 1) surface run-off from precipitation and snow melt events, and 2) ground water flows from surficial aquifers. The ground water flows primarily occur in the late Fall and Winter months after the termination of the adjacent farm land irrigation demands for the year. The water quality of Turkey Ridge Creek is relative to the Creek's water source. If the water is from a run-off event, the water typically have a higher nutrient and sediment level then if the water is from the ground water aquifers.
- D. Following the completion of the Swan Lake dredging project, a filter section consisting of graded filter media, a geo-textile fabric, and seeded topsoil layer was installed in the man made diversion ditch immediately prior to the shear gate control structure. The concept was to utilize the filter media to remove the stream silt load prior to the stream water being diverted to Swan Lake. The stream silt plugged the filter media, thereby

effectively terminating any Turkey Creek inflow to Swan Lake. Swan Lake Improvement Association concerned with the resulting low water level in the Lake requested a revised stream transfer mechanism for diverting Turkey Creek stream flow to the Lake.

- E. After discussion with South Dakota Department of Environment and Natural Resources in September 2000, a stream diversion plan utilizing a smaller diameter transfer pipe was developed. The concern with the existing 30" RCP culvert is that transfer flow could exceed the effective silt removal rate for the existing sedimentation basin. This could result in significant amount of stream silt load being brought into Swan Lake. A smaller diameter transfer pipe would limit the stream transfer flow to the effective silt removal capacity of the existing sedimentation basin.

PART 3 SWAN LAKE INLET PROJECT

- A. The Swan Lake/Turkey Creek Inlet Project begins with the installation of a diversion dike at the head of the man made diversion ditch adjacent to Turkey Ridge Creek. A 12" ductile iron pipe (DIP) is installed through the dike to provide the diverting of the stream flow to Swan Lake. A 12" gate valve is installed in the line to provide a mean to control when stream transfer from the Creek to the Lake occurs. A gate valve wrench is used to open and close the gate valve. The wrench would be provided to an authorized individual to operate the control gate valve. Concrete inlet structures constructed at each end of the transfer pipe to provide a specific point for diverting the stream flow and discharging the transfer flow. The dike slopes are rip-rap to prevent stream erosion of the dike's surfacing.
- B. A pre-sedimentation basin is located in the man made ditch between the diversion dike and the sedimentation basin. The pre-sedimentation basin function is to remove the larger silt particles prior to the sedimentation basin. The pre-sedimentation basin is narrower than the sedimentation basin thus would be easier to have cleaned with a local back hoe and would extend the cleaning cycle of the sedimentation basin.
- C. The shear gate structure prior to the sedimentation basin, the sedimentation basin, and the sedimentation basin outlet structure would be retained. The sedimentation basin was cleaned out in the summer of 2000. The sedimentation basins silt levels would be regularly monitored in-order to schedule their cleaning prior to the basin become too shallow to effectively remove the silt loading. The recommended cleaning schedule is to have the silt removed when the basin effective depth reaches three feet. The sedimentation basin bottom depth is 8 to 10 feet while the pre-sedimentation basin bottom depth is 6 feet.
- D. The sedimentation basin concrete outlet structure outlet control planks revised to a rectangular weir in-order to measure the stream diversion flow rate. This insures that the diversion rate would not exceed the effective silt removal efficiency for the pre-sedimentation and the sedimentation basins. Also, it is possible to determine the recommended diversion rate for the two basins. After the start-up of the new inlet structure, weekly grab samples would be scheduled for the Turkey Ridge Creek, the pre-sedimentation basin effluent, and the sedimentation basin effluent. The samples

would be tested for settleable solids in-order to determine the system silt removal efficiency. By the use of the 12" gate valve, the stream diversion rate can be adjusted to obtain a reasonable diversion rate at an acceptable silt removal efficiency level. The weekly grab samples would be taken until a silt removal efficiency level has been determined for the diversion system. After that, bi-monthly grab samples during the diversion period would be taken to monitor the silt removal efficiency.

PART 4 SWAN LAKE INLET DIVERSION RATE

- A. The stream diversion rate required to meet two primary objectives, 1) provide a sufficient flow rate in-order to replenish the Swan Lake water level in a reasonable time period and 2) provide an acceptable silt removal efficiency. The diversion flow rate is dependent upon the inlet pipe size, the position of the control gate valve, and the water level in Turkey Ridge creek in relation to the sedimentation basins' water level.
- B. The diversion rate and diversion period is dependent upon the annual quantity of water required to replenish the Swan Lake water loss. Swan Lake annual water losses are lake evaporation and lake seepage. The lake evaporation loss is the yearly evaporation loss minus the annual precipitation. The average yearly evaporation is approximately 41 inches and the average annual precipitation is 24 inches which yield a annual evaporation loss of approximately 17 inches per year. It is assumed that the lake ground water seepage loss and the lake ground water recharge are approximately equal over a year period. Swan Lake has a surface area of approximately 180 acres, thus the annual evaporation loss would be approximately 255 acre feet per year. The annual diversion volume is assumed to average 18" of lake water depth which equals approximately 270 acre feet per year.
- C. The recommended diversion period would be time of ground water flows in Turkey Ridge Creek which occurs in the late Fall and Winter months. The diversion would start after the ground water flows increased the Creek flows which generally is mid-October after the irrigation requirement terminates to the year allowing the ground water aquifers to recharge. The earliest date that the diversion can start would be October 20th. The diversion period would continue until the Swan Lake water level is restored. Precipitation run-off flows during this period require that the stream diversion be terminated until the run-off event flow passes the stream inlet structure. The latest date for diversion would be February 28th. Diversion would terminate prior to the Spring snow melt runoff. Diversion during the summer months would generally be impractical due to the low flows in Turkey Ridge Creek except following precipitation events. It is not recommended to divert the run-off flows to the Lake due to the increased silt and nutrients loads. Should circumstances require summer time stream diversion, the diversion will require the notification and verbally approval from the State and Federal agencies involved in the project. The summer months diversion will require the daily monitoring of the stream and diversion flows, twice weekly water quality sampling, and the termination of the stream diversion prior to any precipitation event run-off flows reaching the stream control structure.

- D. The diversion rate is limited to the capacity of the transfer piping and the requirement to meet effective settling times in the sedimentation basins. The 12" DIP transfer pipe would have a 2.45 cubic feet per second flow rate based on a 0.5' elevation difference between the creek elevation and the sedimentation basin elevation. During the fall winter months ground flows, the Creek's elevation would remain fairly constant. The sedimentation pond elevation would be controlled by the sedimentation basin outlet weir elevation and control position of the transfer pipe 12" gate valve. The 2.45 cubic feet/second flow rate will provide a pipe velocity of 3.13 feet per second, which is greater than the minimum required pipe scouring velocity of 2.0 feet per second. The 2.0 feet per second velocity prevents silt disposition in the transfer pipe.
- E. The sedimentation basins' effective settling zone will be the upper 3 feet of the sedimentation basins. The areas lower than 3.0 feet are reserved for silt disposition. The pre-sedimentation basin settling zone volume is 24 feet times 75 feet times 3 feet which equals 5,400 cubic feet. The pre-sedimentation basin detention time would be 5,400 cubic feet divided by 2.45 cubic feet /second flow rate equals 2,200 seconds or 36 minutes. This would provide adequate settling time to remove the larger silt particles. The sedimentation basin settling zone would be 280 feet times 80 feet times 3 feet which equals 67,200 cubic feet. The sedimentation basin detention time would be 67,200 cubic feet divided by 2.45 cubic feet per second which equals 27,400 seconds, or 457 minutes or 7.6 hours. This would provide adequate silt removal settling time in the sedimentation period. After the start-up of the stream diversion inlet system, the silt removal efficiency will be determined by weekly testing for settleable solids. If necessary, the diversion flow rate can be adjusted in-order to achieve acceptable silt removal efficiency level.
- F. At 2.45 cubic feet per second diversion flow rate, the required time frame to transfer 270 acre feet to Swan Lake would be 270 acre feet times 43,560 cubic feet/ acre feet divided by 2.45 cubic feet per second divided by 60 seconds/ minute divided by 60 minutes/hour equals 1333.5 hours or 55.6 days. At 2.45 cubic feet per second, the required time to replenish the lake evaporation loss would be approximately two months. Starting on or after October 20th, this will allow the Lake evaporation loss to be replenish prior to the coldest winter months. This will be a benefit in preventing possible fish kill due to low water level when the lake freeze up during winter months.

PART 5 SWAN LAKE INLET OPERATIONAL CONTROL

- A. The Turkey Ridge Creek stream diversion operational control needs to be established in-order to assure that the objectives of the Swan Lake Inlet Projects are met. The Project's objectives are replenish Swan Lake annual evaporation losses while maintaining a high water quality standard for the Lake. Thus the operations of the Lake Inlet Project would be the responsibility a single person who affirms the objectives of the Project. The inlet control person will be designated by Swan Lake Improvement Association and subject to approval by the various State and Federal agencies involved with the Project. The initial control person is Ed Mansfield of Viborg, SD. Ed has spent a life time working on improving Swan Lake. During the Lake dredging project, Ed performed the water quality control sampling required to monitor the dredging project

- affects on the Lake's water quality. Ed also realizes the affect on Swan Lake if the silt removal efficiency standards are not met during the stream diversion period. By having a single person responsible for the inlet operation will reduce the shifting of responsibility between multiple persons if the operation objectives are not met.
- B. The project should also have a watch dog agency to monitor the Lake Inlet Project operation. The proposed local agency is the Turner County Conservation Service. The proposed plan is to have inlet control person contact the Conservation Service prior to the start of the stream diversion period. The agency would confirm that the fall ground water flow has resumed in Turkey Ridge Creek and the stream silt level is at an acceptable level for treatment in the sedimentation basins. The Conservation Service would make intermittent on-site visits during the diversion period to monitor the inlet project operation. The inlet control person would then inform the Conservation Service at the conclusion of the stream diversion operation.
- C. The final aspect of the diversion operation is to maintain operation records. The operation records would include 1) the Conservation Service notification date, 2) the start-up date of the diversion period, 3) the settleable solids water sampling results for Turkey Ridge Creek, the pre-sedimentation basin effluent, and the sedimentation basin effluent, 4) water quality samples results taken during the diversion period, 5) the sedimentation basin effluent flow rate measurements, 6) pertinent water level elevations, and 7) the ending date of the stream diversion period. These records would be maintained at a central location thus they can be reviewed by the appropriate State and Federal agencies involved with the project.
- D. The operational control duties may be considerable work for one individual, thus portions of the duties such as the conducting water samples or the flow measurement monitoring may be delegated to other individuals. However only one person shall be responsible for determining the diversion period and maintaining the control of the valve wrench for operating the 12" transfer line gate valve. Should any questions arise, the Project Engineer and the State and Federal agencies can be contact for solutions.

PART 6 SWAN LAKE INLET MAINTENANCE

- A. The maintenance of the Turkey Ridge Creek stream diversion system will be the responsibility of the Swan Lake Improvements Association. Maintenance items include the 1) removal debris from the stream Inlet structure, 2) maintaining the diversion dike erosion control features, 3) removal of silt from the inlet piping as may be necessary, 4) monitoring the silt levels in the pre-sedimentation and the sedimentation basins, 5) maintaining the sedimentation basin outlet structure, 6) the upkeep of the fences around the two basins, and 7) other maintenance items as may be required. The Association will also will be responsible to schedule the pre-sedimentation and sedimentation basin silt removal once the silt level reaches 3 feet from the basin surface. This is important in-order to maintain the silt removal efficiency of the basins. The Association will be responsible for the over all operation of the Swan Lake Inlet control system.



United States Department of the Interior

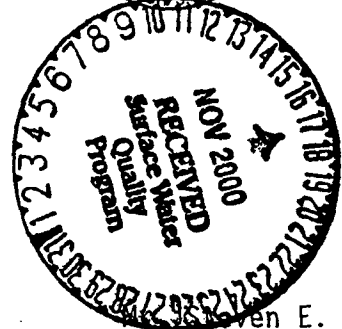
FISH AND WILDLIFE SERVICE

Ecological Services

420 South Garfield Avenue, Suite 400

Pierre, South Dakota 57501-5408

November 15, 2000



Steven E. Naylor
Corps of Engineers, Omaha District
South Dakota Regulatory Office
28563 Powerhouse Road, Room 120
Pierre, South Dakota 57501

Re: Application No. 199730134,
Amendment No. 1, The Swan Lake
Improvement Association, Turner
County, South Dakota

Dear Mr. Naylor:

This is in response to your October 31, 2000, letter requesting comments on proposed modifications to perform fill placement activities in Turkey Ridge Creek and the creek diversion channel to Swan Lake in connection with modifying the existing sedimentation control facilities in the diversion channel. This project is located in the northwest quarter of section 15, township 97 north, range 53 west, Turner County, South Dakota.

The Fish and Wildlife Service believes that there needs to be an evaluation of the proposed project, including the proposed operation plan and its impact on the endangered Topeka shiner (Notropis topeka) which inhabits Turkey Ridge Creek. We suggest that section 7 of the Endangered Species Act consultation be initiated. There have been many changes since the original permit was issued in 1994 and the modification in 1997. Not only was the Topeka shiner listed, but our staff has changed. I suggest that a meeting between your office (including Omaha District staff that would work on the environmental analysis), the Swan Lake Association, the Natural Resource Conservation Service, the South Dakota Departments of Environment and Natural Resources and Game, Fish and Parks (water quality, stream restoration, and fisheries staff), and the Environmental Protection Agency may be appropriate to bring everyone up to speed on the history of the project as well as the new proposed modifications.

Specific points that would be of interest to our concerns for the Topeka shiner include:

- An evaluation of the hydrologic and hydraulic changes this project and the proposed modification and operation plan have on Turkey Ridge Creek. This would include actions that change water quality (including temperatures), quantity, and/or timing or seasonality of flows.

- Any physical modifications that might impact instream habitat.
- Project impacts that might exacerbate downstream incision rates.
- Project impacts that might increase sediment or nutrient loads to Turkey Ridge Creek.
- Alternatives considered to reduce the sedimentation problems in the sediment basin.
- Alternatives considered for the operation plan.

FEDERALLY LISTED SPECIES

Pursuant to section 7(c) of the Endangered Species Act, we have determined that the following listed endangered and threatened species may occur in the project area. This list is considered valid for 90 days.

<u>Listed Species</u>	<u>Expected Occurrence</u>
(T) Bald eagle (<u>Haliaeetus leucocephalus</u>)	Migration. Winter resident.
(E) Topeka shiner (<u>Notropis topeka</u>)	Occupies small, low order, prairie streams with high water quality and relative cool temperatures.
(E) - Endangered	
(T) - Threatened	

Bald eagles use mature riparian timber areas near streams and lakes. Activities should be curtailed if disturbances may occur to bald eagles.

The Topeka shiner is characteristic of small, low order (headwater), prairie streams with high water quality and relative cool temperatures. These streams generally exhibit perennial flows. At times when surface flow ceases, pool levels and cool water temperatures are maintained by percolation through streambed and/or groundwater seepage. Recently, the species has been discovered to utilize off-channel habitats within the floodplain of some streams which are typically seasonally flooded and believed to have contact with groundwater. Substrates in Topeka shiner streams are clean, gravel, cobble, and sand. However, the species persists in some streams with varying degrees of sedimentation. Low numbers of Topeka shiners found in South Dakota streams may indicate that some of these streams are not high quality streams. In South Dakota, Topeka shiners are found in the James, Big Sioux, and Vermillion River watersheds. There are records of Topeka shiners occurring in Turkey Ridge Creek.

If the Corps of Engineers determines that the project "may adversely affect" listed species, formal section 7 consultation should be requested from this office. If a "no effect" determination is made, further consultation may not be necessary. However, a copy of the "no effect" determination for the proposed project should be sent to this office.

Thank you for the opportunity to provide comments on this project.

Sincerely,

Nell McPhillips

for Pete Gober
Field Supervisor
South Dakota Field Office

cc: Secretary, SDDGFP; Pierre, SD
(Attention: Leslie Petersen)
Secretary, SDDENR; Pierre, SD
(Attention: John Miller)
EPA; Denver, CO

SWAN LAKE STREAM INLET PROJECT

OPERATIONAL PLAN

PREPARED FOR:

SWAN LAKE IMPROVEMENT ASSOCIATION
ELMA CARLSON, CHAIRPERSON
908 PRAIRIE PARK DRIVE
BERESFORD, SD 57004

PREPARED BY:

ARENS ENGINEERING
301 CAPITOL, SUITE 1A
YANKTON, SD 57078
OCTOBER, 2000

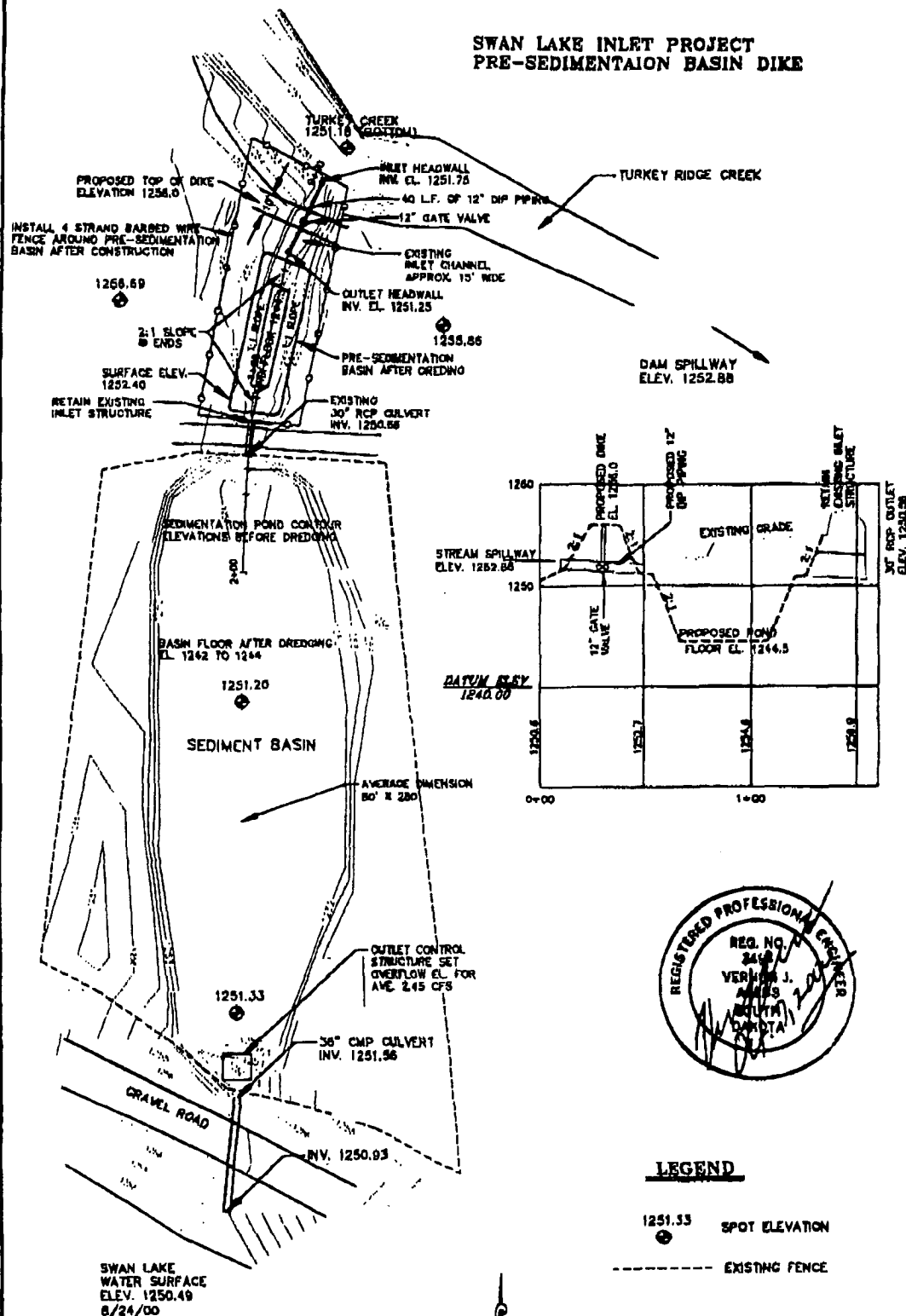
PART 1 PURPOSE

- A. Develop an operational plan for the operation of the Turkey Ridge Creek Inlet to Swan Lake. The Turkey Ridge Creek inlet is designed for two primary purposes; 1) aid in maintaining a stable water level elevation for Swan Lake and 2) maintain a high water quality level for the Lake's water.

PART 2 BACKGROUND INFORMATION

- A. Swan Lake is a 180 acre natural lake located 3 miles north and 1 mile west of Viborg, Turner County in southeastern South Dakota. Swan Lake assumed characteristics of a reservoir when an inlet channel was installed from Turkey Ridge Creek in 1914. This increased the watershed for Swan Lake from approximately 1,000 acres to approximately 81,600 acres. With the small watershed, Swan Lake water level was mostly dependent upon the local ground water level. The stream inlet provided a mean to replenish summer evaporation losses and maintain a better year round water elevation. The stream inlet subjected the lake to degradation factors of run-off silt deposition and farm run-off nutrients. A Diagnostic/Feasibility Study was conducted for the lake by the South Dakota Clean Lakes Program in January, 1993. As a result of the Study, a Swan Lake Improvement project was implemented which included a dredging project for removing accumulated silt and increasing the depth of portions of the shallow natural lake.
- B. In 1914, the man made diversion ditch was installed from Turkey Ridge Creek to the northeast corner of Swan Lake. The diversion ditch consists of 120 foot channel to an shear gate inlet structure at the head of 30" RCP culvert approximately 20 feet in length. The shear gate structure is controlled by a wheel operated threaded metal shaft for opening and closing the shear gate, which controlled the stream diversion to Swan Lake. The 30" RCP culvert discharges to a 280 feet long sedimentation basin which provides for sediment removal prior to the stream diversion water entering the Lake. Finally, concrete structure with wooden stop planks controlled the discharge from the sedimentation basin effluent to Swan Lake, final flow occurring through a 60 feet long 36" CMP culvert.
- C. Turkey Ridge stream flow comes from two primary sources, 1) surface run-off from precipitation and snow melt events, and 2) ground water flows from surficial aquifers. The ground water flows primarily occur in the late Fall and Winter months after the termination of the adjacent farm land irrigation demands for the year. The water quality of Turkey Ridge Creek is relative to the Creek's water source. If the water is from a run-off event, the water typically have a higher nutrient and sediment level then if the water is from the ground water aquifers.
- D. Following the completion of the Swan Lake dredging project, a filter section consisting of graded filter media, a geo-textile fabric, and seeded topsoil layer was installed in the man made diversion ditch immediately prior to the shear gate control structure. The concept was to utilize the filter media to remove the stream silt load prior to the stream

SWAN LAKE INLET PROJECT PRE-SEDIMENTATION BASIN DIKE



SCALE
1" = 50'

SWAN LAKE INLET STRUCTURE			
ARENS ENGINEERING	BY: VERNON J. ARENS	DATE: 08/16/2000	
DESIGN: V.J. ARENS	CHECKED: J.M. HURLBART	DATE: 08/16/2000	
PROJECT NO. 201.35	REVISION NO. 201.35	DATE: 08/16/2000	
BY: J.M. HURLBART	CHECKED: V.J. ARENS	DATE: 08/16/2000	

water being diverted to Swan Lake. The stream silt plugged the filter media, thereby effectively terminating any Turkey Creek inflow to Swan Lake. Swan Lake Improvement Association concerned with the resulting low water level in the Lake requested a revised stream transfer mechanism for diverting Turkey Creek stream flow to the Lake.

- E. After discussion with South Dakota Department of Environment and Natural Resources in September 2000, a stream diversion plan utilizing a smaller diameter transfer pipe was developed. The concern with the existing 30" RCP culvert is that transfer flow could exceed the effective silt removal rate for the existing sedimentation basin. This could result in significant amount of stream silt load being brought into Swan Lake. A smaller diameter transfer pipe would limit the stream transfer flow to the effective silt removal capacity of the existing sedimentation basin.

PART 3 SWAN LAKE INLET PROJECT

- A. The Swan Lake/Turkey Creek Inlet Project begins with the installation of a diversion dike at the head of the man made diversion ditch adjacent to Turkey Ridge Creek. A 12" ductile iron pipe (DIP) is installed through the dike to provide the diverting of the stream flow to Swan Lake. A 12" gate valve is installed in the line to provide a mean to control when stream transfer from the Creek to the Lake occurs. A gate valve wrench is used to open and close the gate valve. The wrench would be provided to authorized individuals to operate the control gate valve. Concrete inlet structures constructed at each end of the transfer pipe to provide a specific point for diverting the stream flow and discharging the transfer flow. The dike slopes are rip-rap to prevent stream erosion of the dike's surfacing.
- B. A pre-sedimentation basin is located in the man made ditch between the diversion dike and the sedimentation basin. The pre-sedimentation basin function is to remove the larger silt particles prior to the sedimentation basin. The pre-sedimentation basin is narrower than the sedimentation basin thus would be easier to have cleaned with a local back hoe and would extend the cleaning cycle of the sedimentation basin.
- C. The shear gate structure prior to the sedimentation basin, the sedimentation basin, and the sedimentation basin outlet structure would be retained. The sedimentation basin was cleaned out in the summer of 2000. The sedimentation basins silt levels would be regularly monitored in-order to schedule their cleaning prior to the basin become too shallow to effectively remove the silt loading. The recommended cleaning schedule is to have the silt removed when the basin effective depth reaches three feet. The sedimentation basin bottom depth is 8 to 10 feet while the pre-sedimentation basin bottom depth is 6 feet.
- D. The sedimentation basin concrete outlet structure outlet control planks revised to a rectangular weir in-order to measure the stream diversion flow rate. This insures that the diversion rate would not exceed the effective silt removal efficiency for the pre-sedimentation and the sedimentation basins. Also, it is possible to determine the recommended diversion rate for the two basins. After the start-up of the new inlet structure, weekly grab samples would be scheduled for the Turkey Ridge Creek, the

pre-sedimentation basin effluent, and the sedimentation basin effluent. The samples would be tested for settleable solids in-order to determine the system silt removal efficiency. By the use of the 12" gate valve, the stream diversion rate can be adjusted to obtain a reasonable diversion rate at an acceptable silt removal efficiency level. The weekly grab samples would be taken until a silt removal efficiency level has been determined for the diversion system. After that, bi-monthly grab samples during the diversion period would be taken to monitor the silt removal efficiency.

PART 4 SWAN LAKE INLET DIVERSION RATE

- A. The stream diversion rate required to meet two primary objectives, 1) provide a sufficient flow rate in-order to replenish the Swan Lake water level in a reasonable time period and 2) provide an acceptable silt removal efficiency. The diversion flow rate is dependent upon the inlet pipe size, the position of the control gate valve, and the water level in Turkey Ridge creek in relation to the sedimentation basins' water level.
- B. The diversion rate and diversion period is dependent upon the annual quantity of water required to replenish the Swan Lake water loss. Swan Lake annual water losses are lake evaporation and lake seepage. The lake evaporation loss is the yearly evaporation loss minus the annual precipitation. The average yearly evaporation is approximately 41 inches and the average annual precipitation is 24 inches which yield a annual evaporation loss of approximately 17 inches per year. It is assumed that the lake ground water seepage loss and the lake ground water recharge are approximately equal over a year period. Swan Lake has a surface area of approximately 180 acres, thus the annual evaporation loss would be approximately 255 acre feet per year. The annual diversion volume is assumed to average 18" of lake water depth which equals approximately 270 acre feet per year.
- C. The recommended diversion period would be time of ground water flows in Turkey Ridge Creek which occurs in the late Fall and Winter months. The diversion would start after the ground water flows increased the Creek flows which generally is mid-October after the irrigation requirement terminates to the year allowing the ground water aquifers to recharge. The diversion period would continue until the Swan Lake water level is restored. Diversion during the summer months would generally be impractical due to the low flows in Turkey Ridge Creek except following precipitation events. It is not recommended to divert the run-off flows to the Lake due to the increased silt and nutrients loads.
- D. The diversion rate is limited to the capacity of the transfer piping and the requirement to meet effective settling times in the sedimentation basins. The 12" DIP transfer pipe would have a 2.45 cubic feet per second flow rate based on a 0.5' elevation difference between the creek elevation and the sedimentation basin elevation. During the fall winter months ground flows, the Creek's elevation would remain fairly constant. The sedimentation pond elevation would be controlled by the sedimentation basin outlet weir elevation and control position of the transfer pipe 12" gate valve. The 2.45 cubic feet/second flow rate will provide a pipe velocity of 3.13 feet per second,

which is greater than the minimum required pipe scouring velocity of 2.0 feet per second. The 2.0 feet per second velocity is required to prevent silt disposition in the transfer pipe.

- E. The sedimentation basins' effective settling zone will be the upper 3 feet of the sedimentation basins. The areas lower than 3.0 feet are reserved for silt disposition. The pre-sedimentation basin settling zone volume is 24 feet times 75 feet times 3 feet which equals 5,400 cubic feet. The pre-sedimentation basin detention time would be 5,400 cubic feet divided by 2.45 cubic feet /second flow rate equals 2,200 seconds or 36 minutes. This would provide adequate settling time to remove the larger silt particles. The sedimentation basin settling zone would be 280 feet times 80 feet times 3 feet which equals 67,200 cubic feet. The sedimentation basin detention time would be 67,200 cubic feet divided by 2.45 cubic feet per second which equals 27,400 seconds, or 457 minutes or 7.6 hours. This would provide adequate silt removal settling time in the sedimentation period. After the start-up of the stream diversion inlet system, the silt removal efficiency will be determined by weekly testing for settleable solids. If necessary, the diversion flow rate can be adjusted in-order to achieve acceptable silt removal efficiency level.
- F. At 2.45 cubic feet per second diversion flow rate, the required time frame to transfer 270 acre feet to Swan Lake would be 270 acre feet times 43,560 cubic feet/ acre feet divided by 2.45 cubic feet per second divided by 60 seconds/ minute divided by 60 minutes/hour equals 1333.5 hours or 55.6 days. At 2.45 cubic feet per second, the required time to replenish the lake evaporation loss would be approximately two months. Starting in mid-October, this will allow the Lake evaporation loss to be replenish prior to the coldest winter months. This will be a benefit in preventing possible fish kill due to low water level when the lake freeze up during the winter months.

PART 5 SWAN LAKE INLET OPERATIONAL CONTROL

- A. The Turkey Ridge Creek stream diversion operational control needs to be established in-order to assure that the objectives of the Swan Lake Inlet Projects are met. The Project's objectives are replenish Swan Lake annual evaporation losses while maintaining a high water quality standard for the Lake. Thus the operations of the Lake Inlet Project would be the responsibility a single person who affirms the objectives of the Project. The proposed person is Ed Mansfield of Viborg, SD. Ed has spent a life time working on improving Swan Lake. During the Lake dredging project, Ed performed the water quality control sampling required to monitor the dredging project affects on the Lake's water quality. Ed also realizes the affect on Swan Lake if the silt removal efficiency standards are not met during the stream diversion period. By having a single person responsible for the inlet operation will reduce the shifting of responsibility between multiple persons if the operation objectives are not met.
- B. The project should also have a watch dog agency to monitor the Lake Inlet Project operation. The proposed local agency is the Turner County Conservation Service. The proposed plan is to have Ed Mansfield contact the Conservation Service prior to the

start of the stream diversion period. The agency would confirm that the fall ground water flow has resumed in Turkey Ridge Creek and the stream silt level is at an acceptable level for treatment in the sedimentation basins. The Conservation Service would make intermittent on-site visits during the diversion period to monitor the inlet project operation. Ed would then inform the Conservation Service at the conclusion of the stream diversion operation.

- C. The final aspect of the diversion operation is to maintain operation records. The operation records would include 1) the Conservation Service notification date, 2) the start-up date of the diversion period, 3) the settleable solids water sampling results for Turkey Ridge Creek, the pre-sedimentation basin effluent, and the sedimentation basin effluent, 4) water quality samples results taken during the diversion period, 5) the sedimentation basin effluent flow rate measurements, 6) pertinent water level elevations, and 7) the ending date of the stream diversion period. These records would be maintained at a central location thus they can be reviewed by the appropriate State and Federal agencies involved with the project.
- D. The operational control duties may be considerable work for one individual, thus portions of the duties such as the conducting water samples or the flow measurement monitoring may be delegated to other individuals. However only one person shall be responsible for determining the diversion period and maintaining the control of the valve wrench for operating the 12" transfer line gate valve. Should any questions arise, the Project Engineer and the State and Federal agencies can be contacted for solutions.

Not exactly a definite operating plan.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

November 26, 2001

Allen Wittmus
SD Geological Survey
Science Building
Vermillion, SD

Allen:

You have inquired about water rights on Swan Lake in Turner County; the following is a short history.

South Dakota Department of Game, Fish and Parks hold Vested Water Right No. 4944-3 for Swan Lake. The Right was issued for sufficient surface water runoff from the Swan lake drainage basin and diversion from Turkey Ridge Creek to fill Swan lake annually to the outlet elevation 1252.4 feet mean sea level. The vested right carry priority dates of November 2, 1889 from natural drainage, January 1, 1914 from Turkey Ridge Creek Diversion and September 30, 1946 from the constructed outlet structure.

The Department of Game, Fish and Parks constructed a spillway and tubes in 1946. In 1995 the system was modified to allow a filter system ahead of the spillway tubes. At the present there is a proposal to control the inflow from Turkey Creek.

The system as designed has an operation plan that specifies the time of year and conditions when Turkey Ridge Creek is allowed into Swan Lake. In addition water rights program has determined that a new application is not needed, as it is a modification of the existing permit.

Gale N. Selken P.E.
Natural Resources Engineering Director
Water Rights Program
Dept. Environment and Natural Resources



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

May 26, 2004

Mrs. Kay Gordon
101 2nd Box 113
Davis, South Dakota 57021

Re: Swan Lake/Turkey Ridge Creek
Diversion in Turner County, South
Dakota

Dear Mrs. Gordon:

We received a copy of your recent letter to Senator Tim Johnson along with his May 4, 2004, response to your concerns regarding the potential transfer of water flows to Swan Lake via the Turkey Ridge Creek diversion channel. Senator Johnson asked that we provide you with any additional information that we might have regarding this matter.

Senator Johnson's letter explains the key problems associated with the lake and the goals for improving the watershed. We have little additional information to provide to you that has not already been submitted in his letter and in earlier letters that we have sent to the Swan Lake Improvement Association (Association) and to Senator Johnson. Enclosed for your review are copies of two letters sent by this office in 2002 - one to Mr. Roscoe Carlson of the Association's Board of Directors dated November 13, 2002, and one to Senator Johnson dated September 4, 2002 - that recite the history of Swan Lake, the proposed project, and the current situation.

For your convenience, a brief summary of the content of those letters follows: Swan Lake was originally a natural shallow prairie lake with a small watershed. The quality and quantity of water in Swan Lake has been dramatically altered since the installation of the early 1900's diversion channel from Turkey Ridge Creek which expanded the watershed and resulted in contamination and filling of the lake with sediments. In recent years, the Association enlisted the assistance of the South Dakota Department of Environment and Natural Resources (SDDENR) to identify specific problems, causes, and potential solutions. The SDDENR determined that the naturally shallow basin, high turbidity, high levels of dissolved solids, high nutrient content, and sedimentation were contributing factors. Land use changes in the watershed, including some agricultural practices and the development of septic systems, were cited as causes. The SDDENR suggested watershed cleanup efforts as well as diversion of water from Turkey Ridge Creek to Swan Lake during the fall and winter when flows are cleaner.

The proposal for fall/winter diversion prompted concern related to the potential impacts to the Topeka shiner, an endangered fish which exists in Turkey Ridge Creek. The species was listed in 1998 pursuant to the Endangered Species Act of 1973. The Corps of Engineers (Corps), the Federal action agency who is responsible for issuing any permit for the diversion of water into Swan Lake, determined that the diversion may affect the Topeka shiner and has delayed issuance

of the section 404 permit required for this project until measures to avoid or minimize impacts to this species may be determined. Additionally, the South Dakota Department of Game, Fish and Parks currently owns the water right to the diversion channel and is also involved in the process. The long-term ideal situation for all involved would be to improve the water quality of the Swan Lake/Turkey Ridge Creek watershed and to divert clean flows during times when water is more abundant (spring) and less likely to impact the Topeka shiner. The SDDENR has already begun implementing the early stages of a watershed assessment and cleanup program.

We are aware of the frustration with the process of attempting to replenish Swan Lake's water supply and continue to recommend, as in our September 4, 2002, letter to Senator Johnson, that the Association take steps to help the SDDENR accomplish the watershed cleanup. A proactive effort by the local community to achieve this common goal would likely speed the process and would help restore clean lake water and conserve the aquatic life within Turkey Ridge Creek.

However, the proposed activities suggested by the Association to replenish the Swan Lake water supply via Turkey Ridge Creek are under the immediate purview of the Corps. The Corps may choose to address Topeka shiner concerns by not permitting the proposed project; by requiring modifications to the project such that Topeka shiners may be affected, but not adversely affected; or by initiating formal consultation and exploring the possibility of incidental take for the species specific to this project. Currently, we await a revised determination by the Corps of the potential effects on Topeka shiners of any action it may permit regarding this project. For additional information or an update on pertinent Corps' activities, we recommend that you contact Mr. Tom Lowin of the Regulatory Office of the Corps in Pierre at (605) 224-8531.

If you have any questions regarding the role of our agency in this project, please contact Natalie Gates in this office at (605) 224-8693, Extension 34.

Sincerely,



Pete Gober
Field Supervisor
South Dakota Field Office

Enclosures

cc: Honorable Tim Johnson; Sioux Falls, SD
FWS/ES; Denver, CO (60120)
FWS/WR ; Denver, CO (60189)
(Attention: Meg Estep)
COE/Regulatory; Pierre, SD
(Attention: Tom Lowin)
COE; Omaha, NE
(Attention: Candance Gorton)
EPA; Denver, CO
(Attention: Rex Fletcher)
SDDENR; Vermillion, SD
(Attention: Allan Whittmuss)
SDDGFP; Pierre, SD
(Attention: Leslie Petersen)

ARENS ENGINEERING

301 Capitol, Suite 1A

Yankton, SD 57078

605-665-2002

RECEIVED

DEC - 9 2004

**WATER RIGHTS
PROGRAM**

December 7, 2004

Mr. Tom Lowin
U. S. Army Corps of Engineers
28563 Powerhouse Road
Pierre, SD 57501

RE. Swan Lake Stream Inlet Project

Dear Mr. Lowin:

Please find enclosed the revised Operational Plan for the above referenced project as per our meeting of November 29, 2004 with Natalie Gates with the US Fish and Wildlife Service. The Operational Plan was revised 1) with relation of the project's effect on the Topeka Shiner population in Turkey Ridge Creek and 2) Swan Lake Association operational personnel was expanded to include several assistants. The project construction plans are also enclosed.

Please feel free to contact me at **1-605-665-2002** with any questions or comments. Thank you.

Sincerely,



Vernon Arens, PE

- c. Swan Lake Association Dave Nelson
- US Army Corps of Engineers Omaha Candace Gorton
- US Fish and Wildlife Service Pierre Natalie Gates
- ✓ SD-DENR Pierre Garland Erbele
- SD-DENR Vermillion Alan Wittmus
- SD-DGFP Pierre Leslie Petersen

SWAN LAKE STREAM INLET PROJECT

OPERATIONAL PLAN

PREPARED FOR:

SWAN LAKE IMPROVEMENT ASSOCIATION
DAVE NELSON, CHAIRPERSON
103 NORTH SIXTH STREET
MILBANK, SD 57252

UPDATED BY:

ARENS ENGINEERING
301 CAPITOL, SUITE 1A
YANKTON, SD 57078
DECEMBER, 2004

PART 1 PURPOSE

- A. Develop an operational plan for the operation of the Turkey Ridge Creek Inlet to Swan Lake. The Turkey Ridge Creek inlet is designed for three primary purposes; 1) aid in maintaining a stable water level elevation for Swan Lake, 2) maintain a high water quality level for the Lake's water, and 3) provide a 2 cubic feet per second flow downstream, a flow rate which would not have an adverse effect on the Topeka Shiner population. The project would maintain a pulsing flow rate downstream when the stream flow much greater than 2 cfs, example snow melt and precipitation run-off events. Stream flows greater than 2 cfs outside the diversion period will overtop the existing diversion dam on Turkey Ridge Creek.

PART 2 BACKGROUND INFORMATION

- A. Swan Lake is a 180 acre natural lake located 3 miles north and 1 mile west of Viborg, Turner County in southeastern South Dakota. Swan Lake assumed characteristics of a reservoir when an inlet channel was installed from Turkey Ridge Creek in 1914. This increased the watershed for Swan Lake from approximately 1,000 acres to approximately 81,600 acres. With the small watershed, Swan Lake water level was mostly dependent upon the local ground water level. The stream inlet provided a mean to replenish summer evaporation losses and maintain a better year round water elevation. The stream inlet subjected the lake to degradation factors of run-off silt deposition and farm run-off nutrients. A Diagnostic/Feasibility Study was conducted for the lake by the South Dakota Clean Lakes Program in January, 1993. As a result of the Study, a Swan Lake Improvement project was implemented which included a dredging project for removing accumulated silt and increasing the depth of portions of the shallow natural lake.
- B. In 1914, the man made diversion ditch was installed from Turkey Ridge Creek to the northeast corner of Swan Lake. The diversion ditch consists of 120 foot channel to an shear gate inlet structure at the head of 30" RCP culvert approximately 20 feet in length. The shear gate structure is controlled by a wheel operated threaded metal shaft for opening and closing the shear gate, which controlled the stream diversion to Swan Lake. The 30" RCP culvert discharges to a 280 feet long sedimentation basin which provides for sediment removal prior to the stream diversion water entering the Lake. Finally, concrete structure with wooden stop planks controlled the discharge from the sedimentation basin effluent to Swan Lake, final flow occurring through a 60 feet long 36" CMP culvert.
- C. Turkey Ridge stream flow comes from two primary sources, 1) surface run-off from precipitation and snow melt events, and 2) ground water flows from surficial aquifers. The ground water flows primarily occur in the late Fall and Winter months after the termination of the adjacent farm land irrigation demands for the year. The water quality of Turkey Ridge Creek is relative to the Creek's water source. If the water is from a run-off event, the water typically have a higher nutrient and sediment level then if the water is from the ground water aquifers.

- D. Following the completion of the Swan Lake dredging project, a filter section consisting of graded filter media, a geo-textile fabric, and seeded topsoil layer was installed in the man made diversion ditch immediately prior to the shear gate control structure. The concept was to utilize the filter media to remove the stream silt load prior to the stream water being diverted to Swan Lake. The stream silt plugged the filter media, thereby effectively terminating any Turkey Creek inflow to Swan Lake. Swan Lake Improvement Association concerned with the resulting low water level in the Lake requested a revised stream transfer mechanism for diverting Turkey Creek stream flow to the Lake.
- E. After discussion with South Dakota Department of Environment and Natural Resources in September 2000, a stream diversion plan utilizing a smaller diameter transfer pipe was developed. The concern with the existing 30" RCP culvert is that transfer flow could exceed the effective silt removal rate for the existing sedimentation basin. This could result in significant amount of stream silt load being brought into Swan Lake. A smaller diameter transfer pipe would limit the stream transfer flow to the effective silt removal capacity of the existing sedimentation basin.
- F. After submittal of the preliminary Turkey Ridge Creek diversion plan in 2001, concern about of the Topeka Shiner down stream of the Diversion dam was expressed. The project is set-up to maintain a 2 cubic feet per second downstream of the diversion point. A 2 cubic feet per second down stream flow rate would not have an adverse affect on the Topeka Shiner population. To provide for the 2 cubic feet per second downstream flow rate below the diversion dam, two 6-inch pipes are installed through the steel face of the dam at elevation 1250.9. The diversion dam overflow elevation is 1252.88. The Swan Lake diversion headwall elevation is 1552.25. See attached project construction plans. The two 6-inch pipes ensure the continued down stream flow of 2 cubic feet per second. The Swan Lake diversion rate would be the stream flow greater than 2 cubic feet per second.

PART 3 SWAN LAKE INLET PROJECT

- A. The Swan Lake/Turkey Creek Inlet Project begins with the installation of a diversion dike at the head of the man made diversion ditch adjacent to Turkey Ridge Creek. A 12" ductile iron pipe (DIP) is installed through the dike to provide the diverting of the stream flow to Swan Lake. A 12" gate valve is installed in the line to provide a mean to control when stream transfer from the Creek to the Lake occurs. A gate valve wrench is used to open and close the gate valve. The wrench would be provided to an authorized individual to operate the control gate valve. Concrete inlet structures constructed at each end of the transfer pipe to provide a specific point for diverting the stream flow and discharging the transfer flow. The streamside inlet structure invert elevation is 1252.25, which is 1.35 feet above the 6 inch downstream flow piping through the diversion dam. This elevation difference insures a 2 cubic feet per second stream flow downstream of the diversion dam.

- B. The second Topeka Shiner concern is the Topeka Shiner migration into Swan Lake during the Fall-Winter transfer period. In Swan Lake, the Topeka Shiner would become fish food for the larger lake fish. The Swan Lake inlet structure in Turkey Ridge Creek would be installed with a stainless steel perforated plate in front of the inlet structure. The perforation holes maximum size would be 3/8 inch in diameter. The perforated plate would prevent the adult Topeka Shiner from migrating into Swan Lake. This aspect would be accomplished by constructing a concrete bulkhead two feet in front of the lake transfer inlet structure and tied back into the stream bank. The concrete bulkhead would be constructed from 18 inches above the dam overflow elevation to the creek streambed. The bulkhead openings would be two each two-foot high by three-foot wide openings equipped with the perforated stainless steel plates on the stream side of the structure. This setup would provide an adequate number of 3/8-inch openings to provide a reasonable transfer rate from the Creek to Swan Lake. The perforated stainless steel plates would require regularly cleaning maintenance by Swan Lake personnel. The opening extension below the lake transfer structure invert elevation of 1252.25 would allow for winter months' transfer after the Turkey Ridge Creek surface has frozen over. The stream diversion would terminate when the stream freeze-up drops the downstream flow rate to 2 cubic feet per second or less. In a normal year, this stream freeze-up can occur as early as the month of December. In an abnormally warm winter, the stream may not completely freeze-up, allowing stream diversion until the end of February.
- C. A pre-sedimentation basin is located in the man made ditch between the diversion dike and the sedimentation basin. The pre-sedimentation basin function is to remove the larger silt particles prior to the sedimentation basin. The pre-sedimentation basin is narrower than the sedimentation basin thus would be easier to have cleaned with a local backhoe and would extend the cleaning cycle of the sedimentation basin.
- D. The shear gate structure prior to the sedimentation basin, the sedimentation basin, and the sedimentation basin outlet structure would be retained. The sedimentation basin was cleaned out in the summer of 2000. The sedimentation basins silt levels would be regularly monitored in-order to schedule their cleaning prior to the basin become too shallow to effectively remove the silt loading. The recommended cleaning schedule is to have the silt removed when the basin effective depth reaches three feet. The sedimentation basin bottom depth is 8 to 10 feet while the pre-sedimentation basin bottom depth is 6 feet.
- E. The sedimentation basin concrete outlet structure outlet control planks revised to a rectangular weir in-order to measure the stream diversion flow rate. This insures that the diversion rate would not exceed the effective silt removal efficiency for the pre-sedimentation and the sedimentation basins. Also, it is possible to determine the recommended diversion rate for the two basins. After the start-up of the new inlet structure, weekly grab samples would be scheduled for the Turkey Ridge Creek, the pre-sedimentation basin effluent, and the sedimentation basin effluent. The samples would be tested for settleable solids in-order to determine the system

silt removal efficiency. By the use of the 12" gate valve, the stream diversion rate can be adjusted to obtain a reasonable diversion rate at an acceptable silt removal efficiency level. The weekly grab samples would be taken until a silt removal efficiency level has been determined for the diversion system. After that, bi-monthly grab samples during the diversion period would be taken to monitor the silt removal efficiency.

PART 4 SWAN LAKE INLET DIVERSION RATE

- A. The stream diversion rate required to meet three primary objectives, 1) provide a 2 cubic feet per second flow in Turkey Ridge Creek downstream of the diversion dam, 2) provide a sufficient flow rate in-order to replenish the Swan Lake water level in a reasonable time period and 3) provide an acceptable silt removal efficiency. The diversion flow rate is dependent upon 1) the stream flow in Turkey Ridge Creek minus the 2 Cubic feet per second downstream flow and 2) the inlet pipe size, the position of the control gate valve, and the water level in Turkey Ridge creek in relation to the sedimentation basins' water level.
- B. The diversion rate is dependent upon first, maintaining a Turkey Ridge Creek downstream flow of 2 cubic feet per second flow below the diversion dam and secondly, providing the diversion of the excess acceptable quality stream flow to Swan Lake. The annual quantity of water required to replenish the Swan Lake water loss is dependent upon the lake evaporation and lake seepage. The lake evaporation loss is the yearly evaporation loss minus the annual precipitation. The average yearly evaporation is approximately 41 inches and the average annual precipitation is 24 inches, which yield an annual evaporation loss of approximately 17 inches per year. It is assumed that the lake ground water seepage loss and the lake ground water recharge are approximately equal over a year period. Swan Lake has a surface area of approximately 180 acres, thus the annual evaporation loss would be approximately 255 acre feet per year.
- C. The recommended diversion period would be time of ground water flows in Turkey Ridge Creek that occurs during the Fall and Winter months. The diversion would start after the ground water flows increased the Creek flows which generally is mid-September after the irrigation requirement terminates for the year allowing the ground water aquifers to recharge. The earliest date that the diversion can start would be September 20th. The diversion period would continue until the Swan Lake water level is restored or Turkey Ridge Creek freeze up, which ever occurs first. Major precipitation run-off flows during this period require that the stream diversion be terminated until the run-off event flow passes the stream inlet structure. The latest date for diversion would be February 28th. Diversion would terminate prior to the Spring snow melt runoff.

- D. The diversion rate is limited to the capacity of the transfer piping and the requirement to meet effective settling times in the sedimentation basins. The 12" DIP transfer pipe would have a 2.45 cubic feet per second flow rate based on a 0.5' elevation difference between the creek elevation and the sedimentation basin elevation. During the fall winter months ground flows, the Creek's elevation would remain fairly constant. The sedimentation pond elevation would be controlled by the sedimentation basin outlet weir elevation and control position of the transfer pipe 12" gate valve. The 2.45 cubic feet/second flow rate will provide a pipe velocity of 3.13 feet per second, which is greater than the minimum required pipe scouring velocity of 2.0 feet per second. The 2.0 feet per second velocity prevents silt disposition in the transfer pipe.
- E. The sedimentation basins' effective settling zone will be the upper 3 feet of the sedimentation basins. The areas lower than 3.0 feet are reserved for silt disposition. The pre-sedimentation basin settling zone volume is 24 feet times 75 feet times 3 feet which equals 5,400 cubic feet. The pre-sedimentation basin detention time would be 5,400 cubic feet divided by 2.45 cubic feet /second flow rate equals 2,200 seconds or 36 minutes. This would provide adequate settling time to remove the larger silt particles. The sedimentation basin settling zone would be 280 feet times 80 feet times 3 feet which equals 67,200 cubic feet. The sedimentation basin detention time would be 67,200 cubic feet divided by 2.45 cubic feet per second which equals 27,400 seconds, or 457 minutes or 7.6 hours. This would provide adequate silt removal settling time in the sedimentation period. After the start-up of the stream diversion inlet system, the silt removal efficiency will be determined by weekly testing for settleable solids. If necessary, the diversion flow rate can be adjusted in-order to achieve acceptable silt removal efficiency level.
- F. At 2.45 cubic feet per second diversion flow rate, the required time frame to transfer 255 acre feet to Swan Lake would be 255 acre feet times 43, 560 cubic feet/ acre feet divided by 2.45 cubic feet per second divided by 60 seconds/ minute divided by 60 minutes/hour equals 1,260 hours or 52.5 days. At 2.45 cubic feet per second, the required time to replenish the lake evaporation loss would be approximately two months. Starting on or after September 20th, this will allow the Lake evaporation loss to be replenished prior to the coldest winter months. This will be a benefit in preventing possible fish kill due to low water level when the lake freeze up during winter months. This time frame is contingent upon a Turkey Ridge Creek Stream flow on 4.45 cubic feet per second. Based on historic flow records, it will probably require longer than 2 months to replenish Swan Lake evaporation loss.

PART 5 SWAN LAKE INLET OPERATIONAL CONTROL

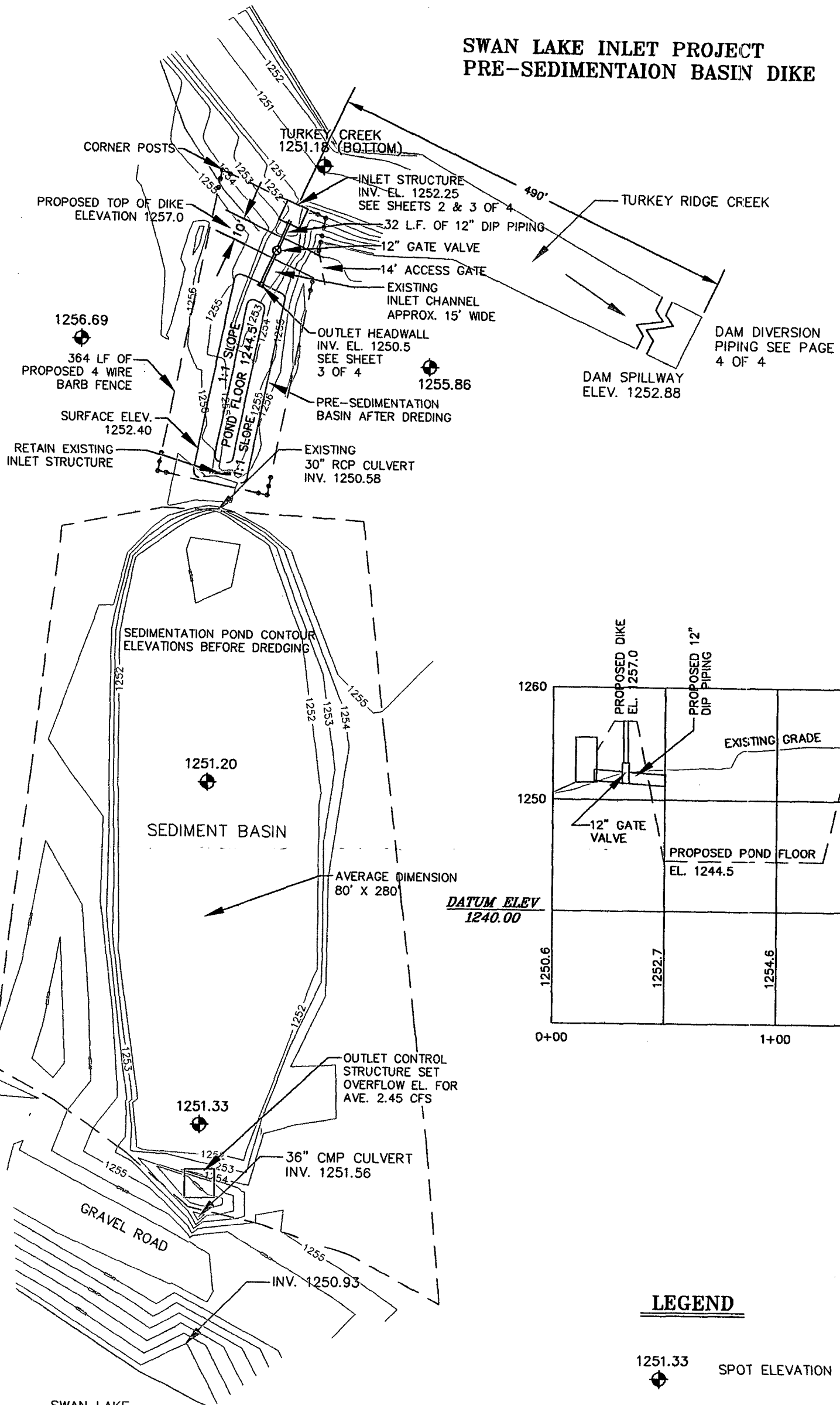
- A. The Turkey Ridge Creek stream diversion operational control needs to be established in-order to assure that the objectives of the Swan Lake Inlet Projects are met. The Project's objectives are first to maintain 2 cubic feet per second stream flow in Turkey Ridge Creek downstream of the diversion dam, and secondly, replenish Swan Lake annual evaporation losses while maintaining a high water quality standard for the Lake. Thus the operations of the Lake Inlet Project would be the responsibility a single person who affirms the objectives of the Project. The inlet control person will be designated by Swan Lake Improvement Association and subject to approval by the various State and Federal agencies involved with the Project. The initial principle operator is Ed Mansfield of Viborg, SD. Ed has spent a life time working on improving Swan Lake. During the Lake dredging project, Ed performed the water quality control sampling required to monitor the dredging project affects on the Lake's water quality. Ed also realizes the affect on Swan Lake if the silt removal efficiency standards are not met during the stream diversion period. Ed will have two assistants to handle the water sampling, determine flow rate measurement, and perform the system maintenance duties. The assistants would be familiar with the diversion system and could step in as the principle operator when Ed Mansfield retires. The first assistant would be Roger Almond of Lennox, SD. Roger is a South Dakota SD-DENR certified wastewater operator for the City of Lennox. As such, Roger is familiar with wastewater sampling and flow measurement procedures. Roger's City duties prevent him from being the system initial principle operator. The second assistant is Ron Poppenga of Sioux Falls. Ron is retired and spends considerable amount of time at the Lake during the summer and fall months. Ron was an active Swan Lake board member during the Swan Lake dredging project in the mid 1990's.
- B. The project should also have a watch dog agency to monitor the Lake Inlet Project operation. The proposed local agency is the Turner County Conservation District. The proposed plan is to have inlet control person contact the Turner County Conservation District prior to the start of the stream diversion period. The agency would confirm that the fall ground water flow has resumed in Turkey Ridge Creek and the stream silt level is at an acceptable level for treatment in the sedimentation basins. The Conservation District would make intermittent on-site visits during the diversion period to monitor the inlet project operation. The inlet control person would then inform the Conservation District at the conclusion of the stream diversion operation.
- C. The final aspect of the diversion operation is to maintain operation records. The operation records would include 1) the Conservation Service notification date, 2) the start-up date of the diversion period, 3) the settleable solids water sampling results for Turkey Ridge Creek, the pre-sedimentation basin effluent, and the sedimentation basin effluent, 4) water quality samples results taken during the diversion period, 5) the sedimentation basin effluent flow rate measurements, 6) pertinent water level elevations, and 7) the ending date of the stream diversion period. These records would be maintained at a central location thus they can be reviewed by the appropriate State and Federal agencies involved with the project.

- D. The operational control duties may be considerable work for one individual, thus portions of the duties such as the conducting water samples or the flow measurement monitoring may be delegated to the assistants. However only one person shall be responsible for determining the diversion period and maintaining the control of the valve wrench for operating the 12" transfer line gate valve. Should any questions arise, the Project Engineer and the State and Federal agencies can be contact for solutions.

PART 6 SWAN LAKE INLET MAINTENANCE

- A. The maintenance of the Turkey Ridge Creek stream diversion system will be the responsibility of the Swan Lake Improvements Association. Maintenance items include the 1) ensuring the downstream flow rate of 2 cubic feet per second below the diversion dam, 2) removal debris from the stream inlet structure, 3) maintaining the diversion dike erosion control features, 4) removal of silt from the inlet piping as may be necessary, 5) monitoring the silt levels in the pre-sedimentation and the sedimentation basins, 6) maintaining the sedimentation basin outlet structure, 7) the upkeep of the fences around the two basins, and 8) other maintenance items as may be required. The ensuring of the downstream flow rate of 2 cubic feet per second would require keeping the 6-inch bypass pipes free from debris and ice formation. The Association will also will be responsible to schedule the pre-sedimentation and sedimentation basin silt removal once the silt level reaches 3 feet from the basin surface. This is important in-order to maintain the silt removal efficiency of the basins. The Association will be responsible for the over all operation of the Swan Lake inlet control system.

SWAN LAKE INLET PROJECT PRE-SEDIMENTATION BASIN DIKE



LEGEND

1251.33 SPOT ELEVATION
--- EXISTING FENCE

SWAN LAKE
WATER SURFACE
ELEV. 1250.49
8/24/00

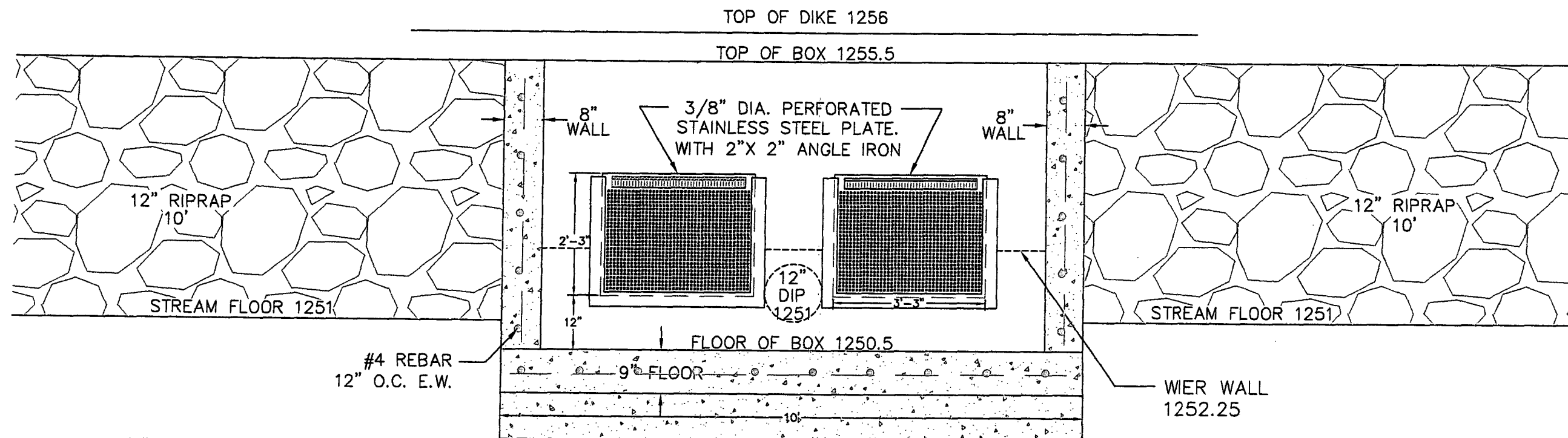
SCALE

1" = 50'

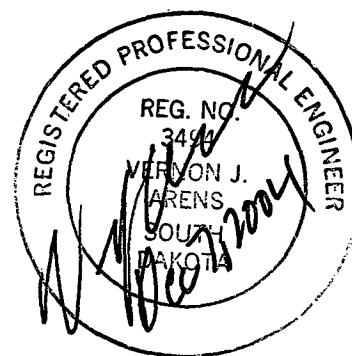
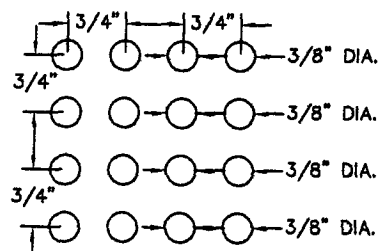


SWAN LAKE INLET STRUCTURE	
ARENS ENGINEERING	
301 CAPITAL SUITE 1A YANKTON, SD 57078 (605) 665-2002	
DRAWN BY: J.J. HURLBURT	DATE: 11/30/2000
CHECKED BY: V.J. ARENS	DRAWING NO.: 20135
JOB NO.: 20135	SHEET 1 OF 4

SWAN LAKE INLET STRUCTURE FRONT VIEW

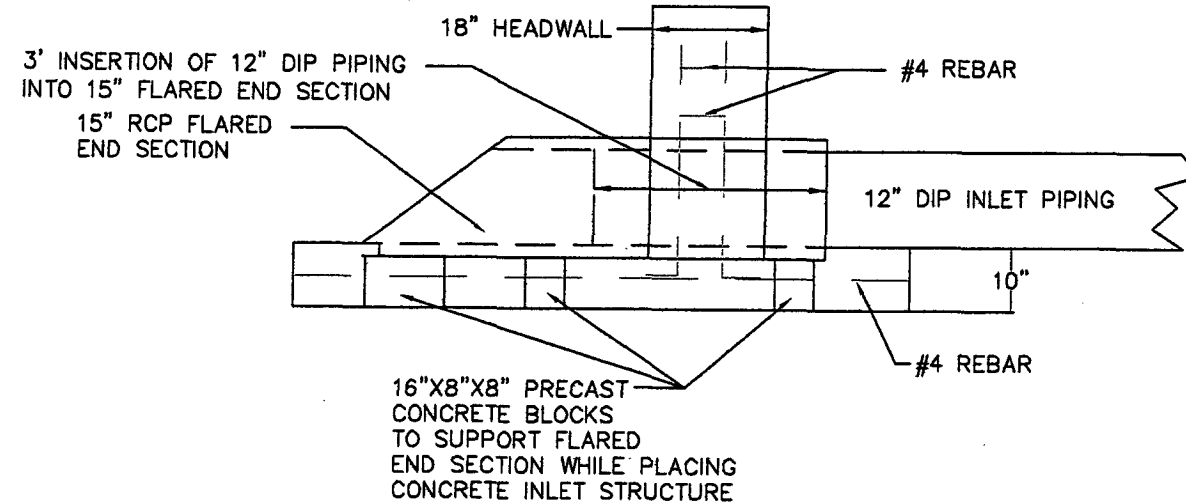
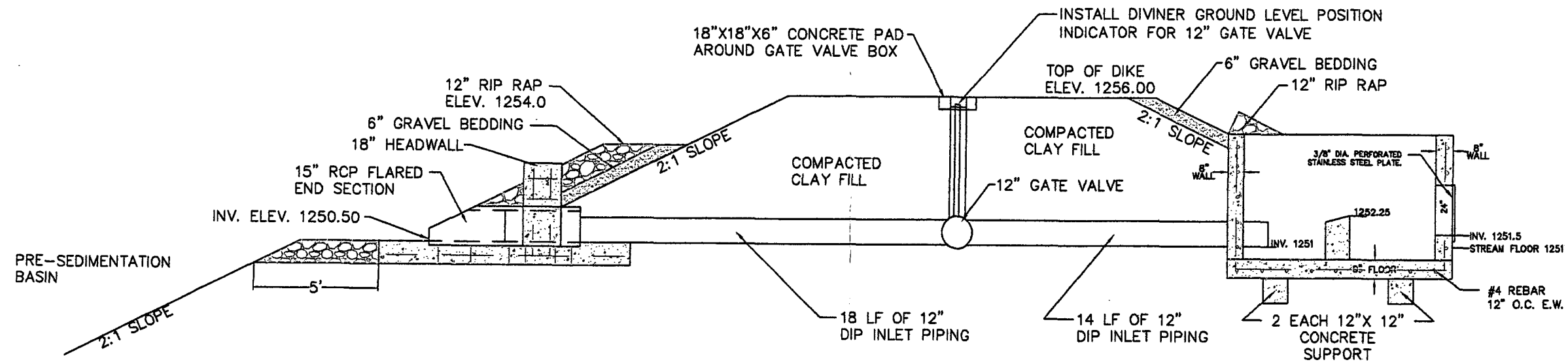


3/8" DIA. HOLES IN
STAINLESS STEEL PLATE.



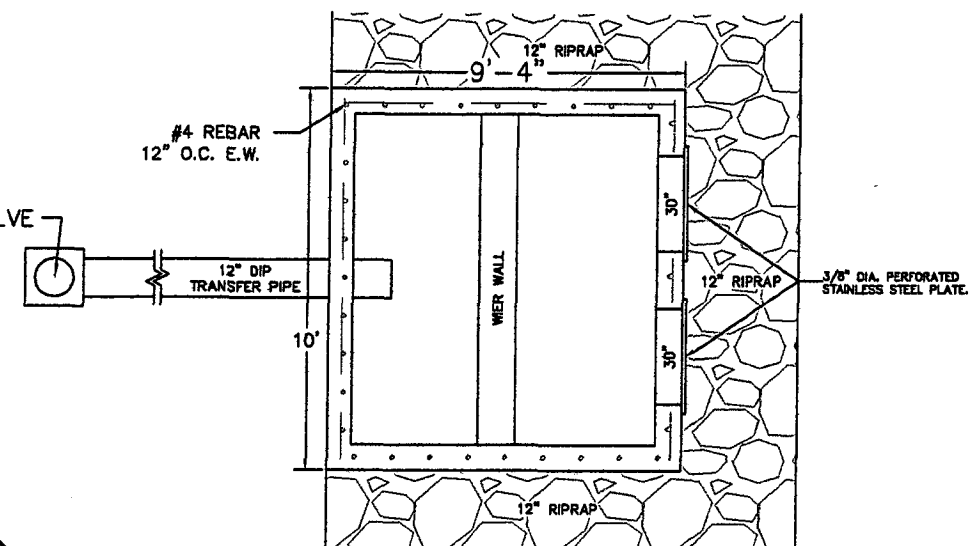
SWAN LAKE INLET STRUCTURE	
ARENS ENGINEERING	301 CAPITAL SUITE 1A YANKTON, SD 57078 (605) 665-2002
DRAWN BY: A.A. WOEHL	DATE: 11/30/04
CHECKED BY: V.J. ARENS	DRAWING NO.: 20135-d
JOB NO.: 20135	SHEET 2 OF 4

SWAN LAKE INLET PROJECT PRE-SEDIMENTATION BASIN DIKE

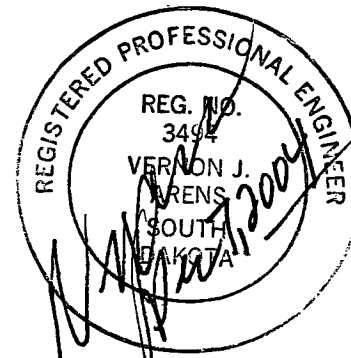


SWAN LAKE OUTLET STRUCTURE
SIDE VIEW

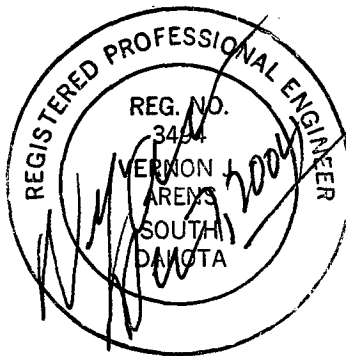
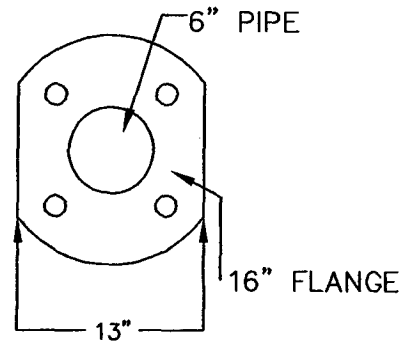
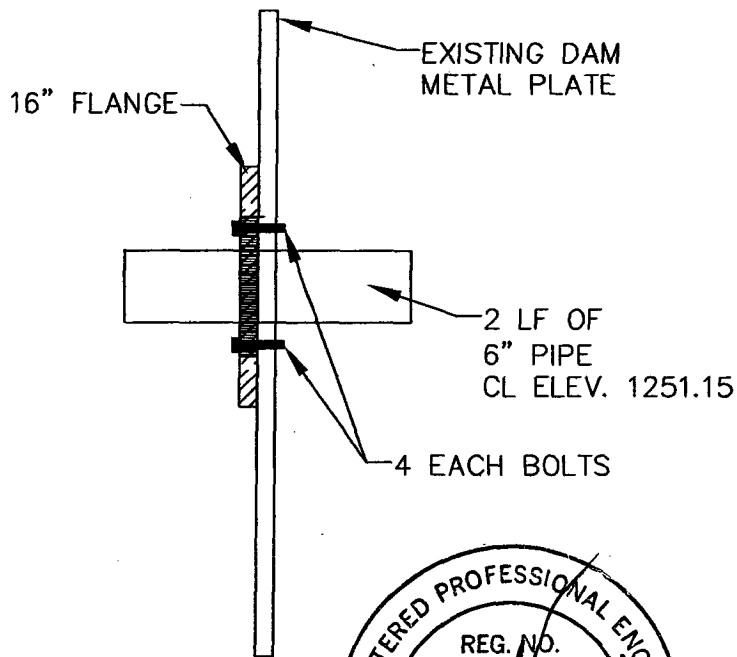
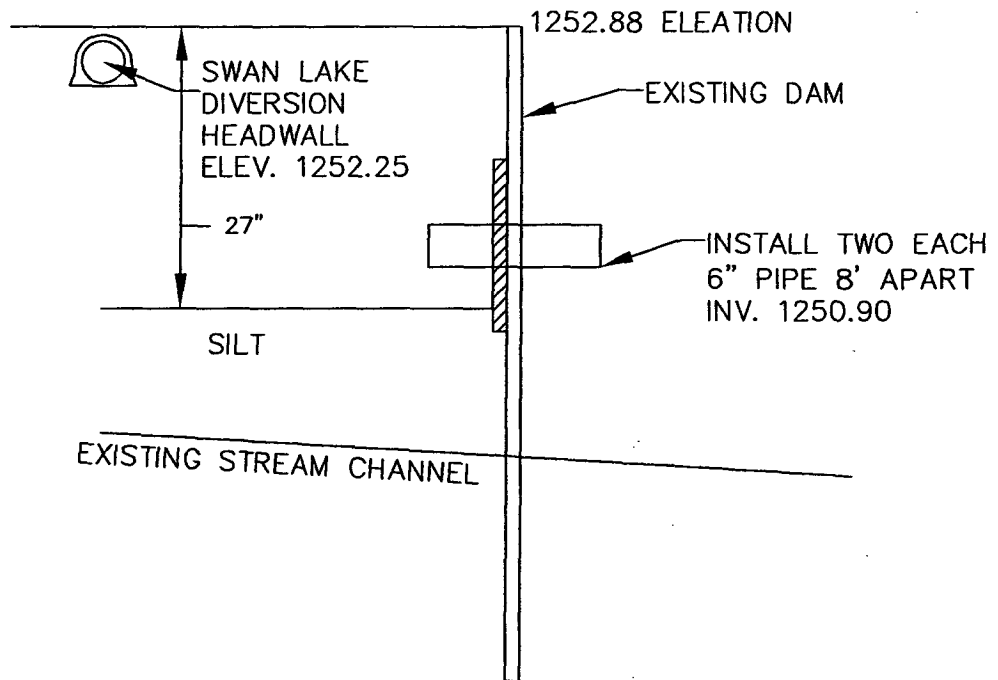
12" GATE VALVE



SWAN LAKE INLET STRUCTURE
TOP VIEW



DRAWN BY: A.A. WOehl	DATE: 11/30/04
CHECKED BY: V.J. ARENS	DRAWING NO.: 20135-d
JOB NO.: 20135	SHEET 3 OF 4



SCALE: NTS

SWAN LAKE DIVERSION PIPING	
ARENS ENGINEERING	301 CAPITAL SUITE 1A YANKTON, SD 57078 (605) 665-2002
DRAWN BY: A.A. WOHL	DATE: 11/30/04
CHECKED BY: V.J. ARENS	DRAWING NO.: 20135
JOB NO.: 20135	SHEET 4 OF 4

70.8

173.0

49.6

31.0

15.7

4-10

4-12

SWAN
LAKE

SWAN
LAKE

T97N R53W

Sec 15

T97N R53W - Sec. 16

129.4

37.4

1.3

4.4

19.9

35.9

39.1

19.8

97-53

y

V/R

4944-3

y

97-53

VR# 4944-3

40.8

113.0

49.6

41.0

15.7

4-10

4-12

SWAN
LAKE

SWAN
LAKE

T97N R53W - Sec. 16

T97N R53W

Sec 15

139.4

37.4

1.3

19.9

4.4

35.7

39.1

19.8
97-53

4

97-53

4

4



DENR
SOUTH DAKOTA

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

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

Memo to File

Swan Lake in Turner County

VWR No. 4944-3

The OHWM was set by the Water Management Board on April 14 & 15, 1983.

OHWM elevation 1252.9 fmsl NGVD29

The outlet elevation was set by the Water Management Board on April 14 & 15, 1983.

OHWM elevation 1252.4 fmsl NGVD29

The Water Management Board validate Vested Water Right No. ⁴⁹⁴⁴⁻³~~1635-3~~ on May 1, 1991.