

No. 1846-3

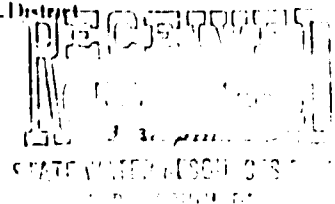
Map No. _____

Water Division No. 3WHETSTONE CREEK

(Blanks to be Filled by the Engineer for the W. R. C.)

District _____

APPLICATION FOR PERMIT



To Appropriate Water within the State of South Dakota

(NOTE: Draw a line through items not applicable)

1. Name of Applicant Dept. of Game, Fish & Parks
 Postoffice address Pierre State South Dakota
 If a corporation show date and place of incorporation _____
2. Method of accomplishing work (contract, employment of others, or by direct labor) completed-meandered
3. Name of diversion work Lake Albert
4. Amount of water claimed (cubic feet per second) 606 acre feet
5. Source of water supply local watershed - run off
6. Location of point of diversion Sec. 6 120-47

County Grant

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 recreation
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 NA years. Additional time required to complete application of water to the proposed beneficial use NA years.
11. Choice of newspaper for Notice of Intent to Appropriate Water publication NA
12. Principal Features of the Proposed Water Supply System.

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

202 surface acres7' max. depth

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

C. Works proposed to apply water to beneficial use.

Estimated Total Cost \$ _____

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

County of DeWitt

I, R. A. Anderson 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 _____

Subscribed and sworn to before me this 13thday of May

Edward M. Smith
 Notary Public (or other qualified officer)

WATER RIGHT APPLICATION APPROVAL

The Water Resources Commission hereby approves Water Right Application No. 1840-3DEPT OF GAME, FISH & PARKS
(Applicant)PIERRE
(Post Office Address)SOUTH DAKOTA
(State)

With the following modifications:

"VESTED RIGHT" CLAIMEDDate of first receipt of application NOVEMBER 6 1969Date of return to applicant for correction, amendments or changes required — 19—Date of receipt of corrected application — 19—Approved APRIL 5 1971 Recorded in Book 11 Page 297WATER RIGHT PERMIT NO. 1840-3The Water Resources Commission hereby grants and issues this Water Right Permit No. 1840-3 authorizing the construction of the water use system and the putting of water to beneficial use as stated in the Application and as modified in the Water Right Application approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is 1889
2. The equivalent of at least one-fifth of the work above specified is ~~to be~~ completed ~~on or before~~ —
3. The whole of said work is ~~to be~~ completed ~~on or before~~ —
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is COMPLETED
5. The water appropriated shall be used for the purpose of PUBLIC 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 606 ACRE FEET ANNUALLY neither shall it exceed the capacity of the above described water supply system, nor shall it exceed the amount of water needed for ~~irrigation~~~~and it shall be limited to not more than 3 acre feet per acre of irrigated land which water shall be used for the purpose of irrigation and the amount of water shall be limited to not more than 3 acre feet per acre of irrigated land which water shall be used for the purpose of irrigation~~USED FOR PUBLIC RECREATION actually and beneficially ~~applied for irrigation~~ on or before JUNE 30 1955 said water to be used during the following described annual period: CONTINUOUSLYWitness my hand this 5TH day of APRIL 1971

WATER RESOURCES COMMISSION

By

[Signature]
Chief Engineer, Executive OfficerCertificate of Construction Issued APRIL 5 1971Water License Issued APRIL 5 1971

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) Dept. of Game, Fish & Parks
Post Office Address Pierce, State South Dakota
If a Corporation show date and place of incorporation _____

13. Notice of Appropriation (If available)
Date of Posting _____ Date of Recording _____
Recording Date _____
14. Date of start of construction of water supply system completed 1889-meandered
15. Date that water was first applied to beneficial use 1889
16. Name of owner of original water supply system State of South Dakota
17. Amount of water originally applied to beneficial use 606 acre ft c. f. s.
18. Present Use of Water
Amount of water now being used 606 acre ft c. f. s.
Date that this amount of water was first used 1889
19. Chronological History of Water Use

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 _____)

I, R. Q. Hodgins, the applicant, certify that I have read the foregoing and that the matters therein stated are true.

Signed _____
Subscribed and sworn to before me this 13th day of Jan 1889
[Signature]
(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.

Permit No. 1840-3Water Diversion No. 3 WHITSTONE CREEK Water District

CERTIFICATE OF CONSTRUCTION

This is to Certify, That the Department of Game, Fish and Parks

Vested Right / Permit No. 1840-3, issued upon Application No. 1840-3, bearing date of priority of 1889
 _____ authorizing the diversion of 606 acre feet annually of the waters of _____
local watershed County of Grant, State of South Dakota at _____
points in the W $\frac{1}{2}$ Section 6, T120N, R47W

_____, for public recreation (Lake Albert)

purposes, has 8 complied with the provisions of the laws of the State of South Dakota relating to proof of
 completion of the works of diversion set out and described in said Permit; that said works are recognized as
condition for diverting and conveying to the place of intended use 660 acre feet annually of water.

Date April 5, 1971

WATER RESOURCES COMMISSION

By:

J.W. GRIMES, Executive Officer

WATER LICENSE NO. 1840-3

(1) WHEREAS, On the 6th day of November A. D. 19 69

the Department of Game, Fish and Parks

made Water Right Application No. 1840-3 for a ^{Vested Right} permit to use 606 ac. ft. annually ~~public recreation~~ of the waters of local watershed

County of Grant State of South Dakota, for public recreation purposes; and

(2) WHEREAS, On the 5th day of April A. D. 19 71

^{Vested Right} Permit No. 1840-3 with a date of priority of 1869

was issued to said applicant for the diversion of said water, ^{recognizing} ~~and providing for~~ the completion of construction of the water supply system therein described ~~on or before the~~ ^{on or before the} ~~day of~~ ^{day of} ~~April 1971~~ ^{April 1971} and ~~for~~ the application to beneficial use of said water ~~on or before the~~ ^{on or before the} ~~day of~~ ^{day of} ~~April 1971~~ ^{April 1971}

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 606 acre feet annually ~~of water~~ 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,

water is used for public recreational purposes

(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 Department of Game, Fish and Parks of Pierre, South Dakota the holder _____ and owner _____ of said ^{Vested Right} permit No. 1240-3 a water right, dating from 1889 to use of 606 acre feet annually ~~cube feet per second~~ of the waters of local watershed in the County of Grant and State of South Dakota, or so much thereof as may be necessary for the purposes hereinbelow mentioned, to be diverted at points in the W $\frac{1}{2}$, Section 6, T.20N, R.47W and ~~conveyed to and upon~~ stored in place for the purpose of public recreation (Lake Albert)

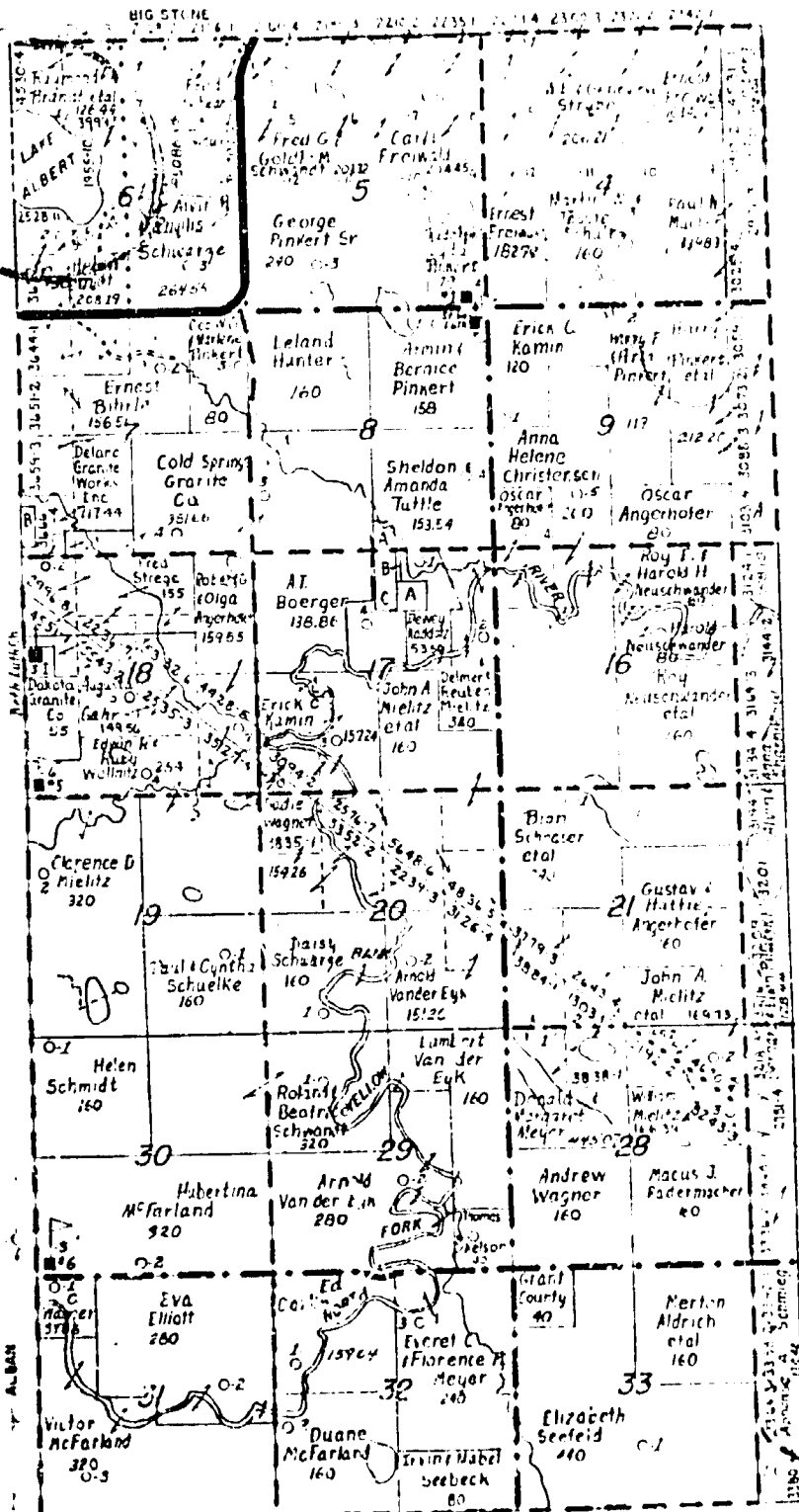
Subject to any limitations listed in Water Right Permit No. 1240-3 and subject to the laws of the State of South Dakota.

WITNESS, My hand and seal of our office at Pierre, South Dakota
this 5th day of April A. D.
Nineteen Hundred and Seventy-One

WATER RESOURCES COMMISSION

By:

Chief Engineer, Executive Officer, J.W. GRIMES



SMALL TRACT OWNERS

S.M. 1918

A. 1918

- 7 B Robert Hunter Granite Co. — 579
- 8 A Steiner-Rauch Granite Co. — 144
- 10 A Wm F. Rohloff — 3103
- 11 A Steiner-Rauch — 1000
- 12 B Cold Spring Granite Co. — 50
- 13 C North Star Granite Corp. — 1605



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,

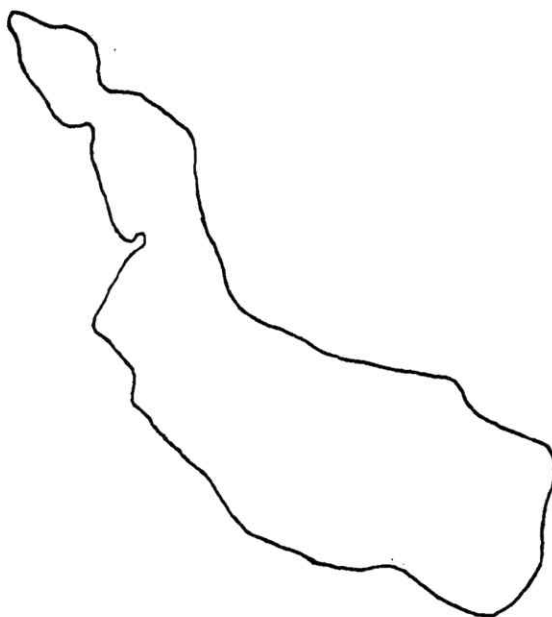
John Hatch
for JOHN HATCH, Chief Engineer
Water Rights Division
605 773-3352

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

1840-3

LAKE ALBERT - GRANT COUNTY

ORDINARY HIGH WATER MARK AND OUTLET ELEVATION INVESTIGATION



Water Rights Program

October 26, 1995



Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

Table of Contents

	Page
List of Appendices-----	2
Abstract-----	3
Introduction-----	4
Meander Line-----	6
General Information-----	6
Water Rights-----	7
Geology and Hydrology-----	7
Historical Water Levels-----	7
Climatological Data-----	8
Runoff Factors-----	8
Man Made Influences-----	9
Field Investigation-----	9
Bench Mark Establishment and Collection of Field Data-----	9
Ordinary High Water Mark Evidence-----	9
Erosion-----	10
Changes in the Character of the Soil-----	10
Boulder Lines-----	10
Terrestrial Vegetation-----	11
Outlet-----	11
Conclusions-----	13
Recommendation of the Chief Engineer-----	14
Bibliography-----	15
Persons and Agencies Referenced-----	16

List of Appendices

	Number
General Highway Map, Grant County-----	1
Meander Line Survey of Lake Albert, Grant County-----	2
Sand and Gravel Resources in Grant County-----	3
Historical Water Levels for Lake Albert-----	4
OHWM Evidence-----	5
Climatological Data-----	6
Photographs-----	7

ABSTRACT

The Grant County Commissioners, 210 East Fifth Avenue, Milbank, SD 57252 have requested the Water Management Board to establish the Ordinary High Water Mark (OHWM) and outlet elevation for Lake Albert in Grant County.

In response to the request by the Grant County Commission and pursuant to SDCL 43-17-1, 43-17-21, 43-17-24 and 43-17-28, an investigation was conducted by the South Dakota Department of Environment and Natural Resources, Water Rights Program acting on behalf of the Water Management Board.

This report contains the results of the field investigation conducted August 14 through 16, 1995.

During the field investigation of Lake Albert, the following easily recognizable characteristics were used in recommending elevations for the OHWM and outlet: erosion, changes in the character of the soil, boulder lines, and terrestrial vegetation.

Based on the finding in this report, the recommended elevations for the Lake Albert OHWM and outlet are 1055.0 and 1054.5 feet above mean sea level respectively.

INTRODUCTION

On April 21, 1995, the Water Rights Program received a written request for the establishment of an outlet elevation for Lake Albert from the Grant County Board of Commissioners. Based upon their request, an investigation was conducted to determine elevations to be recommended for the Ordinary High Water Mark (OHWM) and outlet.

OHWM is defined by SDCL 43-17-20(2), which states:

"Ordinary high water mark," the term as defined in decisions rendered by the courts of this state.

An OHWM is established by the processes of nature. The Water Management Board's (Board) setting thereof is merely a formal recognition of the mark established by nature.

An Ordinary Low Water Mark (OLWM) was not established for Lake Albert. The high water conditions at Lake Albert hid the evidence for an OLWM from view.

State law (SDCL 43-17-2) provides that all navigable rivers and lakes are public highways within 50 feet landward from the water's edge, provided that the outer boundary of such public highway may not expand beyond the OHWM and may not contract within the OLWM. Thus, the public has the right to use a strip of land up to 50 feet wide below the OHWM beginning at the water's edge or the OLWM for public purposes.

Further, while the public may use the 50 foot strip of land for only "public" purposes, the private adjoining landowner may use the land for any purpose not inconsistent with the rights of the public. Such purposes ordinarily would include but not limited to the right to graze and water livestock, to hay, or to build a boat dock.

South Dakota Codified Law (SDCL) 43-17-23 states that in determining the OHWM, natural factors take precedence. Man-made influences, either those that have been constructed to lower the mark or those constructed to raise the mark, shall be disregarded unless the influences have been lawfully constructed or have existed and been accepted for a period of time determined by the Board to be the equivalent of natural conditions.

When requested to do so, the Board is required by SDCL 43-17-21 and 43-17-28 to establish the OHWM for public lakes. SDCL 43-17-1 provides that the ownership of land below the OHWM, and of land below the water of a navigable lake or stream, is regulated by the laws of the United States or by such laws of the state as the Legislature may enact.

A lake is "navigable" if its waters constitute "public waters" (Flisrand v. Madson 35 S.D. 457, 152 N.W. 796, (1915)). A lake is also "navigable" when, if maintained at the high-water mark, it is suitable for rowing, fishing, fowling and bathing (Anderson v. Ray (1916) 37 S.D. 17, 156 N.W. 591).

"Ordinary" according to SDCL 43-17-20(2) is defined in decisions rendered by the courts of this state. In the case of Flisrand v. Madson, 35 S.D. 457, 152 N.W. 796, (1915) the court wrote:

Neither high or low water mark means the highest or lowest point reached by the waters of a lake during periods of extreme and continued freshets, or periods of extreme and continued drought, but does mean the high and low points of variation of such waters under ordinary conditions, unaffected by either extreme.

In the case of Anderson v. Ray, 37 S.D. 17, 156 N.W. 591 (1916) the South Dakota Supreme Court wrote:

In the case of freshwater rivers and lakes - in which there is no ebb and flow of the tide, but which are subject to irregular and occasional changes of height, without fixed quantity of time, except that they are periodical, recurring with the wet or dry seasons of the year - high water mark, as a line between the riparian owner and the public, is to be determined by examining the bed and banks, and ascertaining where the presence and action of the water are so common and usual, and so long-continued in all ordinary years, as to mark upon the soil of the bed a character distance from that of the banks, in respect to vegetation, as well as respects the nature of the soil itself.

In the Waubay Lake decision, issued on January 17, 1986, the South Dakota Supreme Court stated the determination of these water marks is to be done on a case by case basis. The Court stated that:

"... under ordinary circumstances, the Ordinary High Water Mark will be set at a level where there is a distinct mark which evidences erosion, and changes in the character of the soil, and destruction of terrestrial vegetation, which have occurred under the ordinary and continuous conditions of the lake, disregarding periods of extreme and periodic freshets, and disregarding the highest water mark which does not evidence erosion and soil changes and destruction of vegetation occasioned under ordinary conditions. If a single distinct mark, occasioned under ordinary circumstances and evidencing all of the factors delineated above does not exist, i.e., there is conflicting evidence of the role of the Ordinary High Water Mark, it is the level where significant major, and substantial terrestrial vegetation ends, that the OHWM is to be set." (cites omitted)

MEANDER LINE

A meander line, as the name implies, is a line that meanders and is not at a constant topographic elevation (Appendix No. 2). An OHWM is at a constant topographic elevation. Hence, a meander line is not and cannot be associated with an OHWM. A meander line survey is established by man for surveying and mapping purposes and is not a property line. OHWM's are established by nature and defined by man.

In the case of *Flisrand v. Madson*, 1915, the South Dakota Supreme Court wrote:

"The fact alone that the lake in question was meandered by the government survey does not directly control this matter, as a meander line is not considered a boundary line, but merely serves to define the sinuosities of the bank of the lake and a means of ascertaining the amount of land in the fractional tract subject to sale, which is to be paid for by the purchaser. *St. Paul Ry. Co., Shurmeier* 7 Wall 272, 19 L. Ed. 74, and note page 972."

The meander line was surveyed around Lake Albert in September of 1882.

GENERAL INFORMATION

Lake Albert is located in eastern Grant County 5 miles east of the city of Milbank. Lake Albert is located in Section 6, T120N, R47W; Section 1, T120N, R48W; and Sections 34 and 35, T121N, R47W. The present outlet elevation is 1054.78 feet above mean sea level (fmsl) and is located on the southeastern part of the lake in the NE 1/4 SW 1/4 Section 6, T120N, R47W (see Appendix No. 1).

All elevations in this report are referenced to a United States Department of Commerce, Environmental Sciences Services Administration, Coast and Geodetic Survey benchmark with a 1951 sea-level datum described as follows:

The benchmark is located about 5.5 miles southwest along Highways 12 and 77; from the Big Stone City Post Office, Grant County, near the south one sixteenth corner between sections 5 and 6, T120N, R47W; 0.3 miles north and 50 feet east of the crossroads; 690 feet north of the north end of curve in roadway from south to west; 107 feet north of the fence corner, fence runs to the east. A standard tablet in a concrete post, at elevation 1060.210 feet above mean sea level, stamped "102 RDS 1951 1060".

Temporary benchmarks were established by the Water Rights Program along the perimeter of Lake Albert. The locations and elevations of the temporary benchmarks are available from the Water Rights Program upon request.

WATER RIGHTS

Vested Water Right Claim No. 1840-3 held by the South Dakota Department of Game, Fish and Parks (SD GF&P) is the only existing claim on file for water in Lake Albert (Water Right files, 1995). However domestic uses (i.e. livestock watering, dams, dugouts, etc.) are present within the Lake Albert drainage basin.

Vested Water Right Claim No. 1840-3 claims an 1889 priority date, and approximately 606 acre-feet of water per year to fill Lake Albert for public recreational purposes. The location of the points of diversion are in the W 1/2 of Section 6, T120N, R47W.

Vested Rights Claim No. 1840-3 indicates a reservoir capacity (lake storage) when filled of 606 acre-feet and a surface area of 202 acres at a maximum depth of 7 feet. The 202 acres represents the State of South Dakota's acreage kept in trust for the public below the meander line survey conducted in 1882. The lake storage and surface area at full water level were estimated by the SD GF&P on November 13, 1969. The estimate was only an estimate and should not be construed as the actual lake storage or surface area at the OHWM.

A correction will need to be made to Vested Claim No. 1840-3 before the claim can be validated. The claim will need to be amended to correct the amount of water claimed from 606 acre-feet annually to "sufficient water to fill Lake Albert to the outlet elevation".

GEOLOGY AND HYDROLOGY

Lake Albert is underlain by surficial sand and gravel deposits. The sand and gravel deposits are saturated with groundwater and are known as the Veblen Aquifer. This aquifer has an average thickness of 27 feet and an aerial extent of 260 square miles. The Veblen Aquifer is mostly a confined aquifer, however in the Lake Albert area it is at or near the land surface (Hanson, 1990 and 1994).

Because the aquifer is near the land surface in the Lake Albert area, the aquifer could act as a stabilizing agent for Lake Albert water levels during "drought" years. Conversely, high water levels in Lake Albert could discharge into the sand and gravel when groundwater levels are below the lake water level. Discharge in this area is to the Yellow Bank River (Hanson, 1990).

HISTORICAL WATER LEVELS

Available historical water level measurements of Lake Albert are shown in Appendix No. 4. The water level measurements were taken by the Water Rights Program.

However, historical water levels can be inferred from the existence of boulder lines. Boulder lines at Lake Albert have formed as a result of ice and wave action modifying the lake bank. Although it is not possible to put a genesis date on the boulder lines, they are

indicative of historic water levels occurring at or near the boulder line elevations. The base of boulder lines are found at Lake Albert at the following elevations (fmsl): 1053.5, 1054.2, 1054.7, 1055.5, 1059.1 and 1060.4. The top of boulder lines are found at the following elevations (fmsl): 1056.7, 1057.7, 1058.2, 1064.0 and 1065.4. See Appendix No. 5.

CLIMATOLOGICAL DATA

Climatological data for Lake Albert is included in this report as Appendix No. 6. The climatological data is discussed in detail under the heading of RUNOFF FACTORS in this report.

RUNOFF FACTORS

Beginning soil moisture conditions refer to the degree that a soil is saturated with water. During a "dry" year(s), the soil moisture becomes depleted due to plant use, evaporation, and natural drainage. A rainfall event during these depleted soil moisture conditions would not produce a large runoff volume because the rain would soak into the ground.

On the other hand, during a "wet" year(s), the soil becomes saturated with water and isn't capable of absorbing the rainfall event. Hence, the identical rainfall event during "wet" years will produce a much larger runoff volume than during "dry" years. The more saturated the soil becomes, the larger the runoff volumes generated during a rainfall event.

A single rainfall event whose duration is spread over a number of days or weeks generates a relatively small runoff volume. Conversely, a single rainfall event whose duration is only a few minutes or hours will generate a relatively large runoff volume. Hence, the runoff volume generated by any given rainfall event is dependent upon how rapidly the rain falls.

The largest runoff volumes for any drainage basin (Lake Albert or any other lake) are generated when saturated soil moisture conditions are present going into the winter. The ground then freezes nearly solid and becomes impermeable due to winter temperatures below 32 degrees Fahrenheit. Snow accumulations coupled with cold winter temperatures set the scene for a major runoff event the following spring.

A rapid temperature rise in the spring quickly melts the previous winters snow accumulation. The still frozen/saturated soil is not able to soak up any of the snow melt-water, hence, nearly all snow melt-water arrives at terminal locations such as depressions, dams and lakes or discharge to streams.

As previously shown, yearly runoff entering Lake Albert is dictated by a complicated set of circumstances that include general climatic factors, soil moisture conditions, and snow melt.

MAN MADE INFLUENCES

Natural factors are given precedence in determining the ordinary high water mark. Man-made influences, either those that have been constructed to lower the mark or those constructed to raise the mark, shall be disregarded unless the influences have been lawfully constructed or have existed and been accepted for a period of time determined by the Board to be the equivalent of natural conditions (SDCL 43-17-23).

In 1908 drainage into Lake Albert was facilitated by construction of a ditch through the slough at the north end of Lake Albert. The project also involved the construction or improvement of the outlet channel at the southeast end of Lake Albert. Elevations on the plans are local datum and the original benchmarks have been lost or destroyed, therefore the original survey elevations could not be tied into the OHWM investigation.

The Grant County Commission and riparian landowners believe tile was installed through the sand ridge at the southeast end of Lake Albert during the ditch project in 1908. The original plans show cross sections with tile but do not locate the cross sections. The outlet ditch drains into the North Fork of the Yellow Bank River.

State highway 12 and the Chicago, Milwaukee, St. Paul and Pacific Railroad cross the north end of a slough located at the north end of Lake Albert. Both grades have culverts sloped toward Lake Albert. The bottom elevation of the culverts is lower than the recommended OHWM. This would indicate that the slough at the north end of Lake Albert and the areas between the railroad and State Highway 12 are part of Lake Albert at the OHWM. The above man-made influences have apparently had an affect on the OHWM but have been in place such a time and now probably constitute natural conditions.

FIELD INVESTIGATION

BENCH MARK ESTABLISHMENT AND COLLECTION OF FIELD DATA

Temporary bench marks were established around Lake Albert. The locations and elevations for the temporary bench marks are available from the Water Rights Program upon request.

Field data for Lake Albert was collected on the following dates: August 15, 16 and 17, 1995. The field information contained in this report is from natural outcrops along the perimeter of Lake Albert. The data collected can be found in Appendix No. 5.

ORDINARY HIGH WATER MARK EVIDENCE

Distinct physical evidence used in identifying the OHWM are: erosion (change in slope of the bank), changes in the character of the soil, boulder lines, growth and destruction of terrestrial vegetation (FLISRAND V. MADSON, 1915; ANDERSON v. RAY, 1916;

S.D. WILDLIFE FEDERATION v. WATER MGT. BD., 1986; Red Lake, Brule County Ordinary High Water Mark and Ordinary Low Water Mark, and Outlet Elevation Investigation Report).

Erosion

Distinct erosional features around Lake Albert are summarized in Appendix No. 5.

Consistent erosional features at Lake Albert are found at the following elevations: 1057.00 to 1057.82 fmsl and 1059.38 to 1059.98 fmsl. The erosion elevations at or near 1057 fmsl are consistent with high water marks left on trees at different locations around the lake.

Changes in the character of the soil

Soil stratification occurs around a lake when wave action washes the lake shore and leaves the larger parent materials (pebbles, cobbles, boulders) relatively stationary while the fine grained materials (sand, silts, clays, peats) are transported the greatest distance into the lake. An idealized lake shore progression would start with backshore boulder sized materials and terminate with clay and peat materials deposited in the deepest portions of the lake. Historical lake levels can be inferred by locating areas showing remnant soil stratification.

A sand ridge exists at the outlet area of the lake, across the southeast end of Lake Albert. The ridge is most likely a result of ice action (ice action is discussed more thoroughly under the heading "Boulder Lines") over a number of years.

Lake water levels limited the amount of visible soil changes. The few soil characteristics observed were found at elevations of 1054.55 to 1054.76 fmsl, 1057.48 to 1057.82 fmsl and 1059.38 to 1059.98 fmsl. Distinct surficial changes in the character of the soil at Lake Albert can be found in Appendix No. 5.

Boulder Lines

In the spring lake shores can be acted upon by ice sheets/wind action which form ice pushed ridges. The lake ice melts first near the shores because of the relatively rapid heating of the earthy material of the shore and the shallow bottom. An open lane of water is formed which is further widened by a rise in lake level from the water added by the melting snow of the surrounding slopes. If strong winds develop before the ice becomes rotten, the ice is blown about from side to side by the winds and pushed on the shores with almost irresistible force. The direction of shove is related to that of the winds and may vary along any shore even during a jam, if the winds shift considerably. The force of the push depends on the firmness and momentum of the ice, the latter being determined by the velocity and duration of the wind, the weight of the ice and to some extent the distance through which the ice is free to move. (Dionne, 1979)

Ice pushed ridges/boulder lines can be composed of foreshore and backshore materials. There are boulder lines present around Lake Albert. The boulder lines present are related to ice action and wave erosion acting upon the lake bank. The boulder lines are found at the base of steeply sloping hillsides as residuum.

Boulder lines are summarized in Appendix No. 5. Base elevations of boulder lines range from 1053.53 to 1054.70 fmsl, 1055.13 to 1055.74 fmsl and 1059.15 to 1060.43 fmsl.

Terrestrial Vegetation

The tree population observations in this report are limited to easily recognizable characteristics such as species, diameter and elevation. The tree population around Lake Albert is predominately cottonwood with elm being of secondary occurrence. Growth of terrestrial vegetation around Lake Albert is summarized in Appendix No. 5.

Destruction of terrestrial vegetation (i.e. cottonwood trees) has occurred at Lake Albert. Water inundation has destroyed cottonwood trees and left tree debris on the lake shore at 1057.4 fmsl. See photo no. 6.

Cottonwood trees measured at Lake Albert range in diameter from 0.5 feet to 5.0 feet and have grown between the elevations of 1054.58 and 1058.5. Two live elm trees 4.0 feet in diameter were found at elevation 1062.09 and 1062.18 fmsl. The lowest terminal elevation for live trees at Lake Albert is at 1056.22 fmsl.

Consistent elevations for various tree classes (diameters) at Lake Albert were determined from the field data collected. There are three zones of tree growth. The three zones are between elevations of 1054.58 and 1055.50 fmsl for one foot or less diameter trees, 1056.11 to 1058.5 fmsl for trees greater than one foot in diameter and at 1062.10 fmsl where two four foot diameter live trees were found..

OUTLET

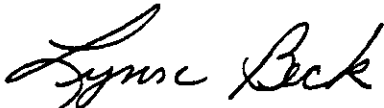
The outlet for Lake Albert is located in the SW 1/4 NE 1/4 SW 1/4 Section 6, T120N, R47W. The existing outlet is a 21 inch by 24 inch corrugated metal culvert (cmp) at elevation 1054.78 fmsl. At the time of the field investigation the outlet was flowing at approximately 16 cubic feet of water per second (cfs). See photo no. 8.

Grant County installed the existing outlet in the fall of 1994. The new culvert replaced a 15 inch culvert which the county installed the previous summer. The culverts were installed to alleviate flooding at the north end of Lake Albert. At the time of construction no old tile was found through the sand ridge at the location of the outlet. Because of the recent construction in the outlet area the original outlet elevation has been lost.

To prevent flooding of downstream property, the outlet channel will need to be cleaned out and maintained between Lake Albert and the Yellow Bank River. Culvert capacities along the outlet channel will also need to be studied and replacements made if necessary.

CONCLUSIONS

1. The term "Ordinary" for any given lake, as defined by established OHWM's can be synonymous with average, normal and yearly. "Ordinary" can also take into consideration periodic fluctuating water levels based upon prevailing climatic conditions and watershed characteristics.
2. A meander line is not at a constant elevation and is not considered in determining the OHWM for any given lake.
3. Historical water levels indicate that Lake Albert has experienced 7 feet of fluctuation since July 10, 1986.
4. Man made influences caused by ditch, road and railroad construction may have affected the Lake Albert OHWM.
5. Based upon the field data collected, potential OHWM elevations for Lake Albert are as follows: Visible changes in the character of the soil occur between 1054.6 to 1054.8 fmsl, 1057.0 to 1057.8 fmsl and 1059.4 to 1060.0 fmsl; base of boulder lines occur between 1053.5 to 1054.7 fmsl, 1055.1 to 1055.7 fmsl and 1059.2 to 1060.4 fmsl; visible erosional features occur at 1057.0 to 1057.8 fmsl and 1059.4 to 1060.0; dead trees are present up to 1056.30 with the majority at or near 1055.0; the lowest terminal elevation for live trees is at 1056.2 fmsl.
6. Based upon the field data summarized in conclusion number 5, potential OHWM elevations for Lake Albert are 1055.0 and 1059.2 fmsl. Data from erosional features and soil characteristics were limited due to the water level in the lake. However, boulder lines and terrestrial vegetation afforded strong evidence at both elevations. Elevation 1059.2 fmsl represents evidence at the higher elevations of the lake bank. OHWM's are not associated with the highest limits of a lake bank but are associated with the upper limits of a lake bank. The majority of the indicators show the OHWM exists at the elevation of 1055.0 fmsl, it is recommended that the OHWM be established at 1055.0 fmsl.
7. The outlet elevation for Lake Albert is currently at 1054.78 fmsl. In order to maintain the OHWM elevation around Lake Albert at 1055.0 fmsl, during those times when the lake is full and spilling, an outlet elevation of 1054.5 fmsl is recommended.



Lynn Beck
Natural Resources Engineer III
Water Rights Program



Gale N. Selken, P.E.
Natural Resources Engineer IV
Water Rights Program

**RECOMMENDATION OF CHIEF ENGINEER ON ESTABLISHMENT OF AN
ORDINARY HIGH WATER MARK AND OUTLET ELEVATION FOR LAKE ALBERT,
GRANT COUNTY**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning establishment of an Ordinary High Water Mark and outlet elevation for Lake Albert in Grant County.

The Chief Engineer of the Water Rights Program recommends that the:

- 1) Ordinary High Water Mark for Lake Albert, Grant County be established at an elevation of 1055.0 feet mean sea level (fmsl).
- 2) Outlet elevation for Lake Albert, Grant County be established at 1054.5 fmsl.

See report for additional information.



JOHN HATCH, Chief Engineer
October 31, 1995

Bibliography

- Dionne, Jean-Claude, 1979, Ice action in the Lacustrine Environment: a Review with Particular Reference to Subarctic Quebec, Canada, Earth-Science Reviews, 15(3), 1979, pp. 185.
- Hansen, Donald S., 1994, Major Aquifers in Codington and Grant Counties, South Dakota, U.S. Geologic Survey Information Pamphlet 47, SD Geologic Survey, Vermillion, SD 57069
- Hansen, Donald S., 1990, Water Resources of Codington and Grant Counties, South Dakota, U.S. Geologic Survey Water-Resources Investigations Report 89-4147, U.S. Geologic Survey, Huron, SD 57350.
- Water Rights Program Files, 1995, Department of Environment and Natural Resources, Joe Foss Building, 523 East Capitol, Pierre, SD 57501.

Persons and Agencies Referenced

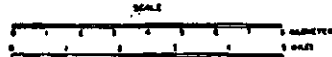
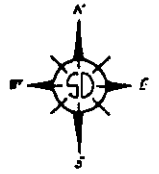
Archives, State Library Building, Pierre, SD 57501

Grant County Register of Deeds, County Courthouse, Milbank, SD 57252

State Climatologist, South Dakota State University, Brookings, SD 57007

Appendix No. 1
GENERAL HIGHWAY MAP
GRANT COUNTY
SOUTH DAKOTA

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

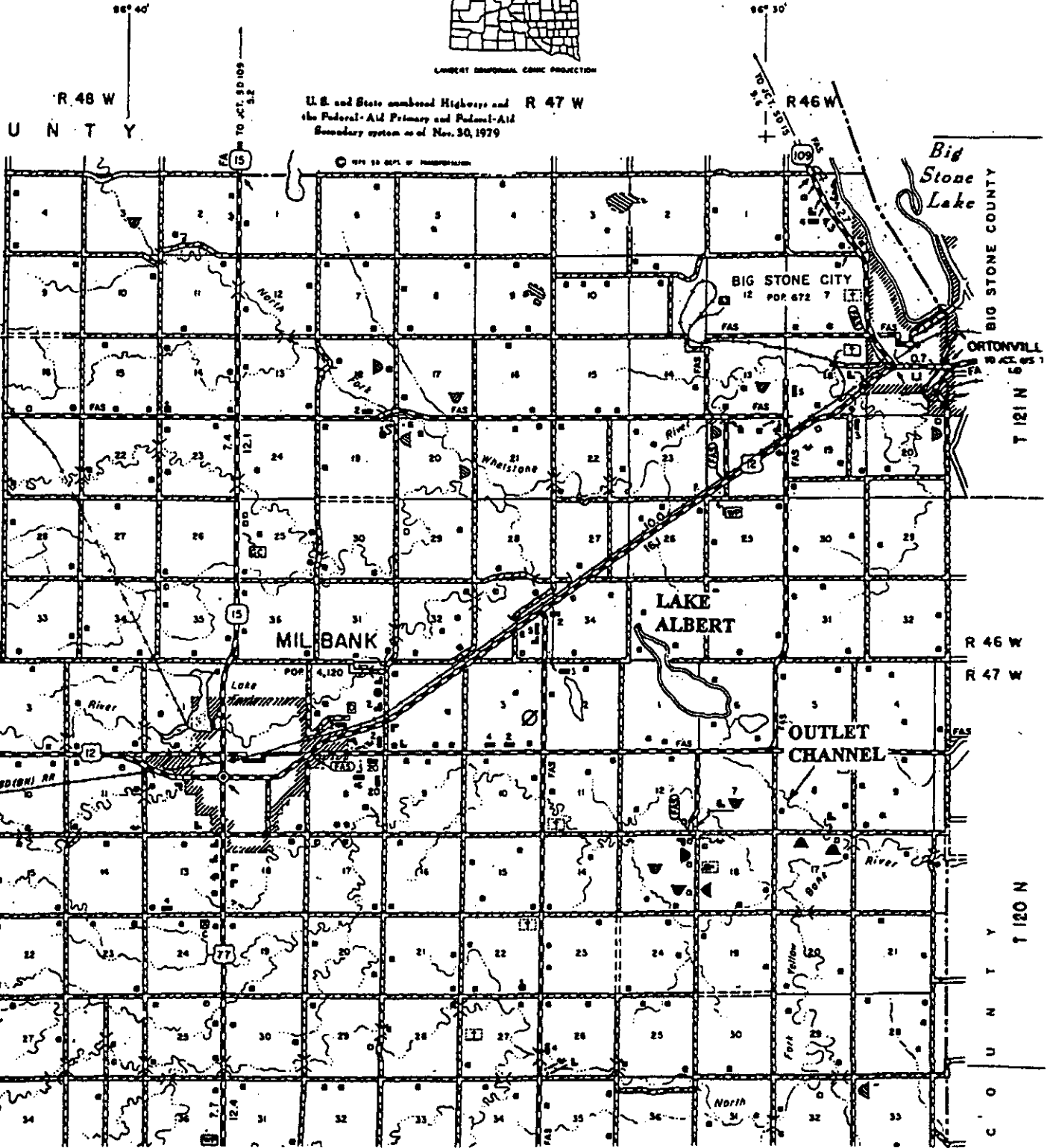


1985



LAMBERT HORIZONTAL CONIC PROJECTION

U.S. and State numbered Highways and
the Federal-Aid Primary and Federal-Aid
Secondary system as of Nov. 30, 1979



Appendix No. 2

OHWM 1055.0 fmsl

MEANDER LINE

Lake Albert

STATE PUBLIC SHOOTING AREA

NATIONAL WATERFOWL PRODUCTION AREA

Contour lines: 1090, 1092, 1094, 1096, 1098, 1100, 1070, 1060, 1054, 1050, 1040, 1030, 1020, 1010, 1000, 990, 980, 970, 960, 950, 940, 930, 920, 910, 900, 890, 880, 870, 860, 850, 840, 830, 820, 810, 800, 790, 780, 770, 760, 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580, 570, 560, 550, 540, 530, 520, 510, 500, 490, 480, 470, 460, 450, 440, 430, 420, 410, 400, 390, 380, 370, 360, 350, 340, 330, 320, 310, 300, 290, 280, 270, 260, 250, 240, 230, 220, 210, 200, 190, 180, 170, 160, 150, 140, 130, 120, 110, 100, 90, 80, 70, 60, 50, 40, 30, 20, 10, 0

Grid lines: R 47 W, R 48 W, T 34 N, T 35 N, T 36 N, T 37 N, T 38 N, T 39 N, T 40 N, T 41 N, T 42 N, T 43 N, T 44 N, T 45 N, T 46 N, T 47 N, T 48 N, T 49 N, T 50 N, T 51 N, T 52 N, T 53 N, T 54 N, T 55 N, T 56 N, T 57 N, T 58 N, T 59 N, T 60 N, T 61 N, T 62 N, T 63 N, T 64 N, T 65 N, T 66 N, T 67 N, T 68 N, T 69 N, T 70 N, T 71 N, T 72 N, T 73 N, T 74 N, T 75 N, T 76 N, T 77 N, T 78 N, T 79 N, T 80 N, T 81 N, T 82 N, T 83 N, T 84 N, T 85 N, T 86 N, T 87 N, T 88 N, T 89 N, T 90 N, T 91 N, T 92 N, T 93 N, T 94 N, T 95 N, T 96 N, T 97 N, T 98 N, T 99 N, T 100 N

Appendix No. 2

OHWM 1055.0 fmsl

MEANDER LINE

Lake Albert

STATE PUBLIC SHOOTING AREA

NATIONAL WATERFOWL PRODUCTION AREA

Contour lines: 1090, 1092, 1094, 1096, 1098, 1100, 1070, 1060, 1054, 1050, 1040, 1030, 1020, 1010, 1000, 990, 980, 970, 960, 950, 940, 930, 920, 910, 900, 890, 880, 870, 860, 850, 840, 830, 820, 810, 800, 790, 780, 770, 760, 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580, 570, 560, 550, 540, 530, 520, 510, 500, 490, 480, 470, 460, 450, 440, 430, 420, 410, 400, 390, 380, 370, 360, 350, 340, 330, 320, 310, 300, 290, 280, 270, 260, 250, 240, 230, 220, 210, 200, 190, 180, 170, 160, 150, 140, 130, 120, 110, 100, 90, 80, 70, 60, 50, 40, 30, 20, 10, 0

Grid lines: R 47 W, R 48 W, T 34 N, T 35 N, T 36 N, T 37 N, T 38 N, T 39 N, T 40 N, T 41 N, T 42 N, T 43 N, T 44 N, T 45 N, T 46 N, T 47 N, T 48 N, T 49 N, T 50 N, T 51 N, T 52 N, T 53 N, T 54 N, T 55 N, T 56 N, T 57 N, T 58 N, T 59 N, T 60 N, T 61 N, T 62 N, T 63 N, T 64 N, T 65 N, T 66 N, T 67 N, T 68 N, T 69 N, T 70 N, T 71 N, T 72 N, T 73 N, T 74 N, T 75 N, T 76 N, T 77 N, T 78 N, T 79 N, T 80 N, T 81 N, T 82 N, T 83 N, T 84 N, T 85 N, T 86 N, T 87 N, T 88 N, T 89 N, T 90 N, T 91 N, T 92 N, T 93 N, T 94 N, T 95 N, T 96 N, T 97 N, T 98 N, T 99 N, T 100 N

Appendix No. 2

OHWM 1055.0 fmsl

MEANDER LINE

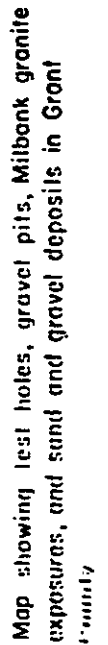
Lake Albert

STATE PUBLIC SHOOTING AREA

NATIONAL WATERFOWL PRODUCTION AREA

Contour lines: 1090, 1092, 1094, 1096, 1098, 1100, 1070, 1060, 1054, 1050, 1040, 1030, 1020, 1010, 1000, 990, 980, 970, 960, 950, 940, 930, 920, 910, 900, 890, 880, 870, 860, 850, 840, 830, 820, 810, 800, 790, 780, 770, 760, 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580, 570, 560, 550, 540, 530, 520, 510, 500, 490, 480, 470, 460, 450, 440, 430, 420, 410, 400, 390, 380, 370, 360, 350, 340, 330, 320, 310, 300, 290, 280, 270, 260, 250, 240, 230, 220, 210, 200, 190, 180, 170, 160, 150, 140, 130, 120, 110, 100, 90, 80, 70, 60, 50, 40, 30, 20, 10, 0

Grid lines: R 47 W, R 48 W, T 34 N, T 35 N, T 36 N, T 37 N, T 38 N, T 39 N, T 40 N, T 41 N, T 42 N, T 43 N, T 44 N, T 45 N, T 46 N, T 47 N, T 48 N, T 49 N, T 50 N, T 51 N, T 52 N, T 53 N, T 54 N, T 55 N, T 56 N, T 57 N, T 58 N, T 59 N, T 60 N, T 61 N, T 62 N, T 63 N, T 64 N, T 65 N, T 66 N, T 67 N, T 68 N, T 69 N, T 70 N, T 71 N, T 72 N, T 73 N, T 74 N, T 75 N, T 76 N, T 77 N, T 78 N, T 79 N, T 80 N, T 81 N, T 82 N, T 83 N, T 84 N, T 85 N, T 86 N, T 87 N, T 88 N, T 89 N, T 90 N, T 91 N, T 92 N, T 93 N, T 94 N, T 95 N, T 96 N, T 97 N, T 98 N, T 99 N, T 100 N



Appendix No. 4

**HISTORICAL WATER LEVELS
FOR
LAKE ALBERT, GRANT COUNTY**

DATE	WATER LEVELS
7-10-86	1054.28
10-8-86	1054.38
4-23-87	1054.48
10-7-87	1052.98
4-20-88	1052.98
9-21-88	1051.08
4-26-89	1051.88
10-18-89	1050.58
5-2-90	1050.58
9-19-90	1050.08
5-1-91	1050.18
10-2-91	1051.08
4-29-92	1051.38
9-16-92	1051.98
5-12-93	1052.98
9-22-93	1055.58
5-4-94	1057.13
9-14-94	1056.08
5-10-95	1055.98
8-15-95	1056.09
10-11-95	1056.07

Measurements by Water Rights Program

Appendix No. 5

OHWL EVIDENCE

EROSIONAL CHARACTERISTICS:

Elevation (fmsl)	Legal Description	Comments
1057.35	NE 1/4 SW 1/4 Sec. 6-T120N-R47W	Erosionline at top of beach.
1057.25	"	"
1057.45	"	"
1057.00	"	"
1059.38	"	Top of the sand ridge.
1059.63	"	"
1059.73	"	"
1059.68	"	"
1059.98	"	"
1057.82	SE 1/4 NW 1/4 Sec. 6-T120N-R47W	Top of cut bank.
1057.48	SW 1/4 SE 1/4 Sec. 35-T121N-R48W	"

WATER MARKS

Elevation (fmsl)	Legal Description	Comments
1057.25	NE 1/4 SW 1/4 Sec. 6-T120N-R47W	High water mark on dead tree.
1057.15	"	"
1057.33	"	"
1057.26	SE 1/4 NW 1/4 Sec. 6-T120N-R47W	"
1057.17	SE 1/4 SW 1/4 Sec. 35-T121N-R48W	High water mark on boulder.

SOIL CHARACTERISTICS:

Elevation (fmsl)	Legal Description	Comments
1054.55	SE 1/4 NW 1/4 Sec. 6-T120N-R47W	Edge of organic soil
1054.76	"	Beginning of sandy beach

BOULDER LINES:

Elevation (fmsl)	Legal Description	comments
1057.81	SE 1/4 NW 1/4 Sec. 6-T120N-R47W	Top of boulder line, photo nos. 14 & 15
1055.55	"	Base of boulder line, photo nos. 14 & 15.
1055.55	"	Base of boulder line, photo nos. 14 & 15.
1058.10	SE 1/4 SW 1/4 Sec. 35-T121N-R48W	Top of boulder line, photo nos. 18 & 19
1055.39	"	Base of boulder line, photo nos. 18 & 19
1064.00	"	Top of boulder line
1059.15	"	Base of boulder line
1057.56	"	Top of boulder line
1055.56	"	Base of boulder line
1058.31	"	Top of boulder line
1055.13	"	Base of boulder line
1065.41	"	Top of boulder line
1060.43	"	Base of boulder line
1055.74	"	Base of large boulder, photo nos. 20 & 21

Boulder lines continued:

Elevation (fmsl)	Legal Description	Comments
1056.72	SW 1/4 SE 1/4 Sec. 35-T121N-R48W	Top of boulder line
1054.24	"	Base of boulder line
1056.41	"	Top of boulder line
1054.70	"	Base of boulder line
1056.97	"	Top of boulder line
1053.53	"	Base of boulder line

TERRESTRIAL VEGETATION:

Elevation (fmsl)	Legal description	Comments
1056.11	NE 1/4 SW 1/4 Sec. 6-T120N-R47W	Dead tree 4.0 ft. diameter, photo no. 3
1054.91	"	Dead tree 1.0 ft. diameter, photo nos. 4 through 6
1055.11	"	Dead tree 0.5 ft. diameter, photo nos. 4 through 6
1055.01	"	Dead tree 1.0 ft. diameter, photo nos. 4 through 6
1055.01	"	Dead tree 0.7 ft. diameter, photo nos. 4 through 6
1055.41	"	Dead tree 1.0 ft. diameter, photo nos. 4 through 6
1056.30	"	Dead tree 4.0 ft. diameter
1058.05	"	Live cottonwood tree, 4.0 ft. diameter
1055.05	"	Dead tree, 1.0 ft. diameter, photo no. 10
1057.73	"	Live cottonwood tree, 2.5 ft. diameter, photo no. 9
1054.93	"	Dead tree, 0.8 ft. diameter, photo no. 10
1055.08	"	Dead tree, 1.0 ft. diameter, photo no. 10
1055.08	"	Dead tree, 1.0 ft. diameter, photo no. 10
1055.50	SE 1/4 NW 1/4 Sec. 6-T120N-R47W	Dead tree, 0.7 ft. diameter
1055.38	"	Dead tree, 0.5 ft. diameter
1055.00	"	Dead tree, 0.8 ft. diameter
1054.88	"	Dead tree, 1.2 ft. diameter, photo no. 13
1054.58	"	Dead tree, 0.5 ft. diameter, photo no. 13
1058.5	SW 1/4 SE 1/4 Sec. 35-T121N-R48W	Live cottonwood tree, 4.0 ft. diameter, photo no. 18
1057.41	SE 1/4 SW 1/4 Sec. 35-T121N-R48W	Live tree, 2.5 ft. diameter
1054.91	"	Dead tree, 1.0 ft. diameter
1062.18	"	Live elm tree, 4.0 ft. diameter, photo no. 20
1062.09	"	Live elm tree, 4.0 ft. diameter, photo no. 20
1056.22	"	Live cottonwood tree, 5.0 ft. diameter

Milbank 285W ad

Precipitation	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Normal	0.48	0.37	0.11	0.76	0.50	0.18	0.95	1.11	0.85	0.32	0.34
0.48 Jan	1.11	0.35	0.85	0.42	1.05	0.05	0.15	0.32	0.42	0.24	0.24
1.40 Feb	3.52	3.77	1.88	2.41	1.18	0.14	3.21	1.18	3.13	1.78	1.78
2.28 Mar	2.42	3.77	1.88	1.05	1.48	1.18	1.18	1.18	6.24	0.77	0.77
2.59 Apr	2.89	2.75	4.94	7.25	3.93	1.18	1.18	1.18	3.13	1.78	1.78
3.31 May	2.81	4.08	2.08	2.81	4.87	3.65	1.48	1.48	2.39	0.34	0.34
2.82 Jun	4.07	3.21	1.87	3.88	2.04	1.30	2.57	3.33	5.80	4.08	4.08
2.54 Jul	3.47	1.85	0.19	0.85	0.57	2.28	1.71	3.46	4.23	2.86	2.86
1.87 Aug	3.40	0.20	3.74	0.87	2.21	0.58	0.13	2.24	0.28	0.35	0.35
1.55 Sep	3.58	0.77	0.27	0.02	0.58	0.58	0.13	1.01	1.01	1.30	1.30
0.82 Oct	0.93	0.00	0.13	0.07	0.80	0.80	0.77	0.00	0.00	0.19	0.19
0.40 Nov	0.93	0.00	0.13	0.07	0.80	0.80	0.77	0.00	0.00	0.19	0.19
20.82 Annual	34.51	20.23	19.53	19.53	19.53	19.53	19.53	19.53	19.53	19.53	19.53

Milbank 285W ad

Precipitation	1988	1989	1990	1991	1992	1993	1994
Normal	0.48	0.27	0.00	0.29	0.50	1.40	0.78
0.48 Jan	0.21	0.83	0.46	1.15	0.63	0.25	0.51
1.40 Feb	1.43	2.01	1.35	1.88	1.44	0.49	0.49
2.28 Mar	0.24	4.03	1.42	2.53	2.58	4.18	4.18
2.59 Apr	2.64	0.70	2.32	8.04	1.13	2.94	0.99
3.31 May	1.54	1.35	5.88	8.74	6.01	3.32	3.32
2.82 Jun	1.46	3.69	4.81	5.74	6.83	7.58	7.58
2.54 Jul	5.09	4.82	3.79	0.98	2.41	2.88	2.88
1.87 Aug	2.15	1.39	0.58	1.48	2.43	1.87	1.87
1.55 Sep	0.31	0.95	0.04	0.00	0.97	2.78	2.78
0.82 Oct	0.75	0.10	0.80	1.00	2.09	0.17	0.17
0.40 Nov	0.75	0.10	0.80	1.00	2.09	0.17	0.17
20.82 Annual	22.20	25.71	25.71	25.71	25.71	25.71	25.71

Station 2E ad77 203

Precipitation	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
0.53 Jan	0.72	0.40	0.22	0.05	0.50	1.80	0.50	1.60	0.08	0.76	0.00
0.57 Feb	0.15	0.55	0.00	0.01	0.50	0.53	0.56	0.74	0.59	0.14	0.08
1.36 Mar	0.87	1.26	1.19	2.20	0.49	1.89	1.13	0.31	2.19	0.07	3.19
2.30 Apr	1.80	2.00	0.86	3.19	1.31	5.54	8.22	1.18	2.84	8.21	3.09
2.89 May	3.31	3.84	0.38	2.09	2.01	2.52	4.99	8.09	1.70	6.53	5.43
3.07 Jun	4.30	3.09	3.40	4.81	1.85	4.99	3.08	2.19	2.41	2.32	1.97
2.77 Jul	1.57	2.28	0.99	5.22	1.51	4.33	0.63	1.22	4.12	6.49	4.78
2.76 Aug	4.77	0.77	2.70	1.93	1.93	3.25	0.63	1.22	4.12	6.49	4.78
1.92 Sep	0.64	1.03	2.70	0.30	1.46	0.59	3.80	0.76	0.94	2.81	2.25
1.55 Oct	1.15	0.00	2.08	0.40	0.30	0.28	0.26	0.94	2.84	1.63	1.09
0.86 Nov	0.90	0.47	1.03	0.23	1.10	0.10	0.42	0.07	1.27	0.30	0.12
0.55 Dec	0.90	0.81	0.27	0.52	0.53	0.59	0.17	0.14	0.56	0.25	0.46
21.17 Annual	20.71	18.50	15.12	22.54	13.71	25.89	26.30	20.42	20.24	29.25	28.25

Station 2E ad77

Precipitation	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1988
0.53 Jan	1.16	0.71	0.13	1.58	0.99	0.40	0.84	0.10	0.41	0.20	0.28	
0.57 Feb	0.57	1.15	0.20	1.17	0.41	0.90	0.25	0.15	1.18	0.09	0.82	
1.36 Mar	1.53	5.19	0.83	1.99		1.11	0.16	0.47	2.79	1.37	7.30	
2.30 Apr	0.84	2.97	2.47	3.20		3.31	3.89	0.43	1.08	3.56	3.08	
2.89 May	0.41	2.52	2.39	1.33	0.90	3.31	0.87	2.22	6.51	2.44	2.53	
3.07 Jun	1.25	1.83	6.31	6.64	3.17	3.31	0.67	1.82	2.33	1.82	6.51	
2.77 Jul	0.45	2.63	3.34	4.18	1.71	3.20	2.25	1.82	3.33	2.86	2.91	
2.76 Aug	1.08	2.46	2.79	1.45	5.25	1.47	1.14	5.08	3.33	2.86	2.91	
1.92 Sep	0.65	3.50	1.11	0.11	0.37	0.53	2.51	1.84	1.21	2.17	4.98	
1.55 Oct	0.50	2.69	0.15	2.91	0.08	1.87	4.02	0.94	5.02	1.88	0.44	
0.86 Nov	0.04	4.77	1.24	0.25	0.00	0.89	0.55	1.74	0.00	2.18	0.92	
0.55 Dec	0.26	1.05	0.31	0.21	0.03	0.58	0.83	0.57	0.50	0.78	0.00	
21.17 Annual	6.77	31.47	21.01	24.09		18.99	18.75	17.84	26.47	20.20	31.19	

Station 2E ad77

Precipitation	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953
0.53 Jan	0.48	0.52	0.02	0.02	0.13	0.07	1.14	0.64		2.01	0.62
0.57 Feb	1.28	0.19	0.98	1.05	0.07	1.59	0.16			1.35	0.90
1.36 Mar	1.39	0.53	1.36	1.85	0.90	0.83	0.95			0.85	0.39
2.30 Apr	0.50	2.05	1.82	0.82	4.15	1.80	0.94		0.39	0.46	4.87
2.89 May	3.39	2.71	1.82	1.83	1.85	1.51	2.90		2.29	1.20	2.65
3.07 Jun	8.52	3.27	6.65	4.56	3.72	7.23	2.45		5.37	3.23	6.87
2.77 Jul	2.41	4.50	3.13	5.46	1.78	4.36				0.33	1.80
2.76 Aug	2.92	3.46	2.28	0.32	0.81	2.69	0.91	2.07	3.59	0.65	3.90
1.92 Sep	0.91	2.57	2.90	3.43	1.31	1.95	1.99	0.81	0.35	0.53	0.30
1.55 Oct	2.29	0.74	0.30	3.78	2.92	1.50	2.29	0.68	2.89	0.02	0.31
0.86 Nov	0.98	1.58	0.57	0.67	2.97	0.42	0.53		0.31	1.62	1.77
0.55 Dec	0.00	0.00	0.32	0.56	0.07	0.00	1.18		0.99	1.09	
21.17 Annual	22.77	24.54	21.96	24.17	20.96	23.84	18.36			13.03	23.44

Station 2E ad77

Precipitation	1957	1958	1959	1960	1961	1962	1963	1964
0.53 Jan	0.17	0.33	0.82	0.10	0.02	0.28	0.63	1.84
0.57 Feb	0.77	0.14	0.46	0.47	0.85	0.37	0.28	0.75
1.36 Mar	1.89	0.82	1.90	1.40	1.18	0.86	1.20	0.48
2.30 Apr	0.18	0.36	2.49	2.65	4.46	1.27	1.59	5.83
2.89 May	2.89	3.99	0.75	1.33	4.80	1.25	4.34	2.12
3.07 Jun	0.64	1.57	1.51	3.86	6.71	4.86	5.50	1.26
2.77 Jul	2.79	1.27	3.87	2.46	4.79	3.30	8.25	5.85
2.76 Aug	1.36	4.44	6.03	3.19	1.95	1.34	1.63	1.47
1.92 Sep	2.31	3.88	2.84	2.99	2.74	2.13	2.11	2.29
1.55 Oct	0.58	0.26	0.40	1.20	0.84	0.07	3.54	2.30
0.86 Nov	0.62	1.83	0.62	0.00	0.33	2.48	2.86	0.90
0.55 Dec	0.27	0.33	0.00	0.32	0.14	0.22	0.28	
21.17 Annual	14.46	19.04	21.39	19.98	26.50	18.45	32.30	

Station 2E ad77

Precipitation	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
0.53 Jan	0.26	0.20	0.87	0.24	0.25	0.11	0.78	0.00	0.44	0.33	0.36
0.57 Feb	0.37	1.54	0.18	0.41	1.39	0.59	0.37	0.15	1.83	0.25	0.39
1.36 Mar	0.96	0.11	1.21	0.91	0.45	0.03	0.44	0.23	1.49	0.99	0.89
2.30 Apr	2.84	0.83	1.83	3.94	1.42	0.84	4.28	2.04	2.13	1.74	3.91
2.89 May	9.15	1.82	3.27	5.92	1.42	2.34	1.74	4.06	8.86	2.44	0.75
3.07 Jun	2.85	4.89	2.16	3.88	2.88	6.34	4.04	2.80	3.26	3.20	2.12
2.77 Jul	1.18	2.94	2.78	2.78	2.38	0.90	2.34	2.48	8.13	4.54	2.67
2.76 Aug	2.50	3.81	4.01	5.40	1.13	1.66	3.24	1.99	0.62	2.47	6.91
1.92 Sep	3.05	0.74	0.91	1.88	0.73	1.71	0.79	3.63		1.51	1.72
1.55 Oct	1.18	0.19		2.78	0.28	1.86	0.87	1.90	0.97	0.97	0.17
0.86 Nov	0.31	0.38		0.99	2.29	0.77	1.08	0.03	0.82	0.58	0.33
0.55 Dec	0.00	1.40		0.16	0.09	1.24	0.92	1.09	0.00	0.86	0.30
21.17 Annual	24.75	18.05		28.87	14.75	17.01	20.55	20.41		19.86	20.34

Station 2E ad77

Precipitation	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
0.53 Jan	0.35	0.29	1.35	0.41	1.60	0.00	0.79	0.54	0.23	0.00	1.54
0.57 Feb	0.09	0.78	0.72	0.11	1.42	0.19	0.85	0.32	0.46	0.96	0.39
1.36 Mar	1.71	1.58	0.31	0.84	0.59	0.87	0.54	1.21	1.52	0.46	2.03
2.30 Apr	2.99	2.50	3.95	5.79	1.86	2.61	1.28	1.29	1.22	2.04	2.78
2.89 May	8.78	0.76	1.00	3.65	2.40	1.85	3.13	7.87	3.74	4.20	0.99
3.07 Jun	2.41	2.03	4.72	3.84	1.82	3.29	7.10	1.27	1.35	0.55	6.72
2.77 Jul	3.05	1.80	2.28	1.56	3.21	2.61	1.27	5.00	2.96	1.37	0.32
2.76 Aug	4.59	6.36	4.07	1.65	0.14	0.40	2.91	1.03	0.96	2.37	4.74
1.92 Sep	0.20	1.09	0.63	4.03	0.13	1.78	0.89	0.27	2.91	0.37	1.48
1.55 Oct	0.55	0.99	0.11	1.07	0.47	1.96	4.17	0.61	1.31	0.93	1.89
0.86 Nov	1.09	0.03	0.01	7.03	0.00	0.09	0.62	1.90	0.93	0.20	0.00
0.55 Dec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21.17 Annual	28.85	18.13	20.00	27.42	16.09	10.46	24.68	21.42	18.41	14.07	23.02



Photo No. 1

Line of trees equal to or less than one foot in diameter. Located at the outlet in the SW 1/4 NE 1/4 SW 1/4 Section 6, T120N, R47W. The base of the trees are from elevation 1054.9 to 1055.4 fmsl.



WATER MARK

Photo No. 2

Group of trees one foot in diameter. Note the water marks on the tree trunk. Lake side base elevations of the trees range from 1054.9 to 1055.1 fmsl. Water mark elevation is at 1054.9 fmsl.



Photo No. 3

Four foot diameter tree located near the outlet in the
SW 1/4 NE 1/4 SW 1/4 Section 6, T120N, R47W.
Lake side base elevation of the tree is 1056.11 fmsl.



Photo No. 4

Five foot diameter live cottonwood tree located in the
NW 1/4 NE 1/4 SW 1/4 Section 6, T120N, R47W.
Lake side base elevation of the tree is 1057.73 fmsl.



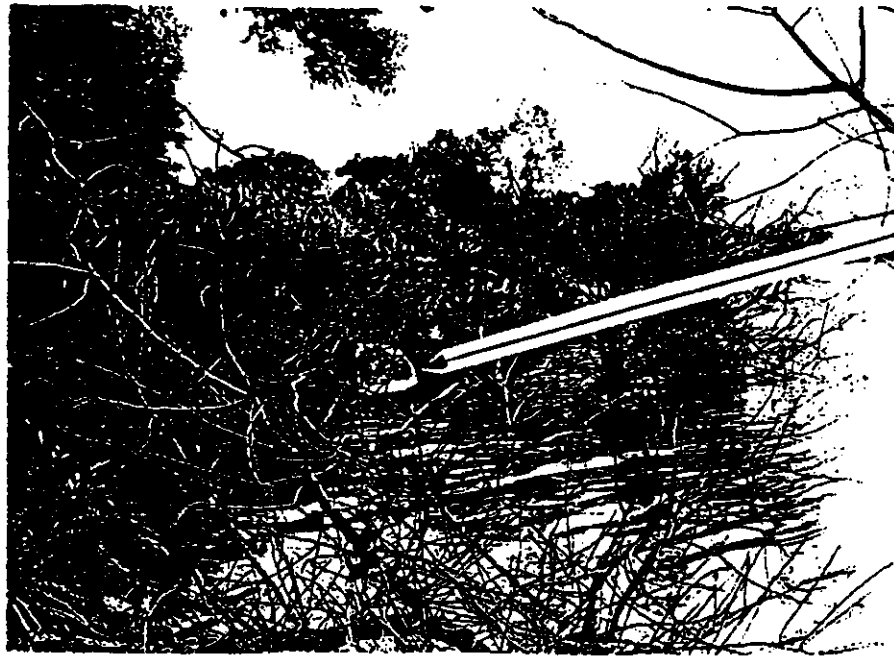
Photo No. 5

Boulderline at a base elevation of 1054.5 fmsl and top cut-bank at elevation 1057.5. NE 1/4 NW 1/4 NE 1/4 Section 1, T120N, R48W.



Photo No. 6

Top of sandy beach where upland vegetation starts and debris has been deposited at elevation 1057.3 fmsl. NW 1/4 NE 1/4 SW 1/4 Section 6, T120N, R47W.



WATER MARK

Photo No. 7

Large boulder with a base elevation of 1055.7 fmsl and
a water mark at elevation 1057.2 fmsl. SW 1/4 SE 1/4
SW 1/4 Section 35, T121N, R47W.



Photo No. 8

Outlet located in the SW 1/4 NE 1/4 SW 1/4 Section 6,
120N, R47W. Outlet elevation at the time of investigation,
1054.78 fmsl.



Photo No. 9

Outlet channel below the outlet located in the SW 1/4
NE 1/4 SW 1/4 Section 6, T120N, R47W.

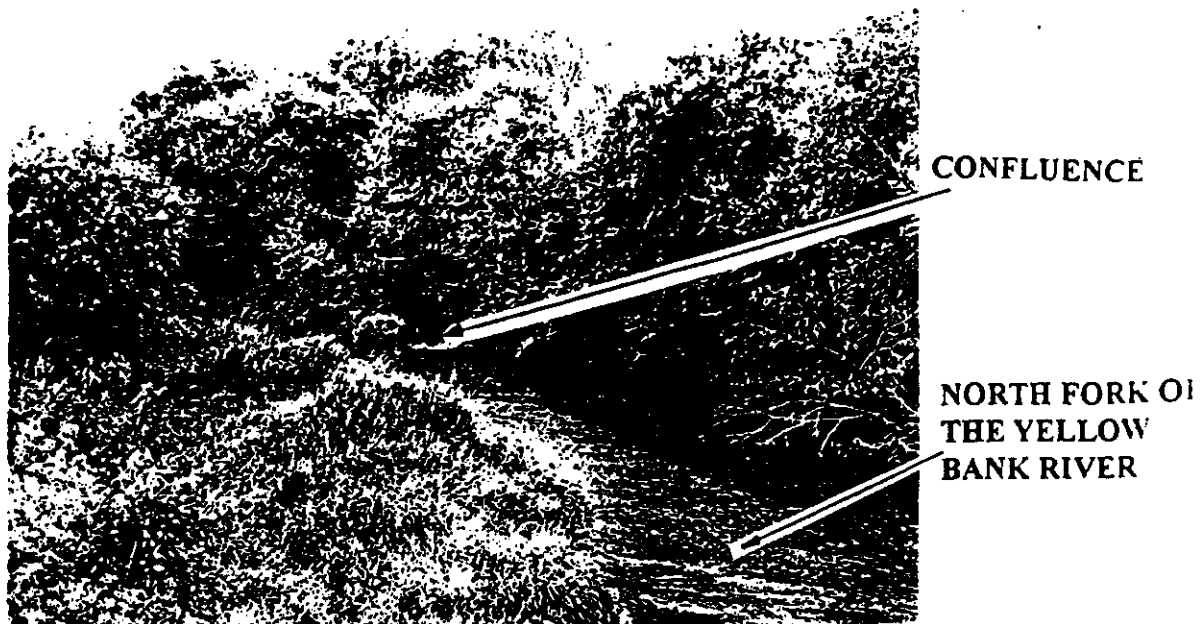


Photo No. 10
Confluence of the outlet channel and the North Fork of
the Yellow Bank River, located in the NE 1/4 NE 1/4
NE 1/4 Section 17, T120N, R47W.

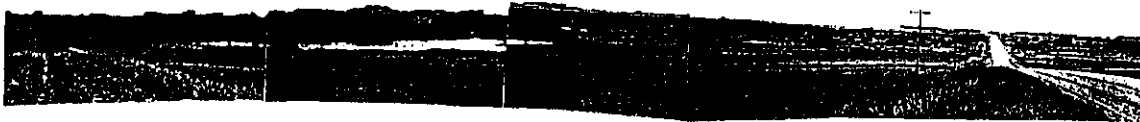


Photo No. 11

Outlet channel below the culvert located through old Highway 12, located between Sections 6 and 7, T120N, R47W.



Photo No. 12

Outlet channel at the culvert located between Sections 7 and 8, T120N, R47W.



Photo No. 13

Outlet channel at the culvert located between Sections 8 and 17, T120N, R47W

**AGENDA
WATER MANAGEMENT BOARD**

December 6 and 7, 1995

**Floyd Matthew Training Center, Joe Foss Building
523 E Capitol, Pierre SD**

Scheduled hearing times are estimates and may be delayed due to prior agenda items

December 6, 1995

8:30 am Call to Order

Approve October 4 and 5, 1995 Board Minutes

Status and Review of Water Right Litigation -- John Guhin

Division of Environmental Services Update -- Steve Pirner

Administer Oath to Department of Environment and Natural Resources Staff

9:00 am Introduction of Staff, Board and Legislative Oversight Committee

Consider Groundwater Discharge Plan Amendment for Wharf Resources -- Gary Haag

10:00 am Consider New Water Permit Applications

- Application No. 1633-1, City of Lemmon -- Eric Gronlund

- Application No. 1624-1, Lyle and Sharon Gunderson -- Rassool Ahadi

Validation of Recognized Vested Water Rights -- Eric Gronlund

Cancellation Considerations -- Eric Gronlund

10:30 am Consider Establishment of an Ordinary High Water Mark and Outlet Elevation for Lake Albert, Grant County -- Lynn Beck

Validation of Recognized Vested Water Right Claim No. 1840-3, Lake Albert, G,F&P -- Eric Gronlund

12:00 pm Lunch

Minutes of the 88th Meeting of the Water Management Board

December 6, 1995

Mr. Priest stated that in 1991, the City of Lemmon applied for a water permit. A \$50.00 permit fee was submitted to DENR at that time but no permit was issued.

Mr. Gronlund stated that the City of Lemmon did apply for a water permit and paid a \$50.00 water permit fee back in 1991, but the permit was never issued because the application was incomplete. As a result of Mr. Ahadi's investigation of the city's municipal water supply, it was found that the city did not have a permit for the golf course.

Mr. Pederson stated that the city has been irrigating the golf course for the last 15 years and were not aware that a water permit was not issued.

Mr. Priest stated that the greens and only a portion of the fairways are being irrigated.

Chairman Rollag asked if the permit could be granted, adding the stipulation requiring an irrigation management plan. In response, Mr. Gronlund stated that when the City of Lemmon first applied for the water permit, Soil/Water Compatibility Permits were still required, and under these permits, management plans were required.

Mr. Gronlund handed out a copy of DENR's proposed qualifications for Water Permit Application No. 1633-1, City of Lemmon (copy in file). Proposed qualifications are the Well Interference Qualification, Irrigation Water Use Questionnaire Qualification, and the following qualifications:

1. Water Permit No. 1633-1 authorized a dam with storage capacity of 11 acre feet of water. The dam may be filled one or more times per year.
2. Permit No. 1633-1 limits the diversion rate from the 11 acre feet storage dam for irrigation of 33 acres to 0.47 cubic feet of water per second (212 gallons per minute).

Mr. Guhin suggested the following qualification be added if the water permit is approved:

The City shall maintain the suitability of the soil for irrigation. Within one year of issuance of this permit, the permit holder shall adopt a written irrigation management plan to maintain the suitability of the soil for plant growth and to avoid damage to the soil structure. The management plan shall provide for testing of the soil at reasonable intervals.

Mr. Freeman MOVED, SECONDED by Mrs. Gunderson to APPROVE Water Permit Application No. 1633-1, City of Lemmon, with staff recommended qualifications, and the addition of Mr. Guhin's qualification. MOTION CARRIED.

Meeting recessed at 11:25 a.m.

Meeting reconvened at 11:30 a.m.

Introductions were made of Staff, Board and Legislative Oversight Committee.

Consider Establishment of an Ordinary High Water Mark and Outlet Elevation for Lake Albert, Grant County

Mrs. Best stated that the Grant County Commission asked that the Water Rights Program to develop a proposal on the appropriate elevation for an outlet structure on Lake Albert in Grant County. In order for the Water

Minutes of the 88th Meeting of the Water Management Board
December 6, 1995

Rights Program to establish the elevation of the outlet structure, an ordinary high water mark (OHWM) must also be established. The Grant County Commission then petitioned for an OHWM investigation and outlet elevation on Lake Albert. An investigation was completed by Lynn Beck, staff engineer with the Water Rights Program.

Mrs. Best entered into evidence the Department's file on Lake Albert (State's Exhibit 1) and Lynn Beck's resume of qualifications (State's Exhibit 2) (exhibits on file).

Mrs. Best stated that Alvin Schwarze had stopped in to speak with Mr. Gronlund the day prior the Board Meeting, asking if he could intervene. Mr. Gronlund contacted Mrs. Best asking that the matter be brought before the Board. Mrs. Best stated that the Water Rights Program has no objection to Mr. Schwarze intervening.

Mr. Brink MOVED, SECONDED by Mr. Rickenbach to ALLOW Mr. Schwarze to become a party to intervene.

Mr. Freeman OBJECTED to the motion for Mr. Schwarze to become a party to intervene. Mr. Freeman stated that he has no objections to interested parties giving their testimony, but rules should be adhered to, whether there are 20 people or there is one person asking to be a late intervenor.

Mr. Hatch stated that late intervenors that are denied by the Board can be called as a witness by an intervening party. MOTION DENIED.

Mrs. Beck stated that the Water Rights Program received a written request from the Grant County Commissioners to establish an outlet elevation on Lake Albert in Grant County. Based on the request, an investigation for the OHWM and outlet elevation was conducted. Mrs. Beck referred to a Grant County highway map (Exhibit 1A) (exhibit not admitted into evidence) showing Lake Albert located five miles east of Milbank. The meander line survey on Lake Albert was conducted in 1882. Mrs. Beck referred to a US Geological Survey map (Exhibit 3) (exhibit not admitted at this time) showing the meander line survey around Lake Albert.

Mrs. Beck stated that there is only one water right on Lake Albert which is held by the Department of Game, Fish and Parks (GF&P). Recognized Vested Water Right Claim No. 1840-3 has a priority date of 1889 and appropriates approximately 606 acre-feet of water per year to fill Lake Albert for public recreational purposes.

Mrs. Beck provided the Board with a copy of the Lake Albert Report (report in file). Historical water levels measured by the Water Rights Program for Lake Albert show a seven foot fluctuation in lake levels in the past ten years. Historical water levels can also be indicated by the existence of boulder lines around the lake shore. These boulder lines are the result of ice action. In 1908, a drainage project was completed to facilitate drainage into Lake Albert. There is a slough at the north end of Lake Albert in the N 1/2, Section 34. A ditch was constructed through the slough to facilitate drainage into Lake Albert. The project also involved construction,

rehabilitation or maintenance of the outlet channel located in the southeast end of Lake Albert, SW 1/4, Section 6.

Mrs. Beck stated that at the north end of the slough, located at the north end of Lake Albert, there is a railroad grade and State Highway 12. Both grades have culverts through them, sloping toward Lake Albert. Field data for Lake Albert was collected in August, 1995. The evidence that was looked at for identifying the OHWM

Minutes of the 88th Meeting of the Water Management Board
December 6, 1995

were erosion, changes in character of the soil, boulder lines and growth of destruction of terrestrial vegetation. The erosion elevation for Lake Albert was at or near elevation 1057 feet mean sea level (fmsl), which is consistent with high water marks left on trees at different locations around the lake.

Mrs. Beck stated there is a sand ridge at the outlet location at the southeast end of Lake Albert, which is the result of ice action over a period of years. Due to high water conditions, few soil characteristics were observed at the time of the investigation.

Mrs. Beck stated that the most relied upon evidence to establish the OHWM are boulder lines and terrestrial vegetation around Lake Albert. Boulder lines and ice pushed ridges can be composed of foreshore and backshore materials. Tree population observations are limited to species, diameter and elevation. There is destruction of terrestrial vegetation at Lake Albert. Water inundation has destroyed cottonwood trees and left tree debris on the lake shore at 1057.4 fmsl.

Mrs. Beck stated that there are three zones of tree growth. The three zones are between elevations of 1054.58 and 1055.50 fmsl for one foot or less diameter trees, 1056.11 to 1058.5 fmsl for trees greater than one foot in diameter and at 1062.10 fmsl where two four foot diameter live trees were found.

Mrs. Beck stated that the existing outlet is a 21 inch by 24 inch corrugated metal culvert (cmp) at elevation 1054.78 fmsl. Grant County installed the existing outlet in the fall of 1994. This culvert was replaced by a 15 inch culvert installed the previous summer. The culverts were installed to alleviate flooding at the north end of Lake Albert. At the time of construction, no old tile was found through the sand ridge at the location of the outlet. Because of the recent construction in the outlet area, the original outlet elevation was lost. To prevent flooding of downstream property, the outlet channel will need to be cleaned out and maintained between Lake Albert and the Yellow Bank River. Culvert capacities along the outlet channel will also need to be studied and replacements made if necessary.

Mrs. Beck's Conclusions are as follows:

1. The term "Ordinary" for any given lake, as defined by established OHWM's can be synonymous with average, normal and yearly. "Ordinary" can also take into consideration periodic fluctuating water levels based upon prevailing climatic conditions and watershed characteristics.
2. A meander line is not at a constant elevation and is not considered in determining the OHWM for any given lake.
3. Historical water levels indicate that Lake Albert has experienced seven feet of fluctuation since July 10, 1986.
4. Man made influences caused by ditch, road and railroad construction may have affected the Lake Albert OHWM.
5. Based upon the field data collected, potential OHWM elevations for Lake Albert are as follows: Visible changes in the character of the soil occur between 1054.6 to 1054.8 fmsl, 1057.0 to 1057.8 fmsl and 1059.4 to 1060.0 fmsl; base of boulder lines occur between 1053.5 to 1054.7 fmsl, 1055.1 to 1055.7 fmsl and 1059.2 to 1060.4 fmsl; visible erosional features occur at 1057.0 to 1057.8 fmsl and 1059.4 to 1060.0; dead

Minutes of the 88th Meeting of the Water Management Board

December 6, 1995

trees are present up to 1056.30 with the majority at or near 1055.0; the lowest terminal elevation for live trees is at 1056.2 fmsl.

6. Based upon the field data summarized in conclusion number 5, potential OHWM elevations for Lake Albert are 1055.0 and 1059.2 fmsl. Data from erosional features and soil characteristics were limited due to the water level in the lake. However, boulder lines and terrestrial vegetation afforded strong evidence at both elevations. Elevation 1059.2 fmsl represents evidence at the higher elevations of the lake bank. OHWM's are not associated with the highest limits of a lake bank but are associated with the upper limits of a lake bank. The majority of the indicators show the OHWM exists at the elevation of 1055.0 fmsl, it is recommended that the OHWM be established at 1055.0 fmsl.
7. The outlet elevation for Lake Albert is currently at 1054.78 fmsl. In order to maintain the OHWM elevation around Lake Albert at 1055.0 fmsl, during those times when the lake is full and spilling, an outlet elevation of 1054.5 fmsl is recommended.

Meeting recessed at 12:00 p.m.

Meeting reconvened at 1:00 p.m.

Mrs. Best entered into the evidence a USGS quadrangle map showing watershed boundaries and the outlet channel on Lake Albert (State's Exhibit 3), and photograph's from Appendix No. 7 in the final report on Lake Albert (State's Exhibits 4 and 5) (exhibits on file).

Mrs. Beck stated that the investigation on Lake Albert was done in August 1995. The water level at that time was 1056.09 fmsl. The water level was measured again on October 11, 1995, and the water level was 1056.07 fmsl.

The Chief Engineer of the Water Rights Program recommends that the:

1. Ordinary High Water Mark for Lake Albert, Grant County be established at an elevation of 1055.0 feet mean sea level (fmsl).
2. Outlet elevation for Lake Albert, Grant County be established at 1054.5 fmsl.

In response to Ralph Hansen's question as to how the normal high water mark was established, Mrs. Beck stated that boulders that surround Lake Albert were surveyed at the base and at the top.

Chairman Rollag administered the oath to Ralph Schmidt.

Mr. Schmidt stated that he supports the Recommendation of the Chief Engineer on establishment of an OHWM and outlet elevation for Lake Albert, Grant County. Mr. Schmidt was concerned about the outlet size of the culvert which drains Lake Albert, which then affects his downstream land. (The downstream drainage is not sufficient to support any greater discharge without renovation.)

Mr. Schmidt asked the question who will pay for any renovations or replacements of culverts, if needed. Mrs. Beck stated that it will be the responsibility of whoever oversees drainage issues within the county. Mr. Schmidt stated that the Grant County Commissioners oversee drainage issues. Mr. Schmidt did not believe the culverts need replacement or renovation, but that a ditch that was dug in 1908 needs cleaning. Over the years, silt and

Minutes of the 88th Meeting of the Water Management Board

December 6, 1995

sediment have developed and the ditch is not visible in some places. With the additional discharge of water, the water is spreading out because there is no runway for the water to drain to the Yellow Bank River.

Chairman Rollag administered the oath to Alvin Schwarze.

Mr. Schwarze, a resident east of Lake Albert, stated that there is a slough on his land that has 30 acres under water. The ditch was originally dug from his slough to the Yellow Bank River.

Mr. Schwarze stated that Lake Albert water levels vary extremely from one end to the other because it does not have a river inlet, but does have runoff water. There is a township road with a culvert in it that restricts Mr. Schwarze's slough. If water is drained out of Lake Albert at too rapid a flow, part of the township road will wash away.

Chairman Rollag administered the oath to Ralph Hansen.

Mr. Hansen stated that the water is backed up on 400 acres, and of the 400 acres, 75% to 80% of this land is farm land. The 1908 ditch was put in for the purpose of draining the land.

Mr. Hansen presented the Board a packet of materials that consists of letters, newspaper articles and data concerning Lake Albert. Mr. Hansen stated that the following landowners around Lake Albert are being flooded: Tim Anderson (15 acres under water); Jim Cronin (3-4 feet under water); David VanVeen (80-85 acres farm land is unfarmable since 1993); Dale Dornbush (16 acres under water); Ron Bowen (35 acres under water); Donald

VanVeen (25 acres under water); Dorothy Laskowski (fence under 30" of water); Gene Holtquist (30 acres under water); and Ralph Hansen (16 acres under water).

Mr. Hansen stated that around Lake Albert there are trees two feet in diameter that are standing in two feet of water. The last culvert put in at the end of Lake Albert was installed 1 1/2 to 2 feet too high according to the depth of the ditch and the visible vegetation under water in the lake. The old Highway 12 embankment grade will not be in danger of erosion and the culvert under Old Highway 12 will take the full capacity of the culvert now at the end of the lake.

Mr. Hansen stated that he believes that Lake Albert is 30 inches over its natural depth at this time. According to a 1908 survey map, the bottom of the inlet culvert should be the same depth as the bottom depth of the outlet culvert. At this time, the inlet culvert has 30 inches of water and the outlet culvert has 8 inches of water.

Mr. Hansen displayed a 1908 survey map which shows drainage, and the inlet and outlet culverts of Lake Albert. Mr. Hansen proposed that the culvert should be 18 inches lower than DENR proposes to put it.

Mr. Hansen stated that according to the data collected, the lake is 2 1/2 to 3 feet over the original high water mark. According to DENR's survey, he believes the culvert elevation should be set at an elevation of 1053.00 feet with an OHWM of 1053.50.

Mr. Hansen stated that he feels that lowering this culvert to the above mentioned elevation, is satisfactory now, but in the future a spillway should be built. A spillway will prevent plugging from debris, etc.

Minutes of the 88th Meeting of the Water Management Board
December 6, 1995

Mr. Guhin asked Mr. Hansen if he is offering the colored map with pictures, the 1908 survey map and packet of materials handed out to the Board as evidence. Mr. Guhin suggested that the packet of materials exclude the written testimony from Gene Holtquist and a letter from Darreld Aden, Grant County Highway Superintendent, based on the fact that they are hearsay. Mr. Hansen stated that he is offering the materials as evidence. Mrs. Best objected to the 1908 survey map being admitted, based on the lack of foundation. Mr. Hansen stated that the 1908 survey map is a copy of the original map which is registered at the courthouse. Chairman Rollag overruled Mrs. Best objection. Mr. Hansen entered into the evidence the map with pictures of the Lake Albert area (Hansen Exhibit 1), the 1908 survey map (Hansen Exhibit 2), and the packet of materials (Hansen Exhibit 3) (exhibits on file).

Chairman Rollag administered the oath to Dick Berens.

Dick Berens, representative for the Grant County Commissioners, stated that the Grant County Drainage Board is recommending that the 24 inch culvert at the base of Lake Albert be lowered 18 inches. If this culvert is lowered, Grant County will agree to replace the downstream culverts with larger culverts to handle the increased capacity, or they are willing to control the flow of water at the outlet culvert of Lake Albert so the downstream culverts will only flow at their capacity.

Chairman Rollag administered the oath to Tim Olson.

Tim Olson, Water Permits Coordinator for GF&P, stated that according to the evidence in Mrs. Beck's report, there are three different water levels around Lake Albert. GF&P as landowners around Lake Albert agree with a high water mark of 1055 fmsl and outlet at 1054.5 fmsl; however, the concern when setting the high water mark

at 1055 fmsl is that public access to the shoreline is narrowed. Mr. Olson stated that the staff recommendations are reasonable and GF&P suggested that the Board adopt those recommendations. They are concerned if the outlet elevations were set at a lower elevation, as was previously suggested.

Mrs. Beck stated that when she surveyed Lake Albert, she used a US Coast and Geodetic Survey benchmark. At the time of investigating Lake Albert, trees were in the water and were inundated and dead. The high water marks on the trees indicate an elevation of 1057 fmsl, which indicated that Lake Albert was a foot higher than when they were conducting the investigation. Mrs. Beck stated that with all the testimony given, she still supports the 1055 fmsl elevation for the OHWM.

Chairman Rollag administered the oath to Gale Selken.

Gale Selken, Engineer with the Water Rights Program, stated that the reason the outlet culvert currently in Lake Albert is 3.5 inches higher than what Mrs. Beck determined, is because the field work conducted to set it at its present elevation was based on sand ridges and trees surrounding the area. Mr. Selken, on behalf of Water Rights, did not establish the elevation of the culvert, but directed the work and was there only as an advisor.

Mrs. Best questioned Mr. Selken as to what will happen if the outlet elevation were set at 1053 fmsl and the outlet structure lowered. In response, Mr. Selken stated that there will be additional land flooding downstream until the water level is maintained.

Mr. Freeman MOVED, SECONDED by Mrs. Gunderson to ADOPT staff recommendations to establish the OHWM at 1055 fmsl, and the outlet elevation for Lake Albert at 1054.5 fmsl. MOTION CARRIED.



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

Lake Albert in Grant County

VWR No. 1840-3

The OHWM was set by the Water Management Board on December 6, 1995.

OHWM elevation 1055.0 fmsl NGVD29

The outlet elevation was set by the Water Management Board on December 6, 1995.

OHWM elevation 1054.5 fmsl NGVD29