



WATER-RIGHT DOCKET

Wind Cave National Park

Docket No: 2

COLD SPRING CREEK INTO NORBECK LAKE

Preliminary Docket Information

11-02-1939: water right record

WATER RIGHT RECORD

Park: WICA

Docket Number:
Federal #2

IDENTIFICATION NO: WICA, R, 26,0505A, F,02,

DITCH/WATER SYSTEM:

SOURCE OF SUPPLY: Cold Spring Creek into Norbeck Lake (Artificial)

LOCATION: N80°54'E 1350 ft. from S½ Cor. Sec. 26, T5S, R5E, BHM

WATER RIGHT:

Appropriator: United States of America, National Park Service

Application/Permit Number: 508

Certificate Record Number:

Date of Priority: November 4, 1939

Quantity of Water: 222.08 acre-feet per annum

Purpose: Stockwater and recreation

Irrigated Land Description:

SUMMARY OF STATUS: This is a federal water right consisting of a dam, creating Cold Springs Lake, also called Norbeck Lake. This project was completed in 1930.

Notice of Intention - November 2, 1939

Notice of Completion of Works - November 2, 1939

Certificate of Withdrawal of Water for Appropriation - November 4, 1939

Certificate of Construction of Works and Appropriation - November 13, 1939

508-2

Jeffrey C. Hughes

Dan McGlothlin

Owen Williams

JEH

DM

OW

February 22, 1996

L54(2380)
WICA/Water Rights

Mr. John Hatch
Chief Engineer, Water Rights Program
Department of Environment
and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

Dear Mr. Hatch:

Please find enclosed two Water Use Reports for 1995 for Wind Cave National Park water rights that are on file with the State of South Dakota. We have also sent a copy of these reports to the U.S. Geological Survey as you requested in your January 22, 1996, correspondence to South Dakota water users. These reports address water uses for water rights numbers 419-2 (Park Headquarters Well) and 33-2 (Wind Cave Pipeline). A Water Use Report for water right number 508-2 (Norbeck Reservoir) is not enclosed as the dam associated with this water right has breached, and the reservoir is no longer functional. The National Park Service will contact your office soon to determine the best course of action concerning this water right.

As you may recall, the National Park Service maintains that it has four vested riparian rights in Wind Cave National Park. We are in the process of quantifying water uses for these water rights and will provide you this information when our analysis is complete. Please let us know whether we should also send this information to the U.S. Geological Survey.

2

If you have any questions concerning these water use documents, please contact Jeff Hughes of my staff at (970) 225-3527.

Sincerely,

Owen R. Williams
Chief, Water Rights Branch

Enclosures

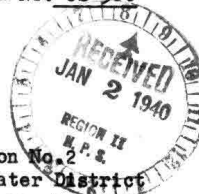
bcc: (all w/Enclosure)
WICA - Superintendent
GPSO - Klukas
Great Plains Cluster - Superintendent
MWFA - Director
2380 - Kimball, Jackson, Flora, Walker, McGlothlin

C O P Y

Form A

CERTIFICATE OF WITHDRAWAL
of
WATER FOR APPROPRIATION
to the
UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Withdrawal No. US 508

Cold Springs Lake (Norbeck Lake)

Name of Project

Wind Cave National ParkWater Division No. 2Fall River Water DistrictCold Springs Creek

Source of Appropriation-Stream

Custer

County

The United States of America, Department of The Interior
National Park Service, having filed "Notice of Intention" to
utilize certain heretofore unappropriated public waters of the State of South
Dakota, in accordance with the requirements of the statutes of the State of South
Dakota, such statutes and authority being contained in Section 61.0137 1939
Revised Code of South Dakota, now therefore;

This is to certify that there is hereby reserved, of the heretofore unappro-
priated waters of Cold Springs Creek, the annual amount of 222.08 acre-
feet of water to maintain storage in Cold Springs Lake reservoir created
by damming said stream at a point N. 80°-54' E., 1350
feet distant from the S $\frac{1}{2}$ Corner of Section 26, Township 5S., Range 5E.
The purpose of such storage is Stockwater and Recreation

This is to certify that there is hereby reserved, of the heretofore unappro-
priated waters of _____ a maximum of _____ cubic feet
per second to be diverted through the _____ ditch, canal
or pipe line at a point located on the _____ bank
_____ feet distant from the _____ Corner of Section _____
Township _____, Range _____ for the purpose of _____
_____ during the months of _____

This certificate and withdrawal shall in no manner prejudice, alter, amend
or affect the rights of any prior appropriator of prior appropriation of water,
nor of any application for appropriation pending on the date of this certificate,
but the rights and privileges of any and all such prior appropriators or appli-
cants for appropriation of water shall remain inviolate and intact, the same as
if the within withdrawal had not been made.

This certificate shall be and is subject to cancellation in accordance with
the provisions of the statutes hereinbefore referred to and under the authority
of which this certificate is issued.

In accordance with the provisions of the statutes hereinbefore referred to,
this certificate is executed at the State Capitol at Pierre, South Dakota, this
4th day of November 1939.

/s/ Dean W. Loucks.
DEAN W. LOUCKS,
State Engineer

Form 17A

WITHDRAWAL NO. _____

Cold Springs Creek Lake
Name of ProjectWater Division No. 2

Fall River Water District

NOTICE OF COMPLETION OF WORKS

Wind Cave National Park,
P.O. Hot Springs, South Dakota.Date Nov. 2, 1939

TO THE STATE ENGINEER OF SOUTH DAKOTA, PIERRE:

Dear Sir: Notice is hereby given of the completion of the construction of Cold Springs Creek Lake reservoir, _____ ditch, or pipe line constructed and owned by the United States of America, Department of the Interior, National Park Service on the _____ in the year 1930. The project provides for the diversion and storage or direct diversion of quantities of water as shown on the plans and reports submitted and the project has been completed in accordance with the said plans and reports, terms and conditions of withdrawals heretofore issued by the State Engineer of the State of South Dakota or as shall be hereafter reported by the Examining Engineer.

1. The proper name of the Federal Agency holding said withdrawal is United States of America, Dept. of Interior, National Park Service.
2. The name and postoffice address of the proper corresponding official for said Federal Agency is Harry Liek, Supt., Wind Cave National Park.
3. The project is located in SE 1/4 of Section 26
NE 1/4 of Section 35
Township 5 South Range 5 East
4. Said water to be used for Stock watering and recreation.
5. The amount of water which said completed works are capable of impounding or conducting to the place of intended use is as shown by information previously submitted or as shall be hereafter reported by the Examining Engineer A. van V. Dunn, Associate Engineer, National Park Service, 601 Sheldon Building, San Francisco, Calif.
6. The amount of land for which said water is available is stock range, 10,000 acres, particularly described as follows: Wind Cave National Park, in Sections 25, 26, 33-36, T. 58., R. 5 E.; Sections 30 & 31, T. 58., R. 6 E.; Sections 6 & 7, T. 6 S., R. 6 E.; & Sections 1-4, 9-12, 13-16, T. 6 S., R. 5 E.

I hereby certify that the facts set forth in the above are true.

See Memorandum from Mr. Liek dated Jan. 22, 1946.

2-4-46
Corrections made
but no question
date or signature
w.p.h.

3/20/46
memo from Dunn
2/28/46 - Corrects
data.

Harry J. Liek
Superintendent

Water Rights

NOTICE OF INTENTION
to the
STATE ENGINEER
of the
STATE OF SOUTH DAKOTA

Cold Springs Creek Lake Project

Wind Cave National Park
South Dakota

Date

Nov 2, 1939

(see memo 1/22/40
from Subt. Liek)

Notice of Intention to divert, store and appropriate water for beneficial
uses from certain streams in South Dakota by the United States of America,
Department of the Interior, National Park Service.

The United States of America, National Park Service
through its officers duly appointed to administer the Wind Cave National Park
in South Dakota, hereby notifies the State Engineer of South Dakota of its in-
tentions to appropriate, by construction, diversion, storage and beneficial use,
the unappropriated public waters of South Dakota, under Section 61.0137 of the 1939
Revised Code of South Dakota. Application is hereby made for the withdrawal of
certain unappropriated public waters of the State of South Dakota in an amount
sufficient to maintain storage in Cold Spring Creek (also called Norbeck) Lake
(artificial)
Reservoir, or to satisfy the requirements of the -- ditch,
canal or pipe line, and the following information is furnished:

1. Representative of the United States of America authorized to act in procurement
of water rights.

Ans. Harry Liek, Superintendent.

2. Name of intending appropriator.

Ans. United States of America, National Park Service.

3. Name and address of agency representing intending appropriator.

Ans. United States Department of Interior

4. Name of reservoir, ditch, canal or pipe line.

Ans. Cold Springs Creek (or Norbeck) Lake.



Signed
Harry J. Liek
Subt.

5. County in which water is to be diverted, stored and appropriated.

Ans. Custer

6. Name of stream from which water is to be diverted, stored and appropriated.

Ans. Cold Springs Creek, tributary to Beaver Creek, legally a "dry draw" at the diversion dam. Also served by Wind Cave Pipe Line, Federal Water Right 33-2.

7. The outlet of the reservoir or the point of diversion of ditch, canal or

pipe line is located N. 80° 54' E. 1350 feet distant from the

South 1/4 Corner of Section 26 Township 5 South Range 5 East.

8. Use to which water directly diverted or diverted and stored, is to be put.

Ans. Stock watering and Recreation.

9. The available capacity of reservoir in acre feet.

Ans. 222.08 acre feet.

10. The carrying capacity of ditch, canal or pipe line in cubic feet per second.

Ans. Used at lake.

11. Acre feet of water to be appropriated annually for diversion and storage in reservoir.

Ans. 222.08 acre feet.

12. Cubic feet of water per second to be appropriated for direct diversion by ditch, canal, or pipe line.

Ans. none.

13. Location of lands to be irrigated.

Ans. none.

14. Class of plans accompanying "Notice of Intention."

Ans. Original tracing and blue print from same, showing final design of dam, reservoir, and related portion of Wind Cave pipe line.

Form NPS-1-1 UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

State South Dakota Tract No. _____
County Quaker Deed No. 7
Civil Subdivision _____ Area _____ acres _____
Name of Park or Area Wind Cave National Park
Right based on withdrawal Date Nov. 13, 1939 Horsthook Lake
Section of Park or Area _____
Legal Description: U. S. Withdrawal 506, Certificate 506-2

Method of Acquisition: Withdrawal Appropriation or Source of funds: Water Rights
Cost (if purchased) or estimated value: _____
Acquired from: State of South Dakota
Accepted by Secretary () Opinion of Att'y. Gen.-title in U. S. () date: _____
Physical Characteristics: A certified right to store 222.06 acre feet of water in the Horsthook Lake for stock watering and recreational purposes with priority of Nov. 4, 1939.

Improvements on Land at time of Acquisition: _____

Existing or outstanding special use permits, reservations, rights, or rights of way: _____

Report Based on: Records of Water Rights Section
Prepared by: A. van V. Dunn, Hydraulic Engineer date: 11/27/43
Map References: NP-WC-4980
Remarks: Diversion on land covered by Deed 5.

Other Supporting Information

[26] From: JIMMY TAYLOR at NP-WICA 8/2/96 9:46AM (709 bytes: 14 ln)
To: Jeff Hughes at NP-WASO-WR
Receipt Requested
Subject: Norbeck Dam Information

L54
WICA/Water Rights

----- Message Contents -----

Jeff:

We are mailing you copies of pertinent information found in several documents relating to the Norbeck Dam. These 12 pages provide background information on the seepage problems and safety issues that lead to the decision to install a 96" culvert and decommission the dam in 1989.

If you have questions or need additional information, please don't hesitate to contact me.

Jimmy D. Taylor
Superintendent



United States Department of the Interior

BUREAU OF RECLAMATION

ENGINEERING AND RESEARCH CENTER

P O BOX 25007

BUILDING 67, DENVER FEDERAL CENTER
DENVER, COLORADO 80225-0007

IN REPLY
REFER TO

D-3390

Certified Mail

Memorandum

To: Regional Director, Rocky Mountain Region, National Park Service,
Department of the Interior, 655 Parfet Street, PO Box 25287,
Denver, Colorado 80225
Attention: Maintenance Division

From: ^{Acting} Chief, Division of Dam Safety

Subject: SEED (Safety Evaluation of Existing Dams) Report for Norbeck Dam -
National Park Service - Wind Cave National Park, South Dakota

Enclosed are two copies of the SEED Report for Norbeck Dam. The SEED Report presents the findings of the SEED examination conducted on June 7-8, 1982, and the recently completed analyses. Future investigations or studies that may be required to further assess safety of dams issues are also discussed in this report.

The overall safety classification of Norbeck Dam is UNSATISFACTORY. This classification is assigned because the embankment will be overtopped by as little as 8 percent of the PMF (probable maximum flood). Such a flood has a recurrence interval as little as 55 years. Theoretically, the PMF overtops the dam by up to 10.9 feet for a duration of 11 hours. Prolonged overtopping of an embankment dam will usually result in failure by breaching.

Seepage is a major concern at the dam, and the potential probably exists for piping of the embankment at high reservoir water surface elevations. The outlet works is inoperable, and there is no effective means of restricting the reservoir storage. Seepage through the foundation and abutments is the primary source of downstream flows.

The National Park Service needs to make a decision whether to rehabilitate the dam or to remove the dam and provide a suitable road crossing such as a bridge or embankment fill with culverts. Preliminary hydraulic calculations related to culvert sizing were sent to you by memorandum dated July 13, 1983.

If the decision is made to keep the dam in service, further spillway studies will be necessary. In addition, seepage must be monitored and embankment and foundation studies performed. Restoration of the outlet works will be necessary.

Questions you may have regarding this report should be directed to the Division of Dam Safety, code D-3320.



Enclosures

Copy to: Director, National Park Service, Department of the Interior,
Washington, DC 20240
(with two copies of this memorandum and enclosures by Certified Mail)

✓ Superintendent, Wind Cave National Park, Hot Springs, SD 57747
Attention: Maintenance Division
(with four copies of this memorandum and enclosures by Certified Mail)

Manager, Denver Service Center, National Park Service, Department
of the Interior, 755 Parfet, PO Box 25287, Denver, CO 80225,
Attention: Midwest/Rocky Mountain Team
(with one copy of this memorandum and enclosures by Certified Mail)

Manager, Denver Service Center, National Park Service, Department
of the Interior, 755 Parfet, PO Box 25287, Denver, CO 80225,
Attention: Branch of Professional Consultants, DSC-MPG
(with one copy of this memorandum and enclosures by Certified Mail)

OPTIONAL FORM NO. 10
JULY 1973 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : Chief, Inspections Branch

Denver, Colorado
DATE: January 18, 1983

FROM : Thomas Brown

SUBJECT: Examination Report of Norbeck Dam for SEED (Safety Evaluation of Existing Dams) Program - National Park Service - Wind Cave National Park, South Dakota

SYNOPSIS OF EXAMINATION

This initial SEED examination of Norbeck Dam was performed during June 1982. The field examination was performed on June 7 and 8, 1982.

A. Description

Norbeck Dam is located in the SE1/4 sec. 26, T. 5 S., R. 5 E., Black Hills principal meridian, on Cold Spring Creek in Custer County, South Dakota, about 11.5 miles north of the town of Hot Springs, South Dakota.

Norbeck Dam is an earthfill structure with a downstream rockfill at the toe. The dam is about 40 feet high. The crest of the dam (about elevation 4260) is about 40 feet wide and approximately 500 feet long. The upstream and downstream slopes of the dam are 3:1 and 2:1, respectively. A cutoff trench was provided under the dam. The cutoff trench is founded on bedrock. Outside the cutoff trench the dam is founded on unconsolidated Quaternary alluvial deposits of unknown thickness which cover the valley floor. The principal appurtenant structures at the dam are the spillway and outlet works. The side-channel spillway is located on the right abutment. It is an uncontrolled concrete weir with a crest length of 102 feet at about elevation 4255 and a concrete-lined discharge channel which extends about 38 feet downstream from the crest. From this point to the original stream channel, the discharge channel is unlined. A stilling basin was not provided.

The outlet works consists of a 12-inch-diameter cast iron pipe through the embankment near the left abutment. The conduit is controlled by a valve near the center of the embankment, just upstream from the crest.

The total capacity of Norbeck Lake does not exceed 300 acre-feet.

Norbeck Dam was designed by the Division of Agriculture Engineering, U.S. Bureau of Public Roads, and constructed by the U.S. Bureau of Biological Survey, Department of Agriculture, in 1929 to impound water for maintenance of game on what was then the Wind Cave National Game Preserve, and provide a



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highway crossing of Cold Springs Creek. The dam is now under the jurisdiction of the NPS (National Park Service).

The dam was initially known as Cold Springs Creek Dam.

Norbeck Reservoir has never stored water as intended because of excessive foundation seepage at the dam and leakage from the reservoir.

B. Conclusions

1. The present NPS downstream hazard potential classification for Norbeck Dam is category 2 [COE (Corps of Engineers) classification], indicating significant downstream hazard. Evaluation of the downstream hazard potential may indicate a lesser hazard potential rating is warranted.
2. Emergency preparedness considerations are adequate with the exception of reservoir evacuation potential and operating instructions. The reservoir evacuation potential requires additional information for proper evaluation, and the operating instructions are considered inadequate due to the lack of an SOP for the structure.
3. An estimated MPF (maximum probable flood) for Norbeck Dam has been developed by the Bureau (Bureau of Reclamation). It is apparent that the existing structures cannot safely accommodate the estimated MPF.
4. Evaluation of the suitability of existing structures with regard to hydrologic considerations will require selection and routing of an IDF (inflow design flood). Selection of the IDF will be based on the hazard potential rating and routing the IDF will require acquisition and/or development of additional data.
5. Bedrock at the dam is composed of sandstone and shale of the Deadwood Formation underlain by Precambrian metamorphic schist. As indicated by exposures upstream and downstream from the dam, alluvial deposits of brown sandy clay with some gravel overlie bedrock at the damsite and throughout the reservoir area. The major part of the embankment is founded upon these alluvial deposits. Dark red-brown to maroon sandstone and maroon to gray shale of the Deadwood Formation form the abutments of the dam. The foundation of the dam is competent to support the dam and, except for seepage, has performed satisfactorily. It has not been determined whether the alluvial foundation materials are susceptible to liquefaction. The potential for liquefaction in the dam foundation is considered to be low, based on the general description of the unconsolidated alluvial valley fill.
6. The side channel spillway is founded on bedrock. The foundation of the spillway is competent to support the structure and has performed satisfactorily. Erosion has occurred in the unlined portion of the spillway chute near the downstream toe of the dam on the right abutment during flows through the spillway.

2. Darton, N.G., and Sidney Paige, Description of the Central Black Hills, South Dakota: U.S. Geol. Survey Geol. Atlas Folio 219, Map 1:125,000, 1925
3. Darton, N. H., Geologic Map of South Dakota, scale 1:500,000, 1951
4. Osterwald, F. W., and B. G. Dean, Preliminary tectonic map of western South Dakota, MF-128, lat. 43° to 45°55', long. 101 to 104°, scale 1:500,000, (see Bulletin No. 1087-I), 1957
5. Tolen, Ron, Black Hills Geological Guidebook, Northern Hills Printing, 1974
6. Radbriech-Hall, D. H., R. B., Colton, W. E. Davis, B. A. Skipp, Ivo Lucchitta, and D. J. Varnes, Preliminary landslide overview map of the conterminous United States, MF-771, lat. 25 to 50°, long. 65 to 125°, scale 1:7,500,000, 1976
7. Algermissen, S. T., and David M. Perkins, A Probabilistic Estimate of Maximum Acceleration in Rock in the Contiguous United States, USGS Open File Report No. 76-416, 1976
8. Harris, David V., The Geologic Story of the National Parks and Monuments, Second Edition, Colorado State University Foundation Press, 1978
9. National Earthquake Information Service, Earthquake Data File on Microfilm: Compiled by NOAA Environmental Data Service, Boulder, Colorado, 1979
10. Technical Data Book, Norbeck Dam, National Park Service, prepared by Bureau of Reclamation, 1982

B. Operational Status During Field Examination

Reservoir water surface elevation: 4236.5 (approximate)
Reservoir storage: unknown
Releases:

Spillway: 0
Outlet works: 0

Normal high water elevation: 4255 (estimated)
Maximum reservoir elevation: unknown
Maximum reservoir elevation to date: 4255+

C. Historical Events

- 1928 - Funding appropriated for dam on Cold Springs Creek.
1929 April 9 - Bids opened by Bureau of Biological Survey.

- 1929 May - Gould and Herrin of Denver awarded contract.
- 1929 September - Completed construction of the dam.
- 1948 or 1949 - Reservoir fills and spillway discharges.
- 1982 June 7 and 8 - Bureau onsite SEED examination.

D. Emergency Preparedness

1. Downstream Hazard Potential

Approximately three-fourths mile upstream from Norbeck Dam, Cold Springs Creek passes under U.S. Highway No. 385. The road fill is as high as the dam, and a 6-foot-diameter conduit is provided for streamflows. Inflow to the reservoir during flooding would be modified by this barrier.

Approximately three-fourths mile downstream from the damsite, Cold Springs Creek joins Beaver Creek. The channels of Cold Springs and Beaver Creek are confined to well-defined, uninhabited valleys below the dam as shown in photographs CE-25 and -26 and the Wind Cave Quadrangle Map included in the Technical Data Book.

NPS personnel indicate the (Carl) Sanson Ranch, approximately 7 miles downstream from the dam on Beaver Creek, shown on the Wind Cave Quadrangle, is still the nearest inhabited structure. This area was not accessed due to lack of authorization from the owner. The area near the Streete Ranch, downstream from the Sanson Ranch on Beaver Creek, was accessed via the county road. As can be seen on the quadrangle sheet, the topography in this area flattens considerably from that nearer the dam. Beaver Creek was dry in this area, apparently indicating the flow noted at the junction of the creeks below the dam becomes submerged in the intervening area.

The present NPS (based on COE classification system) downstream hazard potential classification for Norbeck Dam is category 2, indicating significant downstream hazard. The downstream hazard should be evaluated to verify the appropriateness of the present classification.

2. Access to the Site

Norbeck Dam is located approximately 11.5 miles north of Hot Springs, South Dakota, in Wind Cave National Park (fig. 1). Access to the dam from Hot Springs is via U.S. Highway No. 385 for approximately 11 miles to the intersection with South Dakota State Highway No. 87. From this intersection, the dam is approximately one-half mile north on South Dakota State Highway No. 87 which crosses the top of the dam. The dam is approximately 1.5 miles from the Wind Cave National Park Headquarters. U.S. Highway No. 385 is open year round as is South Dakota State Highway No. 87 to the north park boundary. South Dakota State Highway No. 87 within the park is maintained by the NPS. Access to the dam from Custer, South Dakota, is via U.S. Highway No. 385 south approximately 19 miles to the intersection with South Dakota State Highway No. 87 and north one-half mile to

samples were tested and the averages of the soils intended for use in the dam were: fine gravel - 3 percent; fine-to-coarse sand - 20 percent; very fine sand - 34 percent; silt - 23 percent; and clay - 20 percent.

While the similarity of the tested soils to the foundation soils is not known, it at least can be noted that the test averages do not suggest liquefiable soils.

Based on the field observations by Dale Weskamp, the foundation soils underlying Norbeck Dam may be considered to have a low to negligible liquefaction potential.

E. Seepage

Norbeck Reservoir has experienced extremely high seepage losses since construction and, consequently, has filled on only a few occasions. The principal cause of the high seepage losses is reportedly percolation of reservoir waters into sandstone and shale of the Deadwood Formation [8].

The bedrock underlying the central portion of Norbeck Dam consists of schist which is reportedly "rotten and porous" [8]; however, it is probable that underseepage primarily passes through joints and fractures in the schist underlying the dam. High seepage flows probably are also passing through the Deadwood Formation (known to be water-bearing [8]) of the abutments and underlying schist contact and through the Deadwood Formation (described as "porous and permeable" [8]).

Considering the lack of evidence of piping action associated with seepage during both normal and high reservoir levels, the seepage does not appear hazardous to the safety of the dam at present. However, seepage flows should be collected and measured on a regular, periodic basis such as once every month or two, and the results plotted for review.

F. Landslides and Slope Stability

High, steep slopes are not present around the reservoir. Review of topography and air photographs does not suggest any potential for massive landslides into the reservoir. The potential for landslides into the reservoir of a magnitude hazardous to the dam is considered negligible.

G. Instrumentation

No instrumentation currently exists at Norbeck Dam. The only instrumentation recommended for geologic concerns is devices for collection and measurement of any and all seepage exiting within one-fourth mile downstream from the dam embankment. Measurement of seepage flows should be done on a regular, periodic basis. The structure has only occasionally experienced a full reservoir condition but has experienced it repeatedly without reported hazards due to the excessive seepage. Therefore, additional instrumentation is not considered necessary. Seepage measurement data should be reviewed during future examinations or immediately if unexpected fluctuations occur.

82-SOD-I. - Evaluate the need to excavate embankment material adjacent to the spillway intake channel.

Response. - This embankment material should be removed if hydraulic considerations dictate. If the material is removed, however, the intake channel should be properly protected against erosion.

82-SOD-J. - Evaluate the need to protect the right downstream groin and toe of the dam from erosion due to spillway operation.

Response. - All portions of the dam and abutments should be protected from erosion due to spillway operation. The extent of the protection should be based on hydraulic considerations.

82-SOD-K. - Restore operability of the outlet works.

Response. - Prompt completion of this recommendation is necessary to adequately control the level of the reservoir. As stated previously, it is desirable that the reservoir be restricted to a low level to control any potentially dangerous seepage problems.

Analyses

A. Scope of Analyses

This section presents a comprehensive safety of dams description of the geotechnical aspects of Norbeck Dam, as well as analyses of recognized issues and recommendations for the dam.

B. Historical Performance

Norbeck Dam was designed and constructed in 1929 to impound water for maintenance of game on the former Wind Cave National Game Preserve and to provide a highway crossing (South Dakota State Highway No. 87) of Cold Springs Creek. Very limited data exist as to design and construction of the dam. It has never stored water as intended because of excessive foundation seepage beneath the dam and leakage from the reservoir.

Little information is available on the operation and maintenance of the dam. The only known report, other than the January 18, 1983 Examination Report, was a letter dated January 22, 1931, addressed to the Chief, Biological Survey [1], on the condition of the dam shortly after construction. That report mentions several areas of seepage at the dam that were not believed to be a significant problem at that time. This confirms the fact that seepage has been occurring since filling of the reservoir.

The SEED examination noted seepage at the dam and stated that it was considered to be almost entirely through the foundation. The Examination Report also mentions that the outlet works was inoperable and that the only downstream releases of reservoir water for many years had been the result of seepage. The seepage appeared clear with no signs of piping.

The condition of the embankment was considered fair, due to a number of maintenance items which need to be completed. These include holes and voids in the embankment face, the cause of which needs to be determined; vegetation on both faces that impedes examination of the dam; erosion of the spillway channel close to the embankment; and erosion of the embankment behind a rock wall near the outlet works basin, causing instability of the wall.

C. Seepage

Seepage at Norbeck Dam has been present since construction, as evidenced in this passage from a 1931 letter to the Chief, Biological Survey [1]:

"Study of the geological conditions found at the damsite disclosed the fact that at that particular point the valley has been eroded down through the so-called Deadwood Formation, there only about 50 feet in thickness (approximately just equaling the height of the dam), to the Archaean schist, which was found to be quite rotten and porous. The Deadwood is known to be a water-bearing formation, geologically the lowest of the stratified formations of the region, and very porous and permeable by water at its contact with the underlying Archaean bedrock. The percolating waters gave much trouble during construction but a cutoff trench of puddled clay, 10 feet in thickness at its base, was successfully deposited and compacted across the valley for the entire length of the dam. This trench, of course, does not prevent the free percolation of water around the dam throughout the Deadwood Formation, which is exposed along the sides of the valley and becomes covered by water as it rises in the lake. This condition alone is believed to be responsible for the springs below the dam and for the appearance of new springs at higher elevations as the water in the lake rises. A similar discharge from springs appeared after the heavy rainfall which occurred in the summer of 1929 and was closely watched during the remainder of the construction period. During that season, as appears to have been the case during the summer and fall of 1930 also, there was very little, if any, increase in the discharge of the creek, which varied from about 10 to 20 miner's inches at the lower weir, the amount increasing with heavy precipitation and decreasing during droughts, just as other springs throughout the region increased and decreased. The fact that the water below the dam always has been and is crystal-clear and pure is reassuring with respect to this problem."

Seepage was observed during the June 1982 SEED examination. Seepage was appearing in the original stream channel and near the right abutment in the valley downstream from the dam. In addition to the substantial surface flows, seepage was indicated by lush vegetation and wet and boggy areas. All of the seepage observed at the dam is believed to pass through the foundation rather than the embankment. Seepage appears to be flowing through joints and fractures in the bedrock foundation. It should be noted that the reservoir was at approximately elevation 4236.5, supplying about 15 feet of head. Because of excessive seepage, the reservoir has never stored water as intended. The effects of seepage at high reservoir water levels are not known. It has been stated in the Examination Report that since the outlet works is inoperable, the reservoir empties by seepage and evaporation.

WIND CAVE NATIONAL PARK
DAM SAFETY EMERGENCY ACTION PLAN

Norbeck Dam

Recommended:	<u>Stuart D. Bone</u>	<u>9-9-83</u>
	Chief Ranger	Date
	<u>Lowell Dutton</u>	<u>9-9-83</u>
	Facilities Manager	Date
Approved:	<u>James A. Randall</u>	<u>9/9/83</u>
	Superintendent	Date

WIND CAVE NATIONAL PARK

Norbeck Dam

DAM SAFETY EMERGENCY ACTION PLAN

Description

Norbeck Dam is located on Cold Spring Creek in Wind Cave National Park, Custer County, South Dakota, about 11.5 miles north of the town of Hot Springs, South Dakota. (SE $\frac{1}{4}$, Sec. 26, T5S, R5E, Black Hills Principal Meridian).

Norbeck Dam was designed by the Division of Agriculture Engineering, U. S. Bureau of Public Roads, and constructed by the U. S. Bureau of Biological Survey, Department of Agriculture, in 1929 to impound water for maintenance of game on what was then the Wind Cave National Game Preserve, and provide a highway crossing of Cold Springs Creek. The dam is now under the jurisdiction of the National Park Service. The dam was initially known as Cold Springs Creek Dam.

Norbeck Reservoir has never stored water as intended because of excessive foundation seepage at the dam and leakage from the reservoir. The total capacity of the reservoir does not exceed 300 acre-feet. The reservoir has been dry most of the time since 1936 due to seepage downward, through the bedrock and through the dam. It partially filled in 1960, 1972 (the year of the Rapid City Flood) and 1982.

Norbeck Dam can be described as a homogenous, earth-filled embankment modified by a rockfill toe. The height of the dam above the stream bed is approximately 40 feet. Crest elevation is approximately 4,260 feet with approximate crest width and length 40 and 500 feet, respectively. State Route 87, a paved roadway, crosses the crest. It is the principal north/south scenic drive in Wind Cave National Park and also traverses Custer State Park.

The hydraulic height of the dam is approximately 35 feet based on an estimated spillway crest elevation of 4,225 feet. Upstream and downstream slopes of the embankment are 3:1 and 2:1, respectively.

The spillway consists of an uncontrolled side channel-trapezoidal concrete intake structure located at the right abutment of the dam. The intake channel is 102 feet in length constructed at an estimated elevation of 4,255 feet.

The spillway tapers irregularly with the maximum depth and width at the downstream end at the roadway slab. The roadway slab is 17.5 inches in thickness, 48 feet in length, with a span of 11 feet, 2 inches at the downstream end. A steeply sloped concrete discharge channel extends approximately 38 feet downstream from the roadway. From this point on to the stream channel, the spillway channel is unlined and drops very steeply. A stilling pool has been created by a rock weir.



United States Department of the Interior

NATIONAL PARK SERVICE
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA 57747

IN REPLY REFER TO:

D-3111
D46

February 23, 1989

Memorandum

To: Chief, Dam Safety Office, Bureau of Reclamation
From: Acting Superintendent, Wind Cave
Subject: Decommission of the Norbeck Dam

This is to advise your office of the recent approval of an Environmental Assessment and Finding of No Significant Impact for decommission of Norbeck Dam.

This spring a contract will be initiated for the installation of a 96-inch diameter reinforced pipe culvert to effectively discontinue the intended function of the dam, thereby removing the existing hazard classification.

Because of the aforementioned action, your office will want to re-evaluate the planned evaluation by Bob Campbell scheduled for October 16 - 20, 1989.

If you have any questions regarding this matter, please contact us.

William W. Swift

cc:
Ron Hermance, RMR-MR

Jeffrey C. Hughes JH

Dan McGlothlin WPH
Col

Owen Williams OWW

Dan B. Kimball
For
WPH
2-17-9

July 16, 1996

L54(2380)
WICA/Water Rights

Memorandum

To: Regional Solicitor, Office of the Field Solicitor, Denver, CO
From: Chief, Water Resources Division
Subject: Request for Assistance for Water Rights Issues at Wind Cave National Park, South Dakota

As a result of a July 8, 1996, telephone conversation between Jeff Hughes of my staff and Marilyn Averill of yours, this requests your assistance regarding two water rights issues at Wind Cave National Park (WICA), South Dakota.

Norbeck Reservoir

Background: Norbeck reservoir was constructed in the early 1930's within the WICA boundary. The reservoir is located on lands either reserved from the public domain for park purposes or transferred to WICA from the U.S. Forest Service. The State of South Dakota assigned to the park U.S. Water Right 508-2 for the reservoir and issued a CERTIFICATE OF WITHDRAWAL OF WATER FOR APPROPRIATION on November 4, 1939, and a CERTIFICATE OF CONSTRUCTION OF WORKS AND APPROPRIATION on November 13, 1939 (copies attached). The park was authorized to store 222.08 acre-feet of water per year in the reservoir for stockwater and recreational purposes.

The term "U.S. Water Right" was a special feature of the South Dakota Water Code of 1939. Specifically, Section 61.0137 stated: "Whenever any proper officer of the United States...shall notify the State Engineer that the United States intends to utilize certain specified waters...the State Engineer may withdraw from other appropriators the waters so described and unappropriated at the date of such notice... When the construction of the works for the utilization of such waters...has been completed by the United States, such waters shall be deemed to be appropriated to be used in connection with the works so constructed by the United States." "U.S. Water Rights" are no longer issued by the State of South Dakota.

Issue: WICA no longer uses water from Norbeck Reservoir. According to WICA personnel, the reservoir has rarely retained water due to seepage losses. Presently, a culvert is installed at the bottom of the dam to allow the stream to flow through. According to the WICA Superintendent (Jim Taylor), the National Park Service (NPS) has no plans to use the reservoir for water storage. The State of South Dakota has been informed that the reservoir is no longer operating as documented. The State has asked the NPS to provide information accurately describing the status of the water right.

The NPS has no desire to hold a water right for Norbeck reservoir. We request your advice on the best way to proceed in this matter.

Vested Riparian Water Rights

Background: The NPS maintains that WICA acquired four vested riparian water rights with the acquisition of land parcels. On August 14, 1987, the WICA Superintendent supplied the Water Rights Branch with four signed, notarized State claim forms for vested riparian water rights. Those application forms were captioned "Application For Permit To Appropriate Water Within The State Of South Dakota."

On August 24, 1987, your office responded to a request by this office to review the above described claims for vested water rights. At that time your office responded, "...the State does not have jurisdiction over the NPS to cancel or declare riparian rights abandoned unless such action was part of a general adjudication...[I]t is incorrect and inappropriate for the NPS to file applications for permits to appropriate or affidavits, especially since the rights of concern are riparian, not appropriative...The NPS is not applying for permission from the State to continue to use its vested riparian rights. It is intending only to inform the State as a matter of comity of the existence of the NPS riparian rights so the State engineer can effectively administer the water rights system which must account for the vested rights of all riparians, including the NPS." The memo went on to recommend that the NPS inform the State of its vested riparian rights and include the information needed by the State to administer its water rights system (e.g. date of use, location of use, amount, etc.).

On September 3, 1987, the NPS submitted a package for "...four vested riparian water rights owned by the United States..." to the State of South Dakota. This package did not include the disputed State application forms, but did include supporting information (copies of maps, enabling legislation, location, amounts of water claimed, stream names, original owners of the rights, etc.) deemed necessary for the State to administer the water rights.

On October 7, 1987, the South Dakota Chief Engineer responded to the NPS by stating, "If the National Park Service wants approval of the four vested water rights, the claims must be filed on the appropriate application forms." The applications (Form 2) were attached and entitled "Application for Permit to Appropriate Water Within the State of South Dakota." The Water Rights Branch acted in accord with your opinion and did not file the application form.

Issue: Little has changed since 1987. The State still requires the same forms to be filed if they are to recognize the NPS claims. However, in light of the recent 9th Circuit Court of Appeals decision in U.S. v. State of Oregon written on December 28, 1994, it appears that reconsideration of our position might be appropriate. Our question, therefore, is should the NPS file the State application form at this time?

Please provide us your opinion at your earliest convenience. If you have any questions concerning these issues, please contact Jeff Hughes at (970) 225-3527.

Attachments

cc: SOL (Denver) - Averill (w/Attachments)
bcc: WICA - Superintendent (w/Attachments)
Great Plains Cluster, Executive Committee Leader - Albright
Great Plains Cluster, Senior Natural Resources Program Leader - Cinnamon
Midwest Field Area - Director
Midwest Field Area, Water Resources Program Coordinator - Klukas
(w/Attachments)
2380 - Williams, Jackson, Flora, Walker, Kliwinski, McGlothlin
FNP:JHughes:mf:7/16/96:S:\WRB\JCH\WICA-SOL.REQ

SEAL

C O P Y

Form A

CERTIFICATE OF WITHDRAWAL
of
WATER FOR APPROPRIATION
to the
UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Withdrawal No. US 508Cold Springs Lake (Norbeck Lake)

Name of Project

Wind Cave National ParkWater Division No. 2

Fall River Water District

Cold Springs Creek

Source of Appropriation-Stream

Custer

County

The United States of America, Department of The Interior
National Park Service, having filed "Notice of Intention" to
utilize certain heretofore unappropriated public waters of the State of South
Dakota, in accordance with the requirements of the statutes of the State of South
Dakota, such statutes and authority being contained in Section 61.0137 1939
Revised Code of South Dakota, now therefore;

This is to certify that there is hereby reserved, of the heretofore unappro-
priated waters of Cold Springs Creek, the annual amount of 222.08 acre-
feet of water to maintain storage in Cold Springs Lake reservoir created
by damming said stream at a point N. 80°-54' E., 1350
feet distant from the SE Corner of Section 26, Township 5S., Range 5E.
The purpose of such storage is Stockwater and Recreation

This is to certify that there is hereby reserved, of the heretofore unappro-
priated waters of _____ a maximum of _____ cubic feet
per second to be diverted through the _____ ditch, canal
or pipe line at a point located on the _____ bank
_____ feet distant from the _____ Corner of Section _____
Township _____, Range _____ for the purpose of _____
_____ during the months of _____

This certificate and withdrawal shall in no manner prejudice, alter, amend
or affect the rights of any prior appropriator of prior appropriation of water,
nor of any application for appropriation pending on the date of this certificate,
but the rights and privileges of any and all such prior appropriators or appli-
cants for appropriation of water shall remain inviolate and intact, the same as
if the within withdrawal had not been made.

This certificate shall be and is subject to cancellation in accordance with
the provisions of the statutes hereinbefore referred to and under the authority
of which this certificate is issued.

In accordance with the provisions of the statutes hereinbefore referred to,
this certificate is executed at the State Capitol at Pierre, South Dakota, this
4th day of November 1939.

/s/ Dean W. Loucks.
DEAN W. LOUCKS,
State Engineer

Gary M. Smillie
GMS
Owen Williams
G.S.

July 15, 1988

L54(479)
RMR/WICA/Norbeck Dam

Memorandum

To: Jim Riddle
Rocky Mountain Regional Office

From: Chief, Water Resources Division

Subject: Permit requirements for removal of Norbeck Dam

In response to your request to Ken Czarnowski of my staff to investigate permit requirements for the removal of Norbeck Dam in Wind Cave National Park, we relay the following information.

Mr. Gale Selken, Division of Water Rights, Department of Water and Natural Resources, State of South Dakota was identified as the responsible State contact. He said that no State or Federal permits were required for removal of the dam. However, a "breach plan" describing the dam removal is required by his office. The State will review this plan and allow the work if environmental damage will not occur.

Please be aware that the existing water storage rights for Norbeck Lake, held by the United States, will be abandoned with dam removal. As this right has real value, careful management consideration should be directed at this point. If another location for water storage is being contemplated for future development, then action through the Water Rights Branch to change the location of this right should be initiated prior to dam removal.

The breach plan should be forwarded to the State well before the planned beginning date of the project. Send the plan to the address shown below. If you have any further questions, please contact Ken Czarnowski (303) 221-8339 or Gary Smillie (303) 221-8303.

Mr. Gale Selken
Division of Water Rights
South Dakota Department of Water and Natural Resources
Joe Foss Building
Pierre, South Dakota 57501

Phone: (605) 773-3151

FNP: G. Smillie; SKP: 7-15-88:573

Norbeck Dam removal

February 28, 1946.

MEMORANDUM for the Regional Director, Region Two.

Reference is made to your memorandum of February 7, calling attention to the apparent error in date of Mr. Liek's signature on Notice of Completion of Works in connection with the perfection of Federal Water Withdrawal No. 808 (Deed No. 7) for Wind Cave National Park.

By letter of February 21, State Engineer Dean W. Loucks advises that the original notice was properly dated November 2, 1939, and that only our copies seem to have been in error. Please correct the date on the field copies of the deed assembly.

ESCD SA VAN V. ELLIN

Chief, Water Rights Division.

AvVD:sh.

In duplicate.

C O P Y

DEAN W. LOUCKS, STATE ENGINEER
STATE OF SOUTH DAKOTA
OFFICE OF STATE ENGINEER
PIERRE

February 21, 1946

A. van V. Dunn, Chief,
Water Rights Division,
U. S. Dept. of the Interior,
National Park Service,
Chicago, Illinois 54

Re: Withdrawal #508
Wind Cave
National Park.

Dear Mr. Dunn:

We have your letter of February 12 in which you call attention to an apparently erroneous date on withdrawal #508.

This error is apparently only on your copy, since our copy is dated November 2, 1939. We thank you for your attention to the matter.

Sincerely yours,

(Sgd) Dean W. Loucks.

DEAN W. LOUCKS,
State Engineer.

DWL/ep

February 12, 1946.

MEMORANDUM for the Regional Director, Region Two.

Reference is made to your memorandum of February 7 with regard to Wind Cave National Park Deed 7 covering the impounding of water of the Norbeck Dam at that Park. We enclose two copies of a letter being sent to State Engineer Loucks for verification of dates. The instrument should have been dated in 1939, since I did not initiate the right until August or September of that year.

The print for the Park copy of the deed has been ordered and will be sent direct, as you have requested.

JOSEPH A. VAN V. CUNN

Chief, Water Rights Division.

AvVD:sh.
Enclosure 120.
In duplicate.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CHICAGO, ILLINOIS 54

ADDRESS ONLY
THE DIRECTOR, NATIONAL PARK SERVICE

February 12, 1946.

Mr. Dean W. Loucks,
State Engineer,
Pierre, South Dakota.

My dear Mr. Loucks:

Our copy of the Notice of Completion of Works, in connection with Federal Water Withdrawal No. 508 for water use at Wind Cave National Park, indicates signature by Superintendent Harry J. Lick on November 2, 1935. As I did not initiate this withdrawal until the late summer of 1939, there is clearly an erroneous date on our copy. Will you please advise us of the date on the original notice. The dam was actually constructed prior to 1931, but no right was perfected until 1939, which may account for the confusion. Please advise us, if your copy of the notice is also in error, of any correction which you wish to make.

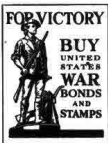
Sincerely yours,

(SGD.) A. VAN V. DUNN

A. van V. Dunn,
Chief, Water Rights Division.

AvVD:sh.

cc: Regional Director, Region Two.



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
REGION TWO
OMAHA, NEBRASKA

WR Copy
② 2/12

February 7, 1946.

MEMORANDUM for the Director.

The following items relating to Wind Cave National Park Deed No. 7, which were requested in Mr. Dunn's memorandum of December 6, 1945, are being transmitted to you with a copy of Superintendent Lick's memorandum dated January 22.

Original copy of Certificate of Withdrawal of Water for
Appropriation.
Original Certificate of Construction of Works.

Since Mr. Lick, who signed the Notice of Completion of Works as superintendent on November 2, 1935, was not superintendent of Wind Cave National Park at that time, we would appreciate having your opinion regarding an attempt to correct either the date or the signature.

Please mail a print of drawing NP-WC-6980 direct to Mr. Lick so that he can complete the assembly of his deed folder.

Lawrence C. Merriam,
Regional Director.

In duplicate.
Encl. (listed).
cc-Supt., Wind Cave.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WIND CAVE NATIONAL PARK
HOT SPRINGS, SOUTH DAKOTA

January 22, 1946.

MEMORANDUM for the Regional Director,
Region Two.

Reference is made to Acting Associate Regional Director Robertson's memorandum of January 17 transmitting Deed No. 7, covering Federal Water Withdrawal No. 508.

The original Certificate of Withdrawal of Water For Appropriation and the original Certificate of Construction of Works are hereby transmitted to your Office as requested.

The Notice of Intention to Appropriate was signed by Harry J. Liek, Superintendent, November 2, 1939, and there were no witnesses. The Notice of Completion of Works was signed by Harry J. Liek, Superintendent, and the date is November 2, 1935. The date evidently refers to date of completion, and not to the date the notice was signed, as Edward Freeland was the Park Superintendent during 1935.

We cannot locate a print of drawing No. NP-WC-6980. Therefore it is requested that one copy of the print be forwarded to this Office, to complete the file. ✓

(Sgd.) Harry J. Liek

Harry J. Liek,
Superintendent.

In duplicate.

Enclosure: Certificate of Withdrawal
Certificate of Construction





CERTIFICATE OF COMPLETION
 BY: JAMES H. HARRIS
 IN CHARGE

SUBMITTANCE
 BY: J. H. HARRIS
 (Sgd.) HARRY L. HARRIS

to complete the work.
 It is requested that one copy of the report be forwarded to this office.
 No action is taken on this of course. No. 11-10-0000. Therefore it

During the year the work submitted during 1945.
 Date of completion: and not to the date the report was signed. as
 required. and the date is December 3, 1945. The date submitted is to
 the office of completion of work was signed by HARRY L. HARRIS, Sub-
 Director, Sub-Region Two, December 3, 1945, and there were no changes.
 The office of completion to submit the work was signed by HARRY L.

Report to this office as requested.
 and the original certificate of completion of work was signed by
 the original certificate of completion of work was signed by

Work submitted No. 300.
 Memorandum of January 11, 1946, No. 1, covering the
 reference is made to the various reports, Director, Region Two,
 Region Two.
 MINORITIES for the Region Two Director.

JANUARY 23, 1946.

HOL SPRINGS, SOUTH DAKOTA
 MIND CASE NATIONAL PARK
 NATIONAL PARK SERVICE
 DEPARTMENT OF THE INTERIOR
 UNITED STATES

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
REGION TWO
OMAHA, NEBRASKA.

January 17, 1946.

MEMORANDUM for the Superintendent,
Wind Cave National Park.

There are enclosed herewith the following items relating to Deed No. 7, covering Federal Water Withdrawal No. 502, in Wind Cave National Park:

One partially complete assembly of Deed No. 7.
One copy of Mr. Dunn's memorandum of transmittal and instructions, dated December 8, 1945.

Please check your files for the original papers requested in Mr. Dunn's memorandum. We will appreciate having the papers and desired data pertaining to dates and signatures transmitted through this office to the Director.


W. A. Robertson,
Acting Associate Regional Director.

Incl. (as listed).

R

54

December 6, 1945.

MEMORANDUM for the Regional Director, Region Two.

Enclosed are two folders for use in making up assemblies of Wind Cave National Park Deed 7 covering Federal Water Withdrawal No. 508. The assemblies when completed should contain the following papers, listed from the bottom up:

1. Drawing No. NP-WC-6980, Cold Springs Creek Lake, Wind Cave National Park.
2. Notice of Intention to appropriate water from certain streams in South Dakota for use at Wind Cave National Park.
3. Notice of Completion of Works.
4. Certificate of Withdrawal of Water for Appropriation, dated November 4, 1939, by Dean W. Loucks, State Engineer.
5. Certificate of Construction of Works and Appropriation, dated November 13, 1939, by Dean W. Loucks, State Engineer.
6. Memorandum of December 28, 1939, by Regional Attorney Joseph E. Taylor for the Director, transmitting copies of memoranda and papers in connection with water right appropriation.

One of the enclosed folders, to be sent to the Superintendent, contains the complete deed assembly except for drawing No. NP-WC-6980. Our records show that prints of this map have been forwarded to both you and the Superintendent, and that copies of all the other contents of the assembly are in your files so that you can complete your assembly of the deed and then forward to the Superintendent the assembly intended for him, in which he should insert his print of the map.

It will be appreciated if the Superintendent will forward to us the original Certificate of Construction of Works and Certificate of Withdrawal of Water for Appropriation, both of which we forwarded to him by Regional Attorney Taylor's memorandum of December 28, 1939.

Also, our copies of the Notice of Intention to Appropriate and Notice of Completion of Works lack signatures and dates, and we would

like to have that information from Mr. Lick's copies so that we may complete the copies in this Office, or the information as to whether to request it from the State Engineer.

Please see the accompanying memorandum transmitting Jewel Cave Deed 2 with regard to Notices of Construction and Certificates of Examination.

(SGD.) A. VAN V. DUNN

Chief, Water Rights Division.

AvVD:sh.

Enclosure 361.
In duplicate.

FILE COPY

601 Sheldon Building
February 13, 1940

Memorandum for Superintendent Lick,
Wind Cave National Park:

Reference is made to previous correspondence relating to Federal Water Right #508-2, Cold Spring Creek Lake, recently secured on behalf of Wind Cave National Park.

We enclose herewith two copies of Hydraulic Engineer A. van V. Dunn's memorandum of February 5 calling attention to a mistake in drafting in connection with drawing NP-WC-6980, wherein the numbering of sections for one tier was reversed.

May we ask that you correct your records by insertion of proper section numbers if you have not already done so.

Also, it is suggested that the extra copy of Mr. Dunn's memorandum herewith enclosed be forwarded to the State Engineer in order that they may be advised of the fact that we recognize our error in connection with this drawing.

For your information, we will shortly write you in some detail with respect to certain aspects of the proposed McAdam purchase.

Regional Attorney.

Enclosure 1782775.

JET:SH

cc: Regional Director, Region II, with
copy of Mr. Dunn's memorandum of Feb. 5, 1940.

601 Sheldon Building,
San Francisco, Calif.,
February 5, 1940.

Memorandum for Regional Attorney Taylor:

Re: Federal Water Right #508-2,
Cold Spring Creek Lake,
Wind Cave National Park.

In reviewing my drawing NP-WC-6980, Cold Spring Creek Lake, which accompanied application for Federal Water Right #508-2, I note that the draftsman reversed the section numbers in the upper tier. Section 26 is correct, but section 25 should be section 27, and section 24 should be section 28.

The error would be obvious to an engineer, but might cause confusion among others. I suggest that this information be sent to State Engineer Dean Loucks, the Director, the Regional Director of Region II, and the Superintendent of Wind Cave National Park.


A. van V. Dunn,
Hydraulic Engineer.

(2 copies mailed to Supt., Wind Cave National Park; 1 copy
mailed to Regional Director, Region II; 2/13/40.)

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

REGION FOUR

SAN FRANCISCO, CALIFORNIA

601 Sheldon Building

December 28, 1939



✓	Reg. Director	719
✓	Brown	B
	Alexander	
	Curtis	
	E Brewer	
	Robertson	
	Horton	
	Answered by	

Memorandum for the Director:

Further reference is made to water rights studies at Wind Cave National Park.

Enclosed herewith for your files are the following papers pertaining to the Norbeck Dam and Reservoir:

Notice of Intention to divert water.

Notice of Completion of Works.

Certificate of Withdrawal.

Certificate of Construction of Works and Appropriation.

Black line print of drawing No. NP-WC-6980, Cold Springs Creek Lake, Wind Cave National Park.

Also enclosed are copies of my memorandum of October 21 to Superintendent Lick and his memorandum to me of November 22, both relating to this matter.

Joseph E. Taylor
Regional Attorney.

Enclosure 1782729.

cc: Regional Director, Region II, with enclosures.
Supt., Wind Cave National Park.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

WIND CAVE NATIONAL PARK

HOT SPRINGS, S. DAK.

November 22, 1939.

Memorandum for Regional Attorney Taylor, Region IV:

In accordance with instructions contained in the fourth paragraph of your memorandum of October 21, there is forwarded herewith formal Federal Water Withdrawal No. U.S.508, and Certificate of Construction of Works and Appropriation U. S. Water Right No. 508-2.

After you have made the necessary copies of the above for your records, please return to this office for filing purposes.

Harry J. Lick
Superintendent.

Enclosure.

*(Copies sent Director and
Regional Director of Region II, 12/28/39.)*

NOV 25 1939		
ROUTING	INITIALS	DATE
Regional Director		
Assoc. Reg. Director		
Asst. S.D. (P. & S.)		
Asst. M.D. (Admin.)		
Personnel-Records		
Files		
Labor Relations		
Legal		
Project Control		
Equipment		
Information		
Travel Bureau		
Vacation Study		
Engineering		
Landscape Arch.		
Architecture		
Forestry		
Geology		
History		
Wildlife		
FILE		

REC'D NOV 6 1939

H. J. Lisk
[Signature]

WIND CAVE NATIONAL PARK

HOT SPRINGS, S. DAK.

November 2, 1939.

Mr. Dean Loucks,
State Engineer,
Pierre, S. Dakota.

Dear Sir:

In accordance with Regional Attorney Joseph E. Taylor's letter of October 21, there is enclosed herewith Tracing and Blue Print of the Map of Cold Springs Creek Lake NP-WC-6980, and properly signed Application for Federal Water Withdrawal and Notice of Completion of Construction, all pertaining to the Norbeck Dam and Reservoir.

Very truly yours,

Harry J. Lisk,
Superintendent.

cc: Taylor, RIV.

FILE COPY

Nonbeck

601 Sheldon Building
October 21, 1939

Memorandum for Superintendent Lick, Wind Cave National Park:

Re: Old Headquarters Spring Water Right.

In his memorandum of October 2, 1939, Acting Superintendent Stricklin gave an excellent portrayal of the impounding dam, but I still lack certain data which I hoped would be available on some topographic map of the spring area back of your main storage reservoirs.

I do not know whether there is a map of that area, but from the list of maps sent to Region II at the time of reorganization I wonder if any of the following are pertinent:

WC-4520 - 1 sheet - Existing and Proposed Water System.
WC-4524C - 1 sheet - Concrete Intake Box.
WC-5055 - 1 sheet - Water Reservoir Addition.

I should like to obtain the inside length, width, and depth of the concrete spring sump; the location and relative elevation of the outlet pipe; bearing, length, and diameter of outlet pipe and the relative elevations of inlet and outlet ends of that pipe; the distance to the center of the dam crest, measured as prolongation of pipe line, and the distance of that point from one end of the dam; the bearing and distance from the oldest reservoir to a corner of the spring sump, and the bearing along one side of that sump; and about three or four horizontal distances from the dam crest to points on the natural hill slope at the same elevation to show shape and size of full reservoir.

This sounds like a good deal of data when listed for tape measurements, but your engineer could probably get all the data by stadia in about an hour. If the latter method is used, it would help to take a few "shots" in the reservoir for contour elevations.

If your engineer could make the field survey and send me the notes, I can reduce them and prepare the map. I enclose a few loose leaf field sheets for such a survey record, and I can return the notes for your permanent keeping after using them. I am sending only a few sheets because I do not wish elaborate topography, but rather the important features.

Encls.

A. van V. Dunn,
Associate Engineer.

AvVD:SH

FILE COPY

601 Sheldon Building
October 21, 1939

Memorandum for Superintendent Lisk, Wind Cave National Park:

We enclose the following pertaining to the Worbeck Dam and Reservoir:

1. Application for Federal Water Withdrawal.
2. Notice of Completion of Construction.
3. Map of Cold Springs Creek Lake -- NP-WC-6980:
 - A. Tracing.
 - B. Blue Print.
 - C. Directo Print.

Please sign the Application and Notice of Completion, and forward with tracing and blue print to State Engineer Dean Loucks at Pierre, South Dakota.

The directo is for your records. As we have a negative in our files, additional prints are available if you wish them.

In time you will receive a formal "Federal Water Withdrawal", and Associate Engineer Dunn will be notified to inspect the system. Please make three exact copies of the Withdrawal for our records, or, if you prefer, forward the Withdrawal for us to copy.

Mr. Dunn will be able to prepare his Certificate of Engineering Inspection from data he obtained last month.

Should the State Engineer return any of the data for corrections or alterations, please forward all such correspondence to us for execution. We hope, however, that no changes will be needed.

We also enclose your prints of the Cold Springs Creek Lake Project, Biological Survey Nos. 441-52, 441-53, and 441-54. These were borrowed while preparing the file map.

Encls.

Joseph E. Taylor,
Regional Attorney.

AvVD:SH

DEAN W. LOUCKS
STATE ENGINEER

STATE OF SOUTH DAKOTA
OFFICE OF STATE ENGINEER

PIERRE

October 13, 1939

REC'D OCT 16 1939

Re: U. S. Water Rights
National Park Service

Joseph E. Taylor, Regional Attorney
U. S. Department of Interior
National Park Service
601 Sheldon Building
San Francisco, California

Dear Sir:

This will acknowledge receipt of your inquiry of October 9th and we are enclosing, herewith, sample forms for proceeding with notice and withdrawals and appropriation as set forth in Section 61.0137 of the South Dakota Code, a copy of which section is, herewith, enclosed. These forms should, I believe, answer the requirements of the dams which you have in mind.

Upon receipt of a Notice of Intention the appropriate Certificate of Withdrawal will be issued by this office. And upon receipt of Notice of Completion of Works a letter of Authorization will be issued for your engineer. Upon his issuing of a Certificate of Examination of Works this office will issue the final Certificate of Construction and Appropriation.

Very truly yours,



DEAN W. LOUCKS,
State Engineer.

DWL:dn
Enc.

FILE COPY

601 Sheldon Building
October 9, 1939

Hon. Dean W. Loucks,
State Engineer,
Pierre, South Dakota.

Dear Sir:

We wish to submit a water withdrawal for the storage of water in the Cold Springs Creek Lake, which was called Norbeck Reservoir in Mr. Dunn's Certificate of Engineering Examination for U. S. Water Right No. 33-2.

This lake or reservoir is formed by a dam across Cold Springs Creek and is filled by the natural stream flow of wet years, of which there have been only two during the past ten. During the intervening dry years, the lowering of the water level is retarded by piping water from springs under U. S. Water Right No. 33-2 which was recently perfected for 0.20 second foot, of which 0.08 second foot is needed for domestic and recreational use at the Headquarters and Utility Area.

Cold Springs Creek is a dry draw at the dam and above, having less than 20 miners' inches, or 0.4 second foot, during most of all years and all of many years. The reservoir has an area of 15.6 acres when full, and capacity of 222 acre feet. (Mr. Dunn estimated 170 acre feet before obtaining topography.) With evaporation of at least 6 feet per year, 80 acre feet are lost in that way within a year after filling. Stock watering and percolation increase this loss to more than the 87.0 acre feet which can be added under said Water Right No. 33-2. At the end of two or three years, depending on normal stream flow and spring behavior, there is only a small puddle which is often almost the only water supply for the buffalo head.

While Mr. Dunn was in Pierre in mid-September, you advised that the storage was not covered by Water Right No. 33-2, and that the form of water withdrawal used at Jewel and Wind Caves, Nos. 32 and 33, were not up to date. Please send us a form which you prefer under the circumstances.

In addition, we will wish to make another water withdrawal for an impounding reservoir on a spring outlet from which no natural surface flow ever reaches a stream. We will also make withdrawals for about four impounding reservoirs filled entirely by precipitation in dry draws.

If you wish to modify withdrawal forms for the various types, please provide us with the necessary information.

Yours very truly,

Joseph E. Taylor,
Regional Attorney.

AvVD:SH

cc: Regional Director, Region II.
Supt., Wind Cave National Park.

FILE COPY

601 Sheldon Building
October 2, 1939

Memorandum for the Director:

Reference is made to South Dakota Water Withdrawals Nos. 32 and 33 made on behalf of Jewel Cave National Monument and Wind Cave National Park respectively.

With a copy of our memorandum of August 10 to the State Engineer we forwarded to you print of the map filed in connection with the water withdrawal for Wind Cave, and on May 19 we forwarded to you a copy of our letter of that date to the State Engineer together with a print of the map filed in connection with the water withdrawal for Jewel Cave.

You will have noted from your copy of our letter to the State Engineer of August 10 that we suggested the appointment of Associate Engineer A. van V. Dunn to prepare and submit the engineer's certificate with respect to field inspection upon these systems.

Following our request to the State Engineer, he on August 15, by letter of authorization addressed to A. van V. Dunn, Engineer, appointed him as inspecting engineer, and Mr. Dunn proceeded to South Dakota for the purpose of completion of his certificates and filing of them with the State Engineer.

Certificates of Construction of Works and Appropriation upon these withdrawals have now been received, and we are enclosing copies of these certificates for your files. We are returning the originals to the park for retention in their files.

In addition to the certificates of the State Engineer, we are also forwarding copies of Mr. Dunn's Certificates of Examination of Works relating to each of these withdrawals, and copies of his memorandum of September 16. While we doubt the necessity of forwarding copies of the engineer's certificates to you, we considered that they might be useful and instructive to the Chief Engineer, inasmuch they give an idea of the type of data which we usually have to provide in obtaining water rights.

It has been ascertained by Mr. Dunn, through conference with the State Engineer, that it is probably advisable to make a further filing with respect to Norbeck Dam and the smaller impounding works for buffalo watering purposes. Engineering data concerning these additional works are being compiled, and a request has been made for certain additional information from the park.

Joseph E. Taylor,
Regional Attorney.

Encl. 1645480.

JET:SH

Regional Director, Region II, with copies
of enclosures.
Supt., Wind Cave National Park, with copies
of enclosures.

*Wind Cave
Jewel Cave*
FILE COPY

601 Sheldon Building
September 15, 1939

Memorandum for the Superintendent, Wind Cave National Park:

I conferred with Dean Loucks, State Engineer of South Dakota, and presented reports of the engineer's inspection of the water systems at Wind Cave and Jewel Cave. These seemed to be in perfect order, and he advised that we would receive a certificate of water right on the two systems relatively soon.

I also discovered, as I had feared before, that the original withdrawal did not include the right to store water at the Norbeck Dam, and that an additional withdrawal and subsequent report of inspection will have to be made to obtain the right for that storage. I have most of the data necessary for both the withdrawal and the report of inspection, except that I should like to borrow for a short time the print or prints showing the contours of the reservoir in back of the dam, and the cross section through the dam itself, in order that I may work up a capacity curve for the reservoir.

I also asked about the small impounding reservoirs used by the wildlife, and was informed that the United States Government is required to withdraw and perfect water rights on those as well as other water supplies. This, however, is a requirement for Federal use which does not apply to private use in what they call dry draws. Consequently, before proceeding further I shall wish to discuss the matter with Mr. Taylor and get his interpretation of certain statutes of which I could only get a single copy at the time of my visit. Thereafter we will have to make some arrangements to locate the dams with ties to section corners before I can complete the withdrawals required in those cases. I doubt, however, if there is any hurry, as the whole State Water Code of South Dakota seems to be rather uncertain, and being revised at the present moment.

Incidentally, the form sent to me for the report of my inspections at the park was in error in recognizing beneficial use for game, though they do recognize fish culture and stock watering. Mr. Loucks advised that buffalo are classed as stock in that

State. He was not so sure about deer, elk, and antelope. For this reason, in the future if you or any one else wishes to justify the use by the wildlife, I would refer to them only as stock.

I did not see, but assume that you probably have, a topographic map or water supply map showing the relation of the spring back of your headquarters reservoirs to the headquarters area, or its relation to the oldest of the three reservoirs. I also assume that you do not have an actual survey of the little dam recently constructed below that spring for the use of the buffalo. It might pay, however, to send me prints of such maps as you have in that vicinity, as it might be that I would have enough data from which to prepare the withdrawal notice without further survey. If there is actually a topographic map that shows the hill slope as far as the dam, it might be that you could sketch in that dam, give the height of the crest above the bottom of the pool, the length of the crest, width of crest, and approximately upstream and downstream slopes of the dam. With this, if the map shows the relative position of the upper reservoir and the spring box, I would be able to complete both the withdrawal and report of inspection in the very near future.

AvVD:SH

A. van V. Dunn,
Associate Engineer.

cc: Director. (Mailed in duplicate Oct. 3, 1939.)
Regional Director, Region II.

FILE COPY
Wind Cave 666-697

601 Sheldon Building
August 10, 1939

Hon. Dean W. Loucks,
State Engineer,
Pierre, South Dakota.

Re: Withdrawals 32 & 33,
National Park Service.

Dear Sir:

Reference is made to past correspondence with respect to the above captioned withdrawals, the last from you being your letter of May 23, 1939, with which you enclosed a copy of Tentative Rules & Regulations governing final procedure under Section 8243 of the Compiled Laws of South Dakota.

We enclose herewith the tracing and one print of drawing NP-WC-6975, entitled Wind Cave Pipe Line. This map is to accompany our water withdrawal to which you assigned number 32 dated September 8, 1937, in accordance with said Section 8243.

This drawing, together with NM-JC-6975, entitled Jewel Cave Pipe Line, which you received on May 23, 1939, constitute the plans of constructed water systems now in use as covered by water withdrawals Nos. 32 and 33. They also show the full quantity which can be diverted at the present time.

Application of the water to beneficial use (for domestic purposes) is dependent upon the public attendance at each area, and the attendance is generally increasing, with the most marked increases after each series of improvements. The rate of water consumption is also increasing with the installation of modern sanitary facilities.

At both Jewel Cave and Wind Cave we are now diverting the full spring flow, giving preference to domestic needs and applying any surplus water to highly desirable recreational purposes, such as irrigating, public campgrounds, and, at Wind Cave, maintaining the maximum water level in the Norbeck Lake. As domestic needs increase, we shall have to sacrifice the least essential of other recreational uses. At Wind Cave we shall also have to enlarge the lower portion of the pipe line which serves the reservoirs of the Headquarters Area.

Our problem now is to determine how far you wish us to go in compliance with the so-called "final procedure" furnished us with your letter of May 23. We also wish to know what additional plans you require, whether the working drawings of dams, collecting sumps, reservoirs, and maps of all distribution laterals are needed. If they are, we wonder whether prints are sufficient, process tracings on vellum would serve, or whether it will be necessary to prepare exact new tracings.

With respect to the possible field inspection, may we suggest that in order to eliminate complications over appropriations for the payment of fees, our water rights engineer, Mr. A. van V. Dunn, might be deputized for the particular purpose. Mr. Dunn is an associate member of the American Society of Civil Engineers, has had eighteen years of varied hydraulic experience on irrigation, water supply, and hydroelectric power, has been with the National Park Service for the past eleven years, a portion of which was in your State, and has handled all engineering features of the Park Service water rights since October 1936.

Respectfully yours,

Joseph E. Taylor,
Regional Attorney.

Encls.

JET:SH

cc: Regional Director, Region II, with print.
Supt., Wind Cave National Park, with print.
Director, with print.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
REGION FOUR
SAN FRANCISCO, CALIFORNIA

601 Sheldon Building
August 2, 1939

Memorandum for Regional Attorney Taylor:

There are enclosed:

1. General Land Office plat of Wind Cave National Park.
2. Field Books No. M-8
T-3
T-4
T-6

These records were borrowed from Region II for the preparation of the file map for the Wind Cave Water System. They should now be returned to that office.

It might be well to advise the Regional Director and Superintendent that I feel that the map is quite accurate, but that we have had to analyze all survey lines carefully, balance and close traverses of them and the G. L. O. to obtain the composite product.

Our data was quite meager regarding profiles, but I believe my old stadia and the topographic maps give a fairly close representation of the conditions. We have shown grades, but not specific elevations because of the limits of our data.

The quantity of water claimed is somewhat limited by the grades of pipes. In 1935, Mr. Kittredge's office stated that the springs in the upper area had a flow of 86,400 g.p.d., or 0.134 sec. ft., on June 13, 1932, and that there were no records at the lower springs. Since 1932 was somewhat drier than normal, I raised the total claim to 0.20 sec. ft., which is intended to include about 0.05 sec. ft. for the lower diversion at spring No. 6.

The claimed diversion seems reasonable from the point of view of both spring flow and probable use in the areas described. It does not, however, fit pipe designs very well. From springs 1-5 to spring 6 (note that I have only tied in the 5 major springs in the upper area) the 8" pipe is excessive. Further, by the introduction of spring No. 6 diversion, the potential head above is lost.

Below spring No. 6, the 6" pipe is excessive and the 2" pipe is too small. The 2½" pipe from the 6" main to the Biological Survey reservoir is also small, but it has a slightly stimulated capacity because of the very small head loss in the 6" pipe when all water is carried therein. In order to claim the maximum capacity for this 2½" pipe, I had to use all the reserve head from the 6" main. This limits the capacity of the 2" line between the Biological Survey and National Park Service reservoirs, and gives the former an unduly large proportion of the water.

My problem has been to prove maximum diversion for the United States with little regard to its division between the two bureaus. I suggest now that the Regional Engineers redesign and reconstruct the line at the first opportunity to permit maximum use of the 0.2 second feet at the desired areas, and eliminate the danger of losing part of the right through non-consumptive use at Norbeck Dam. (Note that both more adequate profiles and greater refinement in computing pipe capacities will be advantageous at that time.)

As mentioned in my last memo, I have claimed no rights in the normal flow of Cold Creek or storage at the Norbeck Dam. Also note that we have not filed on any water for the bison and antelope in the various Biological Survey pastures. These are probably all needless considerations which I call to your attention as a matter of record.

A. van V. Dunn
A. van V. Dunn,
Associate Engineer.

(Copies of this memorandum mailed to Supt., Wind Cave Nat. Park,
and Regional Director, Region II, 8/10/39.)

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
REGION FOUR
SAN FRANCISCO, CALIFORNIA

601 Sheldon Building
August 1, 1939

Wind Cave National Park
Mr. Colver
sent out

Memorandum for Regional Attorney Taylor:

Re: Water Rights,
Wind Cave National Park.

In submitting drawing WC-6975 to the State Engineer of South Dakota to accompany Water Withdrawal No. 32, there are certain explanations which might be included in the letter of transmittal:

1. The main 6" and 8" pipe line was built over-size at the request of the late Senator Norbeck to try to get more water into the reservoir bearing his name.
2. This reservoir also receives the normal flow of Cold Creek, is an artificial lake. The impounded water is pondage and not regulated storage, and the lake was sponsored by Senator Norbeck for esthetic and recreational purposes. Hence, I have made no special claims for the impounded water. Since the dam does not hold the water well, there is little effect on the stream flow below.
3. The maximum average spring flow available for diversion in the spring areas shown is 0.2 second feet, and my intent is to claim it all for the United States.
4. The maximum quantity of this water now available to the reservoirs of the Biological Survey and National Park Service is 0.08 sec. ft. due to the limiting capacity of the 2½ inch pipe. This quantity is not available if conveyed in the 2" pipe which parallels the 6" main, but is obtained by the reduction in friction losses when using the 6" line as far as possible.
5. The 0.12 second feet which are now released into Norbeck Lake constitute a reserve diversion which will be conveyed to the park and Survey headquarters and utilities area through enlarged pipes as increasing park attendance demands it.

6. The reservoirs of the Biological Survey and National Park constitute only approximately one day's flow of the present used 0.08 second feet. Hence they are regulatory distribution reservoirs rather than storage.

A. van V. Dunn

A. van V. Dunn,
Associate Engineer.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

REGION TWO
OMAHA, NEBRASKA

VAD
REC'D JAN 14 1939

*Wind Cave Nat Park,
x National Monument.*

January 11, 1939

Memorandum for Regional Attorney Taylor:

We have your memorandum in regard to maps, etc. in connection with water filings in Wind Cave National Park and Jewel Cave National Monument.

In connection with the water system for the Wind Cave area we are enclosing prints of Plan No. WO-4931, Plan Showing Land and Right-of-Way to be Acquired for Water Supply and Plan No. WO-4921, Development of Water Supply, Route for Pipe Line. We do not see much value in this latter plan but Mr. Dunn may have some use for it. We are also enclosing copies of the agreement and deed in connection with this water system. There is a blue print in our files, the tracing of which has been sent to the Washington office, that does give a few additional details in regard to the water system and you should probably have a copy in your files. It is plan No. WO-4933, Water Supply System. To save time we are asking the Director's office to send you a copy of this plan.

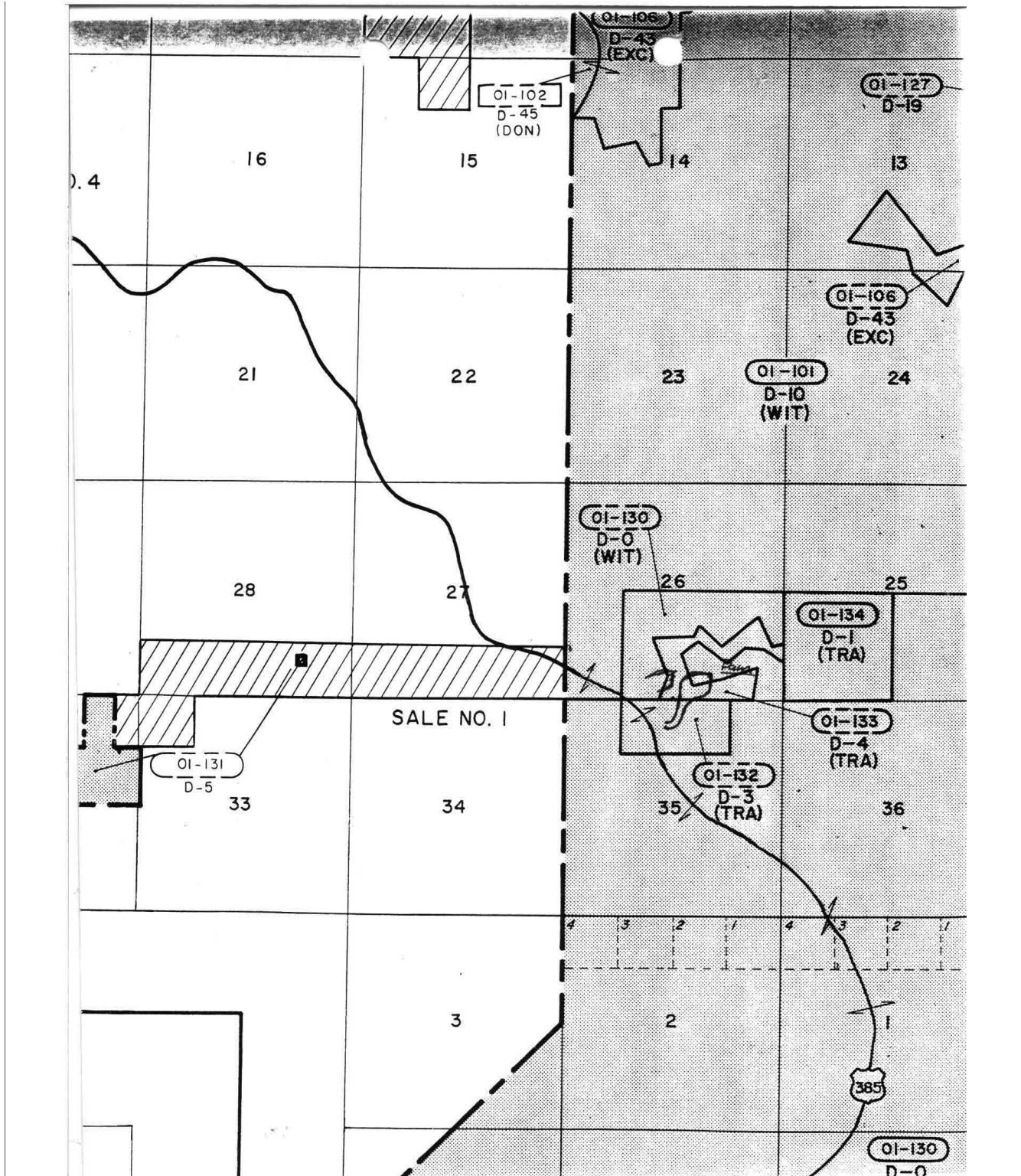
We are also enclosing a topographic map of the Headquarters Area, Jewel Cave National Monument, which shows the water line at the time the topography was taken. There has been a reservoir built since that time but apparently no good location of its site. It is quite possible that some field work will have to be done in order to properly locate this system before a water filing map can be made.

Taylor Brown

Acting Regional Director.

Encl.

Maps and Miscellaneous Information



USA D-10	01-101	PUBLIC DOMAIN		4 173 13	FEE
USA D-45	01-102	COUNTY OF CUSTER		0 00	ROW
USA D-12	01-103	SMITH	(43)	56 00	FEE
USA D-47	01-104	McKIRAHAN LAURA E	(22)	6 99	FEE
USA D-11	01-105	SMITH	(44)	12 00	FEE
USA D-43	01-106	STATE OF SOUTH DAKOTA	(14 15 16)	669 42	FEE
USA D-14	01-107	BOASE		160 00	FEE
USA D-15	01-108	KORTHAUS JOSEPH	(35)	440 00	FEE
USA D-48	01-109	O'NEAL D E	(10)	160 00	FEE
USA D-16	01-110	IRICK	(15)	160 00	FEE
USA D-17	01-111	HILL CITY BANK	(12A)	320 00	FEE
USA D-18	01-112	DOW	(34)	40 00	FEE
USA D-24	01-113	KORTHAUS EMIL C	(6A)	1 249 10	FEE
USA D-32	01-114	MILLER		240 00	FEE
USA D-30	01-115	STREETER HAZEL	(9A)	480 00	FEE
USA D-22	01-116	STREETER ALICE O	(7A)	640 00	FEE
USA D-31	01-117	STREETER MARY	(11 11A)	320 00	FEE
USA D-29	01-118	KORTHAUS MYRTLE M	(19)	956 60	FEE
USA D-46	01-119	COUNTY OF CUSTER		0 00	ROW
USA D-23	01-120	LOVETT	(26)	160 00	FEE
USA D-21	01-121	SAGER	(33)	480 00	FEE
USA D-20	01-122	PARKER	(16)	320 00	FEE
USA D-44	01-123	STATE OF SOUTH DAKOTA	(11)	640 00	FEE
USA D-27	01-124	KEN	(28)	640 00	FEE
USA D-28	01-125	MILTON	(31)	320 00	FEE
USA D-13	01-126	McKIRAHAN, ORIAN L	(10)	2 438 91	FEE
USA D-19	01-127	HERBERT, DAVID	(2A)	153 20	FEE
USA D-25	01-128	HERBERT, DAVID, et al	(14)	320 00	FEE
USA D-26	01-129	HERBERT, FRED E.	(3A)	594 02	FEE
USA D-0	01-130	PUBLIC DOMAIN		8 706 18	FEE
USA D-5	01-131	McADAM ROBERT		100 77	FEE
USA D-3	01-132	DEPT OF AGRICULTURE		80 00	FEE
USA D-4	01-133	DEPT OF AGRICULTURE	(20)	60 11	FEE
USA D-1	01-134	DEPT OF AGRICULTURE		160 00	FEE
USA D-33	01-135	HERBERT HARVEY		160 00	FEE
USA D-2	01-136	DEPT OF AGRICULTURE		156 00	FEE
USA D-34	01-137	SANSON	(25)	320 00	FEE
USA D-42	01-138	LANHAM	(21)	80 00	FEE
USA D-40	01-139	SANSON	(24)	400 00	FEE
USA D-41	01-140	SANDY	(1A)	160 00	FEE
USA D-36	01-141	FEDERAL LAND BANK		320 00	FEE
USA D-49	01-142	COUNTY OF CUSTER	(6A) 19A)	6 60	FEE
USA D-37	01-143	HEIDEPRIEM, FRED C.	(27)	480 00	FEE
USA D-38	01-144	KEPPLER JOHN A.	(5A)	160 00	FEE
USA D-39	01-145	STREETER, HARRY H.	(38)	240 00	FEE
USA D-35	01-146	BALL	(32)	320 00	FEE

Docket Information