

July 9, 1971

Mr. Arthur L. Larson
Watermaster
Water District No. 1
785 Sonja
Idaho Falls, Idaho 83401

Dear Mr. Larson:

Thank you for sending me a copy of the minutes of the Committee of Nine meeting held in Idaho Falls, on June 22, 1971. I am curious as to the reason for inclusion in the minutes the following sentence: "A statement was presented that Mr. Higginson testified for the Salmon Falls Project in Washington, D. C. recently." There must have been more discussion of that subject than the minutes would indicate, and I would appreciate information as to why the committee felt that my appearance in Washington in behalf of the Salmon Falls Project had any particular significance.

Very truly yours,

R. KEITH HIGGINSON
Director

RKH:kh

1971

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JUL 1 1971

Department of Water Administration

MEETING OF COMMITTEE OF NINE

Stardust Restaurant, Idaho Falls

June 22, 1971

The Committee met at 10:00 a.m. with Leonard Graham presiding.

Members present were: C. N. Scoresby, Al Peters, Leo Murdock, J. Lavon Christensen, F. C. Gillette, La-Vern Montgomery, Lynn Loosli, John Rosholt, Mary Smith, Ted Diehl, Lester Saunders, Glenn Simmons, R. Willis Walker.

After preliminaries were disposed of, Chairman Graham asked Mr. Walker to discuss the difficulties involved in securing full authorization and funding of the Lower Teton Project. The environmental aspect was discussed at length as being the obstacle holding up progress on the project.

It was pointed out that the Teton Project sponsors will support the Salmon Falls, Oakly Fan and other projects in return for their support. A statement was presented that Mr. Higginson testified for the Salmon Falls Project in Washington, D. C. recently.

Glenn Simmons reported on the River and Reservoir operations and noted that the peak flow at Heise would probably be today, with Palisades Reservoir due to fill by July 1 and Jackson Lake soon thereafter.

Meeting adjourned at 12:20 p.m.

C. N. Scoresby, Secretary

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MAR 5 1971

MEETING OF COMMITTEE OF NINE
Idaho Falls, Idaho, Feb. 28, 1971

Department of Water Administration

Committee met at the Westbank Restaurant at 7:30 p.m. with Leonard Graham presiding. Other committee members present were Al Peters, Clifford Scoresby, Lynn Loosli, Leo Murdock, Burdell Curtis, Willis Walker, Lester Saunders, and Lavon Christensen. Alternate: Glenn Simmons.

Representing the Bureau of Reclamation were: Norman Moore, John Walker, William Burpee, Allen McGregor, and Dick Lindgren.

Representing Water District No. 1 were: Art Larson and Mike Bennett, and about 25 representatives of waterusers.

Art Larson read the "Annual Report of the Committee of Nine to the Waterusers."

Resolutions 1 through 10 were considered individually, and each accepted for presentation to the waterusers at the annual meeting on March 1.

Resolution No. 7 authorizing the Watermaster, or acting Watermaster, to borrow up to \$20,000.00 annually, was revised to increase the ceiling to \$30,000.00. Moved by Leo Murdock and seconded by Lester Saunders to authorize the higher amount.

Resolution No. 11, regarding H.B. 55 was presented by attorney Tim Hopkins. After some discussion, it was moved by Leo Murdock and seconded by Burdell Curtis that Resolution No. 11 be adopted.

Art Larson read the report of the auditor's examination of the District's books. Motion was made and seconded that the auditor's report be accepted.

Glenn Simmons discussed the proposed goose nesting situation on the Snake River and emphatically stated that it will only be considered on an annual basis, and will never be initiated at the slightest jeopardy to power revenues or stored water.

Burdell Curtis requested an agenda of meetings be sent out in advance to committee members.

Meeting adjourned at 9:10 p.m.

Clifford N. Scoresby, Secretary

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PMC
AKD
R.H.H.
W.G.
J.H.
K.H.F.

Attached herewith are revised minutes of the January 6, 1971 meeting of the Committee of Nine, U.S. Geological Survey, and the Idaho Department of Water Administration. These minutes supersede those previously sent you.

Revised format, rewording of some passages, and inclusion of written reports were suggested by legal authority to make this a complete comprehensive report of the January 6 proceedings which reaffirmed the cooperative agreement between the U.S. Geological Survey, the State Department of Water Administration, and Water District 36.

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Clifford Scoresby,
Secretary, Committee of Nine

Idaho Falls,, Idaho
Feb. 5, 1971

Department of Water Administration

MINUTES

JOINT MEETING OF THE COMMITTEE OF NINE,
REPRESENTATIVES FROM THE U.S. GEOLOGICAL SURVEY, and
IDAHO DEPARTMENT OF WATER ADMINISTRATION

Westbank Restaurant, Idaho Falls, Idaho

January 6, 1971

A joint meeting of the Committee of Nine of Idaho Water District No. 36, representatives of the U.S. Geological Survey and of the Idaho Department of Water Administration was held at the Westbank Restaurant in the City of Idaho Falls, Idaho, on January 6, 1971. The meeting convened at 9:15 a.m. with Mr. W. L. Burnham, District Chief, U.S. Geological Survey, presiding.

Those attending the meeting were:

Committee of Nine members:

Leonard Graham, Al Peters, C. N. Scoresby, Willis Walker, Lynn Loofli, J. Lavon Christensen, Burdell Curtis, and Leo Murdock.

Advisory members: Glenn Simmons.

The following Committee of Nine members were absent:

Lester Saunders

Advisory members: F. C. Gillette, William Kerner, John Stevenson.

Idaho Department of Water Administration:

R. Keith Higginson, Director, and Sherl Chapman.

U.S. Geological Survey:

W. L. Burnham, District Chief and Hal Hall.

Water District No. 36:

Art Larson, Watermaster of Water District No. 36, and Michael Bennett.

North Side Canal Co.:

Ted Diehl and Joe Putman.

Minutes
January 6, 1971
Page Two

Fremont Madison Irrigation District:

L. C. Anderson and Attorney Mary Smith.

Others present at the meeting:

William S. Holden, Idaho Falls, John Rosholt and Edward Reichert,
Twin Falls, Idaho.

Mr. Burnham stated that the purpose of the meeting was to review the proposed operating budget for Water District No. 36 and the relationship between the Idaho Department of Water Administration, Water District No. 36 and the U. S. Geological Survey in the office of the Watermaster for the district. He stated that the discussions which were to follow would help to show the basis for the financial contributions to the budget for the operation of the Watermaster's office contributed to by the U.S. Geological Survey and Water District No. 36. Mr. Burnham then reviewed the history of the joint relationship between the U. S. Geological Survey and Water District No. 36 in funding the costs for the operation of the office of the Watermaster of the district. For the written record of the Minutes for the meeting it was pointed out that since 1919 the Watermaster of the district is also the resident engineer in Idaho Falls of the U. S. Geological Survey. The engineer performs a dual function, (1) as the Watermaster of the district operating as a state official under the primary jurisdiction of the Idaho Department of Water Administration and (2) as a U. S. Government employee assigned to the U.S. Geological Survey office in Idaho Falls. In explaining the relationship between the U.S. Geological Survey and Water District No. 36, Mr. Burnham demonstrated his discussion with a map showing all of the gaging stations in the area with a bar graph at each site illustrating the proportional funding of each station by the various agencies.

Mr. Keith Higginson, Director of the Idaho Department of Water Administration, reviewed the state statutes outlining the legal requirements of the organization and operation of Idaho water districts and the function of the Watermaster as related to the State Department of Water Administration. He noted that, in his opinion, many of the statutes are obsolete and unenforceable, and should be reviewed and studied with the object of updating them. Mr. Bill Holden suggested that the Water District could initiate such a review but that, in his opinion, it would be too costly and suggested that the matter be called to the attention of the State Legislature and that it could establish a commission or a special committee to undertake this work at State expense.

Mr. Higginson commented that the present arrangement of the cooperative agreement between the U.S. Geological Survey and Water District No. 36 was

Minutes
January 6, 1971
Page Three

not entirely satisfactory from an administrative standpoint. The Department of Water Administration is responsible for the administration of the waters of the State and supervision of the watermasters. The fact that the watermaster is a Federal employee and part of his salary is paid by the water users makes this arrangement somewhat difficult. However, he stated that his Department would do nothing to change the present arrangement as it has worked well in the past, and as long as it is a satisfactory arrangement with the Committee of Nine and waterusers.

Mr. Art Larson, Watermaster of the District, reported on the duties, responsibilities and functions of the dual position of Watermaster of the District and the Engineer-in-Charge of the Geological Survey Sub-district office at Idaho Falls. He used a number of charts to illustrate the method of computations used in moving stored water from the various reservoirs down the river to the users. Operation of the North Fork of the Snake River was explained by Mr. Bennett. A copy of the written report is attached to these minutes.

Mr. Hal Hall of the U. S. Geological Survey spoke on the necessity of maintaining an adequate system of stream and canal gaging to document the quantity of flow with respect to time, both to inventory and management of the water resources. He described the methods used in streamgaging and the facilities and equipment used. He illustrated his talk with a slide projection of typical gaging station installations, equipment, and stream-gaging operations. A copy of his written report is attached to these minutes.

The meeting recessed at 11:45 a.m. for lunch and reconvened at 1:00 p.m.

Mr. Burnham, following the luncheon recess, presented the Geological Survey's proposal that Water District No. 36 assume one-half of the salary of the Watermaster, assistant watermaster and the clerk, estimated to be \$22,625.00 for the coming year. Mr. Burnham referred to his previous discussion regarding the Water District's share of the costs of the operating water-management stations necessary to the Watermaster's function to be one-fourth of that total cost. The Water District's share for the coming operational year is estimated to be \$10,115.00. A copy of Mr. Burnham's written report, which covers in detail the U.S.G.S. and the Water District funding of the budget, is attached to these minutes.

General discussion was had regarding the anniversary dates of the budget year, the operating year and the fiscal year, with Mr. Rosholt suggesting some thought be given to simplifying and/or standardizing of the fiscal operations of the District.

Minutes
January 6, 1971
Page Four

Mr. Rosholt, Mr. Holden, Mr. Graham and others, commended the U.S.G.S., the Water District, and the State Department of Water Administration for the informative and detailed explanation of the internal workings of the District on the cooperative basis that has been followed since 1919.

Clifford Scoresby
Secretary of the Meeting

MINUTES

MEETING OF THE COMMITTEE OF NINE OF
IDAHO WATER DISTRICT No. 36

Westbank Motel Restaurant
Idaho Falls, Idaho

January 6, 1971

A meeting of the Committee of Nine was held at the Westbank Motel Restaurant in the City of Idaho Falls, Idaho, on January 6, 1971, at 3:15 o'clock p.m. Mr. Leonard Graham, Chairman of the Committee, presided.

Committee of Nine members present:

Leonard Graham, Al Peters, C. N. Scoresby, Willis Walker, Lynn Loosli, J. Lavon Christensen, Burdall Curtis, and Leo Murdock.

Advisory members: Glenn Simmons.

Committee of Nine members absent:

Lester Saunders,

Advisory members: F. C. Gillette, William Kerner, and John Stevenson.

Others present at the meeting:

John Rosholt, William S. Holden, and Art Larson.

Mr. Graham stated that the purpose of the meeting was to review and discuss the presentations which had been made at the Joint Meeting of the U.S. Geological Survey, the Idaho Department of Water Administration and the Committee of Nine of Idaho Water District No. 36 earlier in the day. Following a discussion, it was moved by Al Peters and seconded by Leo Murdock that the Committee of Nine approve the funding of the budget for the office of Watermaster of Idaho District No. 36 as proposed by Mr. W. L. Burnham of the U.S. Geological Survey. The motion was approved unanimously.

There being no further business to come before the meeting, on motion duly made, seconded, and unanimously carried, the meeting adjourned.

C. N. Scoresby, Secretary
Committee of Nine
Idaho Water District No. 36

WD#36
by: WLB

Staff
1-6-71

U. S. G. S. Idaho Falls Subdistrict Activities

Responsibilities:

The Idaho Falls Subdistrict office is an operational arm of the District Office in Boise with a responsibility for data collection and processing in a large area of southeastern Idaho and parts of western Wyoming. Its strictly Subdistrict responsibilities, as separated from Water District and Watermaster functions, include:

1. Stream flow data collection at gaging stations, crest-stage stations, and miscellaneous measurement sites, including operation and maintenance of instruments, gages, cableways, and appurtenant structures.
2. Computation and compilation of stream flow data preparatory to final review for publication.
3. Measurement and recording of ground-water level data from wells and piezometers. Records are processed in the District Office.
4. Collection and shipping of water samples for chemical-quality analysis of both streamflow and ground-water.
5. Assisting Geological Survey staff personnel in making level surveys to gages and wells, in making site surveys for gaging stations, and in field data collection for water-resources appraisal studies.
6. Making measurements and studies, or assisting Geological Survey District staff personnel in making studies of floods and flood hazards, surface water-ground water relationships, and related general hydrologic conditions in the geographic area of the Subdistrict.

Current Program:

The present program includes the operation of 32 gaging stations needed for water management in the WD#36 operations, 2 stations in the USGS Federal program, 11 stations for the State-Federal cooperative program, 2 stations for a combined State-Federal-BLM program, 1 station for a combined State-Federal-WD#66 program, 1 station for the Bureau of Sport Fisheries, 1 station for Corps of Engineers, and 5 stations for the Bureau of Reclamation. These last 23 stations are in addition to, and separate from activities related to WD#36 needs except for one Federal station (Heise) that is vital to Water District operations. In addition, the Subdistrict operates and maintains 18 maximum-flow (or Crest-stage) stations, 13 for a USGS-State Highway Department cooperative program and 5 for the US Forest service. These are expected to terminate on September 30, 1971. In the ground-water program, the Subdistrict collects water-level data at 45 wells, 30 for the Bureau of Reclamation and 15 for the Federal-State cooperative program. Also, 27 sites are sampled for water quality analysis at the USGS laboratory facilities, either at Boise or in Salt Lake City.

Program Adjustment:

This total program is adjusted from time to time to maintain knowledge of the over-all hydrologic system and to meet the needs of the various participating and cooperating agencies. Priorities for allocating supporting funds must be re-determined as needs and funds-availability change. Basically, the water-management stations are operated to measure and record water availability and delivery, and continued so long as the need is sufficient that the benefitting water users provide funding support. When water-user needs no longer justify water-user funding support, the water-management classification ends and the station is either re-classified or discontinued. The hydrologic data inventory or documentation stations are operated on a priority sufficient to obtain a significant and meaningful period of record. The other stations are generally operated for specific problem-solving purposes and may vary in priority within small time intervals.

Data Collection and Processing:

The data collected by the Subdistrict staff are field measurements which must be processed in various ways to make them useful for water development, management, and the general water user. This processing involves office computation, compilation, tabulation, and technical review and checking. When the Subdistrict has completed these actions on the data to be published by the Geological Survey, the information goes to the District Office in Boise where that part that is to be published or otherwise released is given final review and checking. It is then prepared in Boise in proper form for release and publication. Much of the data must be processed on special time schedules and in special form to meet immediate local needs prior to publication. This often requires re-handling or multiple processing of the same data. Special equipment and automated procedures requiring special training and experience are used wherever possible to minimize the costs of these special processing needs.

Staffing:

The current Subdistrict responsibilities require one hydraulic engineering technician to make field measurements, maintain equipment, and assist with office processing of the data; one professional engineer or hydrologist to supervise and assist with field activities, make the office computations and direct the data processing, and to manage the Subdistrict; and one clerk-typist on a half-time basis. This need is now met by Mr. Virgil devoting essentially full time to field data collection and maintenance, Mr. Larson spending less than 40% of his time on management and computation, Mr. Bennett devoting approximately 60% of his time to supervision, computation, and processing of the records, and Mrs. Zavala devoting about 35% of her time to clerical and typing work for the Subdistrict. When the varying work load exceeds the capabilities within this staffing, assistance is provided from the District Office in Boise and from hydrographers paid directly from Water District funds. A credit of \$4,000 was made to the Water District in 1970 to cover this hydrographer assistance.

Funding:

The gaging stations, crest-stage stations, wells and sampling sites, exclusive of those water-management stations needed by the Watermaster for Water District management, are operated and funded as a part of the total Geological Survey District program. The salary, operating, construction, maintenance, administrative and technical-supervisory costs of this part of the program are charged to the various accounts from which funds are acquired to support the same cost items in the total Geological Survey District program, according to the appropriate proportion that the Subdistrict activity represents. These costs are separate from and not charged in any way to Water District #36 fund sources, even though much of the data and work thus supported is of direct benefit to the Water District and its water users.

The water-management stations in the Federal-State cooperative program identified by the Watermaster as necessary to Water District operation are also operated and maintained as part of the Subdistrict activity, and their data are processed and distributed. The cost to the Geological Survey to operate these stations and process the data will be \$40,675 during the coming (1971) operating year (USGS Fiscal year 1972). The sources of funds to support that cost are Water District #36 -- \$10,115, State of Idaho appropriation to the Federal-State cooperative program -- \$10,225, and the Geological Survey matching funds account -- \$20,335. Thus, the Water District pays approximately 25 percent of the cost to support flow-measurement and water distribution recordation absolutely necessary to the operation of the Watermaster function according to rights, decrees, and Idaho law. The State pays a second 25 percent, and the Federal Government pays 50 percent of the cost even though many of these strictly water-management stations are not necessary to the Federal responsibility to record and document the water resources and provide general hydrologic data.

Cost of the Watermaster function

The watermaster function, as described by Mr. Larson, is clearly a complex, multiple-duty activity requiring more than the capabilities and attention of one person. As currently assigned by the water users and the Committee of Nine, the activity is essentially that of Water District management. The Watermaster is required to not only manage and distribute the water according to a complicated set of rights, decrees, storage allocations, and water transfer agreements, but he also serves a multitude of other functions. He serves the secretarial functions for both the water users and the Committee of Nine, manages and disburses the operational funds of the Water District, prepares billings and collects the assessed income of the Water District, serves as the Water District representative and advocate before public and private groups, represents the Water District on legal actions in those matters directly related to Watermaster activities, hires and directs all employees of the Water District, and in virtually every respect is a spokesman and the representative of the water users in the total management of their Water District affairs.

The costs of the assigned Watermaster function directly identifiable as an obligation of the Water District and Chargeable to Water District funds may be grouped in four categories: Salary and field expenses of hydrographers and river riders employed and paid by the Water District; miscellaneous operational costs directly attributable to the Watermaster and Water District operations; salary of the Watermaster and staff; and the proportionate share of operation and maintenance of water-management stations necessary to the Watermaster functions. As will be discussed by Mr. Larson, each of the categories contain the following:

Hydrographers and River Riders

The present-day management and distribution of water requires the service of six hydrographers and seven river riders in addition to the activities of the Watermaster and staff. Salary and expenses for these total \$ 26,350.

Miscellaneous operational items

Several cost items are specific charges against Water District operations and are charged directly against Water District funds. These are:

- Gage readers
- Vehicle milage for Watermaster work
- Subsistence while on Water District work
- Telephone and telemark
- Social Security for Water District employees
- Bond premium of Watermaster
- Insurance for Water District liability
- Storage rental
- Snow pillow
- Ground-water data collections (Aberdeen-Springfield area)
- Postage
- Interest on loans
- Incidentals, including part-time clerical help on specifically Water District needs.

These costs amount to ----- \$ 9875

Salary of Watermaster and Staff

It has been previously shown that the Watermaster (Water District management) function requires at least 60 percent of the time of Mr. Larson, 40 percent of the time of Mr. Bennett, and 65 percent of the time of the clerk, Mrs. Zavala. Consequently, these percentages of the total salary and benefits of these three persons represent an obligation of the Water District. As now foreseen, this cost for the coming operating year is \$24,228. The remainder of the total salary and benefit load for these three persons (\$21,022) is an obligation chargeable to Subdistrict operations.

Because this represents an approximately even division of obligation, and in order to minimize annual computation of this obligation, the Geological Survey proposes that it be agreed to annually divide the salary and benefits obligation for the three-member Watermaster and staff on a 50-50 basis. If so agreed, the salary and benefits obligation of the Water District for the coming year would be ----- \$22,625.

Water-management station operation

It was earlier discussed and shown that the total cost of the Geological Survey for operation of the 32 water-management stations necessary to the Watermaster function is \$40,675. As noted, and in accordance with the policy and procedures applied statewide, the 25 percent proportionate share of this cost chargeable to the Water District in the 1971 operational year is -----\$10,115.

By: H-1 H-11

Hall
1-6-71
To WD #36
Idaho Falls

Stream and canal gaging

An adequate system of stream and canal gaging to document the quantity of flow with respect to time is an absolute necessity both to inventory the resource and to manage the resource. The accuracy of the data and the degree of detail needed, however, are the determining factors in the cost of this documentation.

The Watermaster is responsible to assure the delivery and equitable distribution of the available water to many water users in accord with their statutory rights. To meet these responsibilities the Watermaster must operate a system of stream and canal gaging that documents on a daily basis the amount of water in storage, in transit, and being delivered through the system at more than 100 places. This requires bi-weekly and even weekly current meter measurements at most sites and daily gage height readings and daily computations of daily discharge.

To meet the Federal-State hydrologic data requirements, the stream and canal gaging program must document on a one-to-several-times-per-year basis the amount of water flowing at a given point. In contrast to the Watermaster responsibilities, this requires current meter measurements on about a monthly basis, a continuous record of gage height and computations of daily discharge ^{once} to several times per year.

Stream gaging consists of obtaining records of stage and measurements of discharge. Stage is the height of the water above a chosen datum, or elevation. The chosen datum corresponds to zero on the gage. An accurate record of stage is one of the essential factors in determining river discharge. Records of stage vary from one or more readings per day of a staff gage by an observer to the continuous recording of stage on a graphic chart or the automatic punching of a tape at intervals of five minutes to one hour.

Measurement of rate of water flowing past a cross section of the stream in a unit of time is the other essential factor in determining river discharge. Such a velocity-area measurement of discharge is made with a current meter by wading, from a cable way or from a bridge (foot-bridge, highway bridge, etc.). A gaging site operated in the Federal-State hydrologic data program is visited about once a month, at which time a measurement of discharge is made and the recorder of stage serviced. A gaging site operated to meet responsibilities of the Watermaster may be visited daily to determine stage and measured as frequently as once a week.

S. J.
V. L. M. M. M.
Cable News

Gaging records are processed by relating the quantity of water flowing at the time of measurement to the stage or gage-height of the water obtained at the same time. The relationship must be established for the range of stages and discharges experienced. This relationship permits a rating curve to be drawn from which a rating table may be calculated. This stage-discharge relationship must be confirmed or redetermined with time so that adjustments can be made to the stage record as necessary because channel cross-section and conditions change with time. By this adjustment to the stage record the correct discharge can be determined for any one gage-height reading or for the mean gage-heights for the day.

For a gaging site operated for hydrologic data the record is handled from once to several times per year for either manual or automated record computation, depending upon the demand and use for the data. On the other hand, to fulfill the responsibilities of the Watermaster the determination of discharge related to stage must be done every day during the irrigation season. During this period the Watermaster must continually adjust all previously computed daily discharges as each new measurement of discharge is made that reflects a change in the stage-discharge relationship. This must be done in order to maintain an accurate accounting of the total quantities of water.

In addition, the daily discharge records for gaging stations are documented in annual publication reports of the Geological Survey which are available to the public. Provisional records of daily discharge for any gaging station for selected periods may be requested prior to the publication of the report. These records of discharge for hydrologic data stations are used by all people with planning and management responsibilities in assessing the distribution and availability of the water resource.

Many value judgements go into the selection and location of gaging sites and the costs related to them. First there must be a need for hydrologic data at the site. Next the site must be accessible; it must be capable of reflecting a stage-discharge relation; and funding must be available, either in the Federal-State program or from some other source. Only five per cent of the available funds are federally appropriated funds, and these are for specific sites. The other 95 percent of available funds come either from other Federal agencies for specific work items or from the Federal-State matching program where State-offered funds are matched by Federal funds on a 50-50 basis.

January 14, 1971

Mr. Arthur L. Larson
Watermaster
Water District No. 36
785 Sonja
Idaho Falls, Idaho 83401

Dear Art:

We have reviewed the minutes of the meeting held in Idaho Falls on January 6, 1971. I agree with you that the meeting should be titled as a meeting of the Committee of Nine, the U. S. Geological Survey and the Idaho Department of Water Administration. Your list of those present does not include Mr. John Rosholt. In the fifth paragraph I would ask that you change the second sentence to read as follows:

Mr. Higginson commented that the present arrangement of the cooperative agreement between the U. S. G. S. and District 36 was not entirely satisfactory from an administrative standpoint. The Department of Water Administration is responsible for the administration of the waters of the state and supervision of the water masters. The fact that he is a Federal employee and part of his salary is paid by the water users makes this arrangement somewhat difficult.

I see no other changes we would suggest in the minutes.

Very truly yours,

R. KEITH HIGGINSON
Director

RKH:cc

RECEIVED
JAN 21 1971

MEETING OF COMMITTEE OF NINE, U.S.
Geological Survey and Department of Water Administration
Westbank Restaurant, Idaho Falls

Department of Water Administration

January 6, 1971

The meeting was called to order at 9:15 a.m. by Mr. W. L. Burnham, District Chief, U.S. Geological Survey.

Present were: Committee of Nine members- Leonard Graham, Al Peters, C.N. Scoresby, Willis Walker, Lynn Loosli, J. Lavon Christensen, Burdell Curtis, and Glenn Simmons.

Idaho Department of Water Administration- Keith Higginson, Sherl Chapman.

U. S. Geological Survey- W. L. Burnham, Hal Hall.

Water District No. 36- Art Larson, Michael Bennett.

North Side Canal Co.- Ted Diehl, Joe Putman.

Fremont Madison Irrig. District- L. C. Anderson, Mary Smith.

Attorney William Holden, Idaho Falls, and Edward Reichert, Twin Falls.

Report
Mr. Burnham made the opening remarks by reviewing the history of the relationship between the U.S. Geological Survey and the Water District 36. He demonstrated his discussion with a map indicating all the gaging stations in the area with a bar graph at each site illustrating the proportional funding of each station by the various agencies.

Keith Higginson reviewed the state statutes outlining the legal requirements of the organization and operation of water districts and the function of the watermaster as related to the State Department of Water Administration. He noted that many of the statutes are obsolete and unenforceable, and should be reviewed and studied with the object of updating them.

Mr. Bill Holden suggested that the Water District could initiate such a review. Mr. Higginson commented that the present arrangement of the cooperative agreement between the U.S.G.S. and District 36 was not entirely satisfactory from administrative standpoint. ~~with the Department of Water Administration as the Department~~ *and supervisor of the water master* ~~law~~ is responsible for the administration of the waters of the State. However, the Department would do nothing to change the present arrangement as it has worked well in the past, and as long as it is satisfactory to the present ~~committee~~ and water users.

Art Larson reported on the duties, responsibilities and functions of the dual position of Watermaster for District 36 and Engineer-in-Charge of the Geological Survey Sub-district.

A number of charts illustrated the method of computations used in moving stored water from the various reservoirs down the river to the users. Operation of the North Fork of the Snake River was explained by Mr. Bennett. (Copy of written report attached to original minutes).

Hal Hall spoke on the necessity of maintaining an adequate system of stream and canal gaging to document the quantity of flow with respect to time, both to inventory and management of the water resources. He described the methods used

PHH
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in stream-gaging and the facilities and equipment used. He illustrated his talk with a slide projection of typical gaging station installations, equipment, and streamgaging operations. (Copy of written report attached to original minutes).

Meeting recessed at 11:45 a.m. for lunch, and reconvened at 1:00 p.m.

Mr. Burnham presented the Geological Survey's proposal that the Water District assume one-half the salary of the Watermaster, assistant watermaster and the clerk, estimated to be \$22,625 for the coming year. Mr. Burnham referred to his previous discussion regarding the water district's share of the costs of operating water-management stations necessary to the watermaster's function to be one fourth of the total cost. The water district's share for the coming operational year is estimated to be \$10,115. (Copy of written report attached to original minutes).

General discussion was had regarding the anniversary dates of the budget year, the operating year and the fiscal year, with Mr. Rosholt suggesting some thought be given to simplifying and/or standardizing of the fiscal operations of the District.

Mr. Rosholt also summed up the general consensus of the meeting that the proposal of the U. S. Geological Survey cooperative budget of \$68,000 was comparable to upwards of \$100,000 worth of services to the Water District.

Mr. Rosholt, Mr. Holden, Mr. Graham, and others, commended the U.S.G.S. the Water District, and the State Department of Water Administration for the informative and detailed explanation of the internal workings of the District.

The meeting adjourned at 3:00 p.m.

The Committee of Nine met in executive session immediately thereafter and after a few minutes discussion of the earlier presentation, it was moved by Al Peters and seconded by Leo Murdock that the Committee of Nine hereby approve the arrangement as proposed by the U. S. Geological Survey.

Cliff Scoresby
Secretary

Idaho Falls, Idaho.
Jan. 8, 1971

COMMITTEE OF NINE MEETING -- Jan. 6, 1971

by A. L. Larsen

One of the main purposes of this meeting is to get everyone acquainted with all the internal workings of Water District No. 36 and most of the Geological Survey Sub-district Office.

A number of the present members of the Committee of Nine have served for many years. Mr. Gillette, I find, has served intermittently since 1940; Mr. Walker and Mr. Graham since 1948; Mr. Scoresby since 1953; Mr. Murdock since 1954; Mr. Peters since 1959; and so on, for an aggregate total of 171 years. That's a lot of years experience in the water business and all of you are either directors or managers of various irrigation groups. Therefore, as we present our interpretation of this river operation, if anything appears to be inconsistent with procedures which you recognize as having been established in the past, please put us straight.

We will solicit and appreciate any suggestions, comments, or changes that may come to mind, and I am certain any and all questions can be answered here today. We are going to attempt to present in some detail a typical operation in moving stored water through the system. We will try not to get too involved, as at best we can do little more than scratch the surface in the time available.

The watermaster's year begins on the first Monday in March, when the waterusers within the district assemble and vote their decreed rights in conducting the business of the water district. The users, following the recommendations of the Committee of Nine, assign certain duties to their elected watermaster, by means of a number of resolutions. These, of course, are in addition to the duties and responsibilities as set down by the Idaho code through the Department of Water Administration.

The main resolutions, as generally adopted annually, define the transmission losses to be charged to stored water being moved down the river from the various reservoirs.

Pre-reservoir conditions are to be maintained as nearly as possible by allowing for bank storage and time of travel.

The users approve and accept the budget for the ensuing year, as prepared by the Watermaster and the Geological Survey, and previously reviewed by the Committee of Nine, usually at a special meeting the day or evening before the general meeting.

They authorize the watermaster to borrow a limited amount of money each year in order to pay outstanding bills near the end of the irrigating season.

The users recommend a committee to assist and advise the watermaster in the renting of surplus stored water to canals or individuals in need of supplemental water.

COMMITTEE ON NINE MEETING -- Jan. 6, 1971

by A. L. Larson

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The users recommend a committee to assist and advise the watermaster in the renting of surplus stored water to canals or individuals in need of supplemental water.

By state law, he is required to deliver water according to decreed rights, and when decrees can no longer be filled by the natural flow of the river, he must then determine the amount of stored water being delivered to the user and keep a running total of the balance so that the user can prorate his remaining storage over the balance of the season.

State law stipulates that annually, or as requested, reports must be filed with the Department of Water Administration. Also, the watermaster must file with the Department an official bond in the penal sum of \$500.

Regular reports are issued at weekly intervals during the non-regulating season, and three times weekly during the time the river is on regulation. This report keeps interested parties informed of the river flows, reservoir contents, decrees in effect, and noteworthy items regarding precipitation and snow conditions on the watershed. You are all familiar with it. Incidentally, to indicate the widespread interest in such data regarding the Upper Snake River, the mailing list for the report includes addresses in Washington, D.C., Denver, Salt Lake City, Boise, and almost every city and town in the Snake River Valley.

Part of the responsibilities of the watermaster is active participation on a number of committees involved in various aspects of river operation. Currently, they are the Committee of Nine, the Storage Pool Committee, the Ririe Reservoir Allocation Committee, and the State Reclamation Education Committee. Typical of most committees, they operate intermittently, but can become quite demanding when suddenly activated.

As with any organization, people are required to make it function. The permanent force of Water District 36 and the U.S.G.S. Sub-district office amounts to four persons. The watermaster, his assistant, one hydrographer, and a clerk. In addition to Water District duties, they are responsible for all the U.S.G.S. assignments in SE Idaho and the Snake River in Wyoming. Part time help the year around amounts to a hydrographer and several gage readers, who are paid only for the actual time worked.

When the irrigation season begins on May 1, some kind of record is attempted on all diversions. Most of the larger canals have stage recorders on them, pumped canals are rated through line meters, or pump data, and the majority of the diversions are gaged by daily gage readings. During the flood water season, canal company watermasters are furnished gage height books and are asked to record their gage readings as often as possible. Most of them do a conscientious job of this, and these readings furnish the basis for most of the early season diversion records.

From May 1 to the time regulation begins, usually about July tenth, current meter measurements are made on the canals by one hydrographer at St. Anthony, one here at Idaho Falls, and one at Burley. Current meter measurements are necessary to properly relate gage heights to cubic feet per second flow. Also, towards the end of May, a deputy watermaster is employed in the Teton Basin to gather hydrometric data and read canal and ditch gages in order to properly administer the decrees in the basin. Likewise, a deputy is employed on a part-time basis in the Swan Valley from about the first of July to about the first of September.

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When the river goes on regulation, the river riders are put on to furnish us with daily canal readings so that the latest information can be had regarding distribution of stored water. Two additional men are employed thusly in the St. Anthony area, and four in the Idaho Falls area, usually for a period of about 75 to 90 days. Readings in the lower valley are placed into the Bureau of Reclamation office by canal company personnel, and then relayed to the Idaho Falls office for inclusion in the daily data.

Now to go through some of the motions of how this data is obtained, tabulated and eventually condensed into final form for publication in both the watermaster's annual report, and in the U.S. Geological Survey's "Water Resources Data for Idaho".

A typical day's operation in mid-summer begins with about a dozen phone calls submitting data to aid in determining just when we are on the river operation. In more or less random order, reports come in from the river riders responsible for the canal gage readings in their respective reaches of the river. Also, included are a number of river readings, like at Boise, Burley, and Blackfoot. Probably the key river reading is the one from the benchmark at the Shelley station. This gage is situated in a strategic location in the river reach and reflects the water usage upstream. As has been stated so many times, beginning with the Fallcrest conference, the ideal river operation is to keep the river as low as possible at the Blackfoot station. Ideally, this would be nearly zero, but that would be impractical and unfair to the last few canals in the Blackfoot area. It seems that if a flow of between one and two thousand cfs can be maintained past the Blackfoot gage, it keeps everyone happy, and still keeps a "cushion" there if the demand should suddenly pick up.

The St. Anthony office works very similarly, only the two full-time hydrographers and the one part-time hydrographer make their gage reading rounds first thing in the morning, report into the office, then do their current meter work in the afternoons. In the Idaho Falls area, one man does all the current meter measuring, full time, and four individuals work part-time reading the gages.

The deputy watermaster in the Teton Basin sends in weekly reports from which a figure is determined to be stored water used in the Basin. This is somewhat tentative at times, but is close enough to keep the Teton River in balance. At the end of the season when all data is available, all storage figures are corrected and revised slightly before publication. This is especially important in years of short supply when carryover storage is a big item.

We have referred to the storage rental pool, and the way this works is as follows. If a person or a canal company owns a big block of storage, and they do not anticipate using any or all of it, they notify the water district office well ahead of the irrigation season, and this block of water is pooled with other offers to form a source of supplemental water to those who do not have an adequate supply of stored water. The watermaster's office acts as a broker, receiving money for water rented and disbursing it at the end of the season to those who offered it for rent. The only remuneration to the District for this service is the use of the rental money for a period of

several months to pay current district expenses. Stored water is rented at the rate of 50 ¢ an acre-foot apparently based on the Palisades Water Users Contract which calls for annual payments of 25 ¢ an acre-foot per year. Therefore, a Palisades water user cannot offer for rent more than one-half his storage allotment so that he can no more than break even on his storage assessment.

As soon after October 1 as possible, depending on the ease and speed with which all canal records can be accumulated, the total canal discharges for the summer are totalled up, and the billing sent out to the various users. The assessment is computed as follows: All water district expenses are added up for the past year, October 1 to September 30, and divided by the total number of cfs days of water diverted from May 1 to September 30, except in the lower valley where the season is longer and April 15 is the initial date. However, the lower valley rate is the lowest in the District, and is the base rate. To that rate the Committee of Mine expenses, upper valley members only, is added on. For the Swan Valley users, a portion of the Swan Valley deputy's expense is added on, and likewise in the Teton Basin.

Canal companies, districts and a number of individuals are billed directly. However, all of the Teton Basin, Swan Valley, and various groups of unorganized ditches and individuals are billed through the Counties via the Tax rolls. And, in this respect, a problem has arisen this year. Teton County auditors have ruled that the County has no obligation to pay their assessment until all the water taxes are collected by them. Therefore, out of a total billing of \$1,798.49, they have collected and paid to us the sum of \$1,448.28, short some \$350.21, so far. It seems some clarification is in order here. The Idaho Code is somewhat ambiguous and does not spell out in so many words as to how the counties are to collect that last penny to reimburse the Water District.

For many years the Water District Office has sold the Geological Survey topographic maps, originally mostly as a public service. In recent years, however, the demand for these maps has grown to where we now sell them on a commercial basis, that is, at the same rates as the stationary stores. The profit realized from the sale of these maps go into Water District funds, and are now at about \$400 annually.

It seems the Water District gets more than its share of the attention at this type of a meeting, and rightfully so, as that is where your primary concern lies. But let us dwell on what role the Geological Survey plays in the scheme of things here. First, they are the recognized authority on stream-gaging, ground water levels, and quality of water. Earlier, I mentioned that the Watermaster's year begins about March 1, and how the regulation season goes. When the irrigation season ends September 30, there are several frantic weeks getting the bills out. In this process the canal records are finalized. Then comes several months of accumulating all the river and canal data for compilation into the "black book". Usually, this is completed and sent to Mr. Higginson's office for duplication and binding by the end of January so that the annual report is available by the March 1 meeting. Now we finally come to the time of year that we can devote most of our time to the Geological Survey.

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As soon after October 1 as possible, depending on the snow and speed with which all small reservoirs can be accumulated, the total annual discharges for the summer are tallied up, and the billing sent out to the various users. The assessment is computed as follows: All water district expenses are added up for the past year, October 1 to September 30, and divided by the total number of days of water diverted from May 1 to September 30, except in the lower valley where the season is longer and April 15 is the initial date. However, the lower valley rate is the lowest in the district, and is the base rate. To that rate the Committee of Mine expenses, upper valley members only, is added on. For the Swan Valley users, a portion of the Swan Valley deputy's expense is added on, and likewise in the Teton Basin.

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Gaging station records outside the district have been largely neglected since the last April or May, and they must now be brought up to date, first through the past September 30, so that they can be sent to the Boise office for editorial review and then forwarded to the printers for publishing and binding.

It is usually possible to bring all records up to date by about April or May, when it ^{is} again time to start concentrating on District 36 duties. Of course, stream-gaging is not the only Geological Survey function we perform for the District office. With all the accents lately on water pollution, etc., quality of water has become very important, and a substantial share of our efforts are directed towards the collection of quality of water samples. Sometimes the number of bottles sitting around our office almost makes one wonder what our business might be.

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Stream and canal gaging

An adequate system of stream and canal gaging to document the quantity of flow with respect to time is an absolute necessity both to inventory the resource and to manage the resource. The accuracy of the data and the degree of detail needed, however, are the determining factors in the cost of this documentation.

The Watermaster is responsible to assure the delivery and equitable distribution of the available water to many water users in accord with their statutory rights. To meet these responsibilities the Watermaster must operate a system of stream and canal gaging that documents on a daily basis the amount of water in storage, in transit, and being delivered through the system at more than 100 places. This requires bi-weekly and even weekly current meter measurements at most sites and daily gage height readings and daily computations of daily discharge.

To meet the Federal-State hydrologic data requirements, the stream and canal gaging program must document on a one-to-several-times-per-year basis the amount of water flowing at a given point. In contrast to the Watermaster responsibilities, this requires current meter measurements on about a monthly basis, a continuous record of gage height and computations of daily discharge once to several times per year.

Stream gaging consists of obtaining records of stage and measurements of discharge. Stage is the height of the water above a chosen datum, or elevation. The chosen datum corresponds to zero on the gage. An accurate record of stage is one of the essential factors in determining river discharge. Records of stage vary from one or more readings per day of a staff gage by an observer to the continuous recording of stage on a graphic chart or the automatic punching of a tape at intervals of five minutes to one hour.

Measurement of rate of water flowing past a cross section of the stream in a unit of time is the other essential factor in determining river discharge. Such a velocity-area measurement of discharge is made with a current meter by wading, from a cable way or from a bridge (foot-bridge, highway bridge, etc.). A gaging site operated in the Federal-State hydrologic data program is visited about once a month, at which time a measurement of discharge is made and the recorder of stage serviced. A gaging site operated to meet responsibilities of the Watermaster may be visited daily to determine stage and measured as frequently as once a week.

Gaging records are processed by relating the quantity of water flowing at the time of measurement to the stage or gage-height of the water obtained at the same time. The relationship must be established for the range of stages and discharges experienced. This relationship permits a rating curve to be drawn from which a rating table may be calculated. This stage-discharge relationship must be confirmed or redetermined with time so that adjustments can be made to the stage record as necessary because channel cross-section and conditions change with time. By this adjustment to the stage record the correct discharge can be determined for any one gage-height reading or for the mean gage-heights for the day.

For a gaging site operated for hydrologic data the record is handled from once to several times per year for either manual or automated record computation, depending upon the demand and use for the data. On the other hand, to fulfill the responsibilities of the Watermaster the determination of discharge related to stage must be done every day during the irrigation season. During this period the Watermaster must continually adjust all previously computed daily discharges as each new measurement of discharge is made that reflects a change in the stage-discharge relationship. This must be done in order to maintain an accurate accounting of the total quantities of water.

In addition, the daily discharge records for gaging stations are documented in annual publication reports of the Geological Survey which are available to the public. Provisional records of daily discharge for any gaging station for selected periods may be requested prior to the publication of the report. These records of discharge for hydrologic data stations are used by all people with planning and management responsibilities in assessing the distribution and availability of the water resource.

Many value judgements go into the selection and location of gaging sites and the costs related to them. First there must be a need for hydrologic data at the site. Next the site must be accessible; it must be capable of reflecting a stage-discharge relation; and funding must be available, either in the Federal-State program or from some other source. Only five per cent of the available funds are federally appropriated funds, and these are for specific sites. The other 95 percent of available funds come either from other Federal agencies for specific work items or from the Federal-State matching program where State-offered funds are matched by Federal funds on a 50-50 basis.