

**OTHER DOCUMENTS
EXIST ON MICROFILM IN THE VAULT**

THE BIG LOST RIVER BASIN
and the
SRBA

February 4, 1991

- I. What the SRBA means.
 - A. Court decree of all water rights in the Big Lost River Basin, both surface and ground water rights, as well as all other water rights in the Snake River Basin in Idaho.
 - 1. The priority and ownership of each water right will be determined along with all other elements of each water right.
 - 2. The decree of water rights will include instructions for the distribution of water to guide the Department, the Water District and the water users.
 - B. The case is assigned to Judge Hurlbutt in the Fifth Judicial District Court in Twin Falls.
 - C. Even though the case is assigned to the Twin Falls Court most activity with the Court, when necessary for the Big Lost, will be accommodated locally.
 - D. To the extent applicable, the provisions of the Utah Construction decree will be incorporated in the SRBA decree of the Big Lost.
 - a. The recommendation of water rights and water distribution plan will be presented to the court in the Director's Report prepared by IDWR.
 - 1. Water rights are recommended based upon the claims filed with IDWR and IDWR's investigation of those claims and applicable law.
 - 2. The water distribution plan will be based upon the need to protect senior water rights, IDWR's understanding of the hydrology of the basin, historical practices and applicable law.
- II. Time schedule for the Big Lost River Basin and the SRBA.
 - A. The Director's Report for the Big Lost will be filed with the court this spring. (The current planning date is May 1, 1991.)
 - 1. The report will contain a description of each water *RIGHT* recommended to be decreed by the Court.
 - 2. The report will contain IDWR's recommendation for distribution of water within the Big Lost basin.
 - B. At the same time the Director's Report is filed with the Court IDWR will file a motion with the court seeking the authority to distribute all water rights contained in the Director's Report.
 - 3. This motion for "Interim Administration" will be heard by the Court from 30 to 60 days after the

motion is filed with the Court.

4. The motion will seek authority to distribute water within the basin the same as it will be distributed after the Court enters its decree of water rights.
- C. If the Court approves IDWR's motion for interim administration the Director will have the authority to implement a distribution plan and time table to allow the Water Master to regulate all water users in the Big Lost River Basin.
- D. The procedure for objecting to the Director's Report and the final decree of the water rights for the basin will be fully discussed in mailings to the water right claimants and information meetings planned for the basin.
- E. Claims for water use within the basin are currently being investigated and the Director's Report of those water rights is being compiled.
 - 2,230 Claims filed
 - 650 Domestic and stockwater
 - 1,560 Irrigation claims
 - 20 Other uses
 - Review 1,530 Irrigation: Investigated & review continuing
 - 242 D & S: Final stages of review
 - 542 Irrigation: Final stages of review
 - Staff is working closely with Irr. Dist. on finalizing its claims.
5. Claimants whose rights will be substantially changed in the Director's Report from the way they were claimed will be contacted by IDWR prior to the filing of the Director's Report.
6. As unclaimed water uses are identified the owners of record of the property upon which the water is being used will receive another notice of the requirement to fill a claim in the SRBA.
- F. The plan for water distribution within the basin is being developed by IDWR with data coming from a variety of sources including the renewed USGS effort in the basin and the IWRI in addition to IDWR.

THE BIG LOST RIVER BASIN
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February 3, 1991

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Dave Shan. Don —

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Norm needs this Monday 2/4. ^{THX Dave}
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Where are we on ~~round 2~~, etc.

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Keith
My initial
idea
very

BIG LOST RIVER BASIN PUBLIC MEETING

NOVEMBER 26, 1991

MANAGEMENT PLAN DEVELOPMENT

Remind of history of IDWR involvement since 1989

Public meeting

Advisory group meetings

Remind of provisions of May 7, 1990 memo

Status quo to be maintained and defined

Remind of provisions of August 7, 1990 order

moritorium

conjunctive management

The study results presented here tonight emphasize the need to implement conjunctive management.

SRBA director's report will identify water rights considered to be from a common source and therefore to be administered together. Present Bill Schaffer's work. Describe how line will be chosen and the effect of being on one side or the other.

Mention that surface tributaries previously decreed to be administered separately will remain so.

The development of a management plan will proceed as follows:

Actual adoption can not occur until after the court enters and SRBA order defining rights.

However, the process will be began now to avoid delay.

Adoption will be by the Director pursuant to his authorities under Section 42-237a.g., 603, 604, and 1805(8). The adoption will be under the administrative procedures act meaning that notice will be given, hearings will be held, and the rules will be subject to legislative review.

Development of the management plan will be an open process. I intend to involve the Big Lost Advisory Committee in the process. IDWR staff is preparing a proposed plan to be reviewed with the advisory committee. The basic premise being incorporated into this proposal is that those irrigating additional land from that identified in the UC Decree will mitigate depletions effecting those senior surface rights who have not supplemented with ground water. This can be implemented through a voluntary organization of pumpers or IDWR can administer through water district authorities.

Requirements for the proposed plan:

Must be capable of being implemented upon entry of the SRBA order by the court.

Must provide protection for senior surface water from gw pumping depletions by either terminating gw pumping or by mitigation, compensation or other relief.

Must provide an equitable sharing of the cost of mitigation on the gw users.

Must be simple enough to be implemented and understood.
Must have a reasonable administrative cost.

Sequence of events:

Proposed plan to the Advisory committee

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Big Lost River Irrigation District
Board of Directors
Mackay, ID 83251

February 18, 1988

Dear Rita, *Y Directors*

After much consideration, I have decided to declare 425 acres of land irrigated through the Moore Canal. Realizing that this is somewhat less than I have previously declared, I feel that I owe the Board some explanation. Perhaps I have overestimated in the past, and also some years when water is plentiful we get more water delivered.

Let me try to explain our irrigation system a little. In 1987 I irrigated 1125 acres--the reason I use "I" so much is because I don't want to confuse you with "our" or "us", realizing that there are several of us involved in this system and I desire to explain my part. I have $3\frac{1}{2}$ wells on Don's farm and 60% of one well on Hermans farm that is delivered through our own private ditch. This water is all decreed to my land, and is approximately 1050" of water. In addition I purchased some water from Michael Aikele and some from Gerald Stewart, which is another 200 inches that came through the private ditch. If we give that 1250 inches a 15% shrink we have 1060 inches of delivered water.

The water that I have rights to delivery from the Moore Canal is; 80" from Kirby Jensen well; 150" from Leo Jensen well; 180" from my 60% share of the Reynolds well, besides, I purchased about 500" from Richard Reynolds and Craig Stewart for part of the year. This adds up to 910 inches, and if we shrink that 30% we have delivered about 637 inches of water. Now if we add that to the 1060 inches of water I receive through the private ditch we have about 1700" of delivered water, divided by 1125 acres of irrigated land equals about 1.5 " per acre.

I don't have any idea how we used that much water, but that's my problem. Perhaps I need to work something out with my partners.

Anyway, if you divide that, you see the 637 inches of water from the Moore Canal irrigated 425 acres.

I should also make note that Bruce Soelberg has 700" of water, Bret Aikele has 120", Steven Aikele has 460", for a total of 1280" less shrink, that delivers to us from the Moore Canal. In addition, Don and Herman have 3 wells that are delivered to the flat through the private ditch about 700" less shrink.

As to the status of my water rights: The Department of Water Resources has taken no action on water permits, licences, etc., for quite some time. Now that the Swan Falls agreement has been made final perhaps we will get some decisions and action from them on our applications. The one well that needs 'application for transfer' is the well I ahve purchased from Kirby Jensen. In talking with Ron Carlson, he suggested we change the agreement between Kirby and myself in a way he thought would be more acceptable to the Department. So I am working on this. I will need a one year pumping agreement from the district for this well for 1988. It should be on a more permanant basis after this year.

As to my 50% share in Leo Jensen-Craig Stewart well: The way the application was made with the Department is to deliver the water through a private ditch through Leo's place to what we call the Lava ditch, another private ditch, and then trade the water with ourselves to get it to the land it is to be made pertinent to. The last 2 or 3 years I have exchanged this with the District to have it delivered to the end of the Moore Canal. This has been somewhat unsatisfactory and I plan to fix up Leo's ditch and go under the U.C. bypass canal to bring this into accordance with the water application for this year and hereafter.

In the past I ahve purchased the water from Richard Reynolds well. He does not want to sell the well, but seems to be willing to sell the water on a year by year basis. I would like to be able to continue to do this. This turned into a problem with the ditch rider and consequently the district in 1987. Perhaps the Board needs to amke a decision as to allowing or disallowing this action. This looks to me to be beneficial to everyone because it gets me some reasonably priced

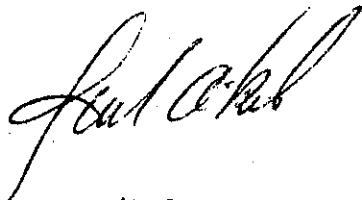
water, allows Rick to use his well, which gives him a constant clean stream of water for his sprinklers, and relieves the district of the responsibility of delivering water that additional $\frac{1}{2}$ mile or whatever it is to get it to him, and keeping a constant flow to him.

This is very lengthy, but I hope it helps to clear up some of the misunderstandings that have had in the past. Irrigation is a real pain, but if we are to farm in this area it is something we must work with. I have no desire to harm anyone else's water rights. I do want adequate water for our farm. We try to be efficient, we plant crops early to try to utilize the Spring moisture and cut down the late season irrigation.

It would be beneficial if the ditch rider could have some radio communication and maybe they need to be paid a little better wage to help assure having some good help for the job. I hope that you continue to press for better measuring devices on the headings.

I appreciate your service as office manager, board of directors, water master, outside crew, etc., and realize the importance you each are to us as irrigators. I appreciate your being conservative in your operation, but if a little more money would make for a more efficient and harmonious operation, I would encourage that also.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Juel Aikele', written in dark ink.

Juel Aikele

Hal *HA*
Wayne *WA*
Norm *NA*
Keith *KA*

MEMORANDUM

To: Big Lost River Basin File
Thru: Steve Baker, Alan Robertson
From: Bill Schaefer *BS*
Date: September 17, 1991

Subject: Comparative analysis of surface water / ground water relationships in the Big Lost River Basin

A study was conducted to evaluate the relationship between the Big Lost River and the local ground-water system during mean and extreme conditions. Spring mass water-level measurements in the Big Lost River Basin for 1991, 1985, and 1968 (Figures 1, 2, and 3 respectively) were used in the analysis. Water-levels for 1968 and 1985 are thought to represent near mean conditions, whereas, 1991 measurements were obtained following a four-year period of drought. All data used were collected by the USGS. Maps and profiles used in the analysis were constructed using IDWR's Surfer/Grapher software by Golden Software, Inc.

The study area is bounded by: Mackay Reservoir; the White Knob Mountains; the Lost River Range; and the Snake River Plain. The aquifer studied is confined to the Quaternary alluvium and colluvium sediments of the valley fill. Not all data points were valid due to measurement errors or recording errors. Some measurements were from deeper wells where the direction of ground water flow was not near horizontal and not part of the shallow, unconfined aquifer. These data were excluded from the contouring data base. The locations of the wells where a "static" water-level measurement was obtained are shown on each of the maps. In addition to the three water-level elevation maps, two profiles of the water-level maps along the Big Lost River were prepared. The first profile (Figure 4) shows the position of each water-level relative to the river with a mean sea level datum and the second profile (Figure 5) with the Big Lost River as the datum.

Spring 1985 and 1968 water-level maps indicate the surface of the aquifer under near mean conditions. During both time periods, there was significant flow in the Big Lost River as far south as Arco. The last recorded flow at the Arco gaging station was in the 1988 water year. Figures 4 and 5 show the dramatic decline of water-levels throughout the Big Lost River below the Mackay Reservoir for spring 1991. The decline is the result of a storage imbalance in the aquifer. This imbalance is because there is less water available for natural recharge of the aquifer due to the prolonged drought and the increased withdrawals from pumping wells.

Note that the greatest change in water-levels has occurred south of the Moore Diversion for all three time periods studied. There

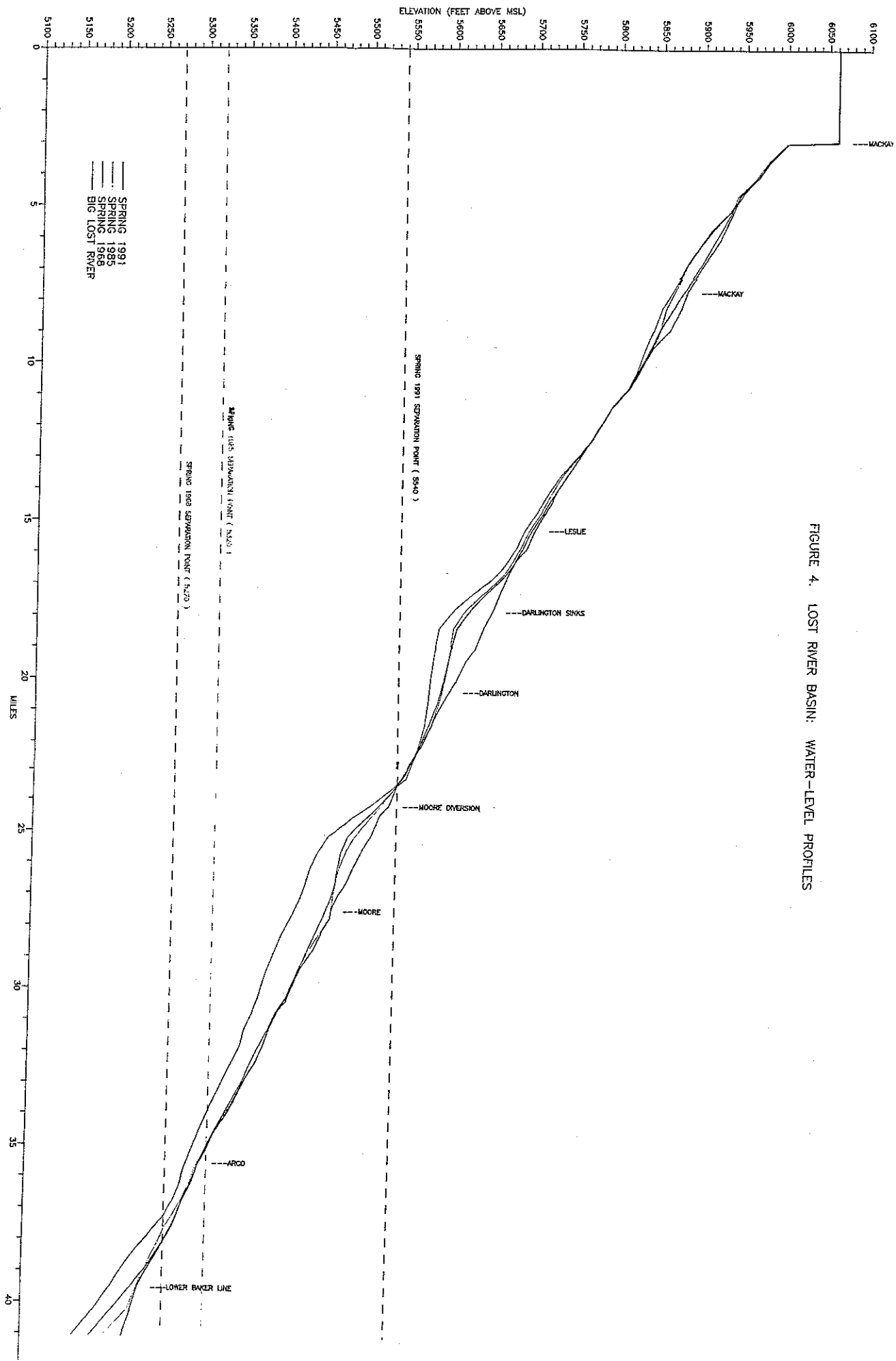
are three factors responsible for this. The first is that above the diversion, the valley floor is wider and would have more storage capacity due to an increase in volume of the aquifer. The second factor is the greater withdrawals as indicated by water rights filed. There were 105 claims filed with a total potential withdrawal of 356 cfs north of the diversion compared to 132 claims with a total potential withdrawal of 598 cfs south of the it. This suggests that total potential use south of the diversion is about 68% greater than the amount claimed to the north. The third reason is that at the Moore Diversion, water is diverted to both sides of the valley for irrigation. This reduces the water available for recharge beneath the river.

The procedure used by Steve Baker (IDWR Memorandum, 1989) was used to determine which wells could impact the surface water in the Big Lost River. For spring 1991, the point of final hydraulic separation of the Big Lost River and the aquifer is marked by the 5540 ft. water-level contour (Figure 1). This location is immediately north of the Moore Diversion. The location of this 1991 separation occurs at approximately the same position on the 1968 and 1985 maps. However, during these years this location does not represent the point of final separation since the river and ground water do become reconnected below Moore. The apparent stability of this "spill-point" may be due to a change in the transmissivity of the aquifer and a diverting of a majority of flow in the Big Lost River to a system of canals along both flanks of the valley during the irrigation season.

From this point of hydraulic separation, flow lines were delineated along both sides of the river. Because of the change in hydraulic characteristics at this locale, the aquifer is assumed to be anisotropic and flow lines need not be perpendicular to the equipotential lines. Since the water-level data used to delineate the flow lines represents a period of static or "non-pumping" conditions in the aquifer, a buffer zone was needed to be added down-gradient from them to account for the effects of local pumping. Based on computations by Crosthwaite et al (1970, pg. 81), a mile-wide zone seemed adequate to inhibit any adverse effects of pumping. This zone of hydraulic separation is shown on the 1991 water-level elevation map. This procedure was repeated for spring 1985 and 1968 maps (Figures 2 and 3).

As the aquifer system returns to normal, it can be expected that this point of separation will shift "downstream" towards the near mean location in 1985. It is not known what effects a prolonged drought would have on the boundary location. If the current drought conditions prevail, less water would be available for recharge, consumptive use would continue to increase, and the Big Lost River would continue to be diverted at the Moore Diversion into the irrigation canals flanking the valley. It is assumed that the 1991 point of hydraulic separation is stabilized near its present location primarily because of the Moore Diversion. However, below the Moore Diversion, ground water-levels would continue to decline beneath the river.

FIGURE 4. LOST RIVER BASIN: WATER-LEVEL PROFILES



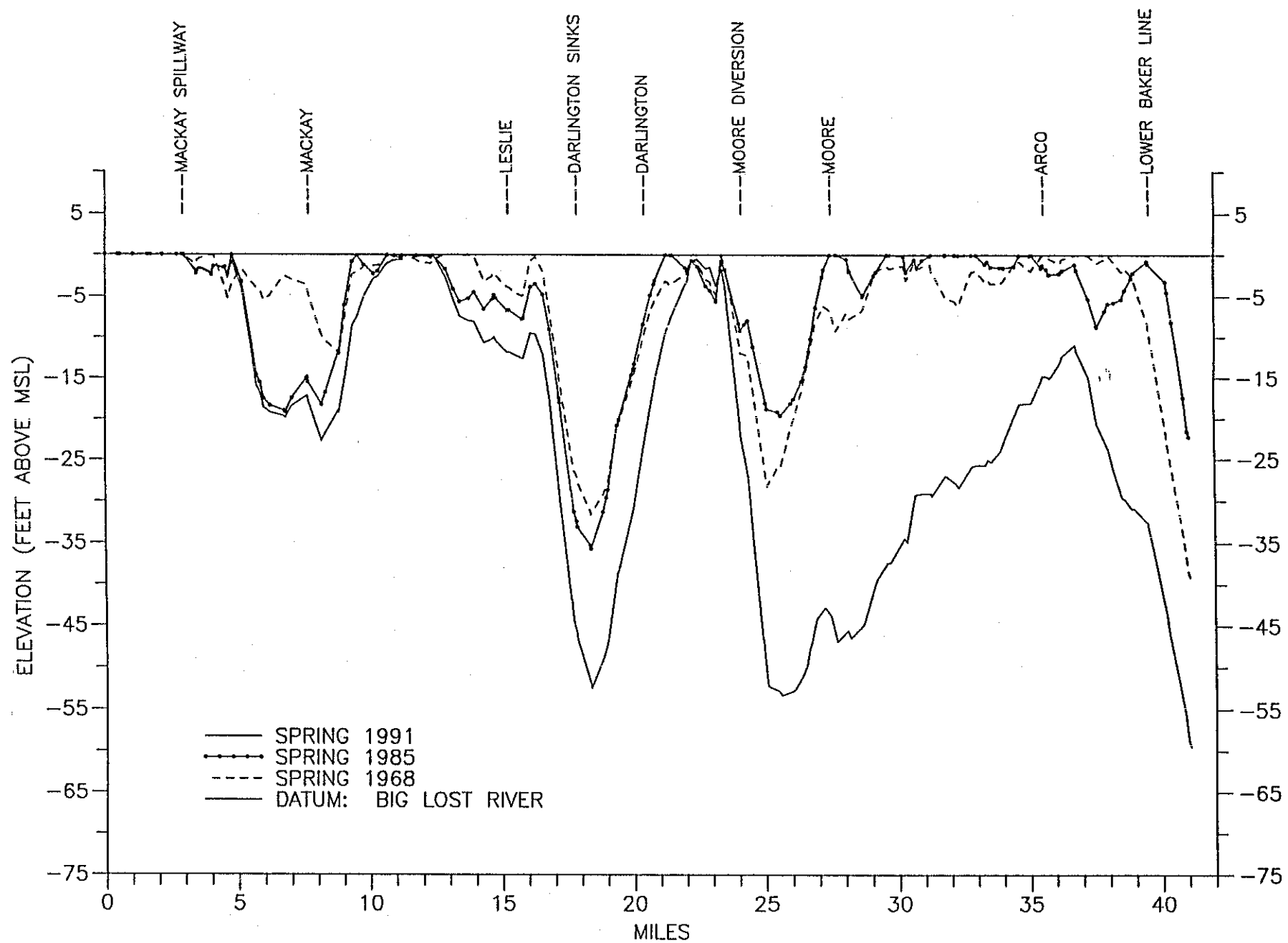


Figure 5. Profile of Water-Level Elevation Maps

**GROUND-WATER PUMPING IMPACTS ON
SURFACE WATER IRRIGATION DIVERSIONS
FROM BIG LOST RIVER**

EXECUTIVE SUMMARY

*Dave Rauster
Gary Johnson*

by
Idaho Water Resources Research Institute
November, 1991

Flow in Big Lost River is affected by precipitation within the basin and by the amount of consumptive water use. Ground water and surface water within the basin are often considered as a single resource because of the intimate hydraulic connection between the two. Activities which impact one, also impact the other, although not necessarily to the same degree.

Consumptive water use in the basin has increased during the last several decades due to the expansion of irrigation acreage, made possible by increased ground-water pumping and the partial conversion of flood to sprinkler irrigation. The additional water use and recent drought conditions have resulted in a decline in the water table, and consequently greater losses from Big Lost River. The resulting diminishing river flows, in turn, provide less water for diversion by surface water irrigators, possessing generally senior water right priorities.

Diversion records of Water District 34 indicate that diversions have decreased relative to river flow in the last two decades. That is, recent diversions are less than in earlier years of similar river flow immediately below Mackay Dam. The degree of depletion of diversions varies with the availability of surface water in any year. Although diversion records from different time periods may not be entirely accurate or dependable, historic changes in recorded diversions probably represent the best available means of estimating the effects of irrigation development on the availability of surface water for irrigation diversion. Comparison of diversions for periods representing the pre-development and post-development eras suggest that diversion depletion is between 20,000 and 30,000 acre-feet per year in water years similar to the 1987 through 1990 period (river flow about 70% of normal). The comparison implies that depletion in a normal water year is about 13,000 acre-feet.

Ground-water pumpage is one of the factors affecting flow in the river. The pumpage during the 1984 through 1991 calendar years averaged 31,000 acre-feet per year in Big Lost River valley below Antelope Creek. Pumpage during the normal water year is estimated to be about 47,000 acre-feet for the entire Big Lost River basin.

We believe that the available water resources in the Big Lost River valley are sufficient to meet current irrigation demands. The resources, however, must be properly managed to equitably distribute water to the users. Ideally, the resource should be managed by those who use it, the surface and ground-water irrigators of the basin. Effective management, however, requires cooperation from irrigators regardless of the water source, and agreement among the users on equitable means of water distribution and/or mitigation.

Several management alternatives are available with varying degrees and types of mitigation, if it is determined that senior water right holders are entitled to mitigation for reduced surface water supplies. The options include: 1) No compensation, but relieving the impacts by modification to the irrigation system, 2) monetary compensation for lost water, 3) water replacement, and 4) closure of junior water rights. The fourth alternative would have serious consequences and is the least desirable. The effectiveness and efficiency of any alternative is dependent on cooperation among the water users of the basin.