



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

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May 21, 1993

Dear Water Users:

In April 1991, the Salt Lake Valley Interim Ground-Water Management Plan was implemented. One of the major components of this plan is the collection of water use and water quality data from the major ground-water users in the valley. During the past few years, we have sent out several letters to the water users regarding this aspect of the plan. The first year of data collection is now complete, and response has generally been good. As promised, we are submitting, for your review, a summary report on the data received for 1992.

In order to utilize the ground-water withdrawal data, accurate descriptions of the well locations are necessary. My staff put forth considerable time correlating the water use data you have submitted to exact locations. All of the water right information that applies to each well was then tabulated. Every water user who has reported data to us will have an appendix in this report which summarizes the water rights in each well for which data was submitted. Please review this carefully and contact our office if you find any discrepancies. Also, we request each water user notify our office of any water right title changes.

There has been some confusion regarding the submittal of water quality data. According to the Ground-Water Management Plan, an annual water quality analysis is requested for all wells that pump over 250 acre-feet per year. We realize that the Division of Drinking Water also requires public water suppliers to submit a water quality analysis to them, typically every three years. An analysis submitted to them can also be submitted to the Division of Water Rights to satisfy that particular year's requirement. Although we require an analysis every year, the sampling parameters are considerably less extensive. We are NOT trying to characterize the water quality in a particular well. Rather, we are using this data to determine what effect pumping has on the water quality in specific regions of the principal aquifer. It is important to have this data on an annual basis, preferably during the peak pumping periods, from all of your large production wells. We can then correlate how variations in ground-water withdrawals effect overall quality. This is an important aspect of the ground-water monitoring program we are operating in conjunction with the U. S. Geological Survey. The details of this aspect of the Management Plan were set forth in a letter we sent to the water users in May 1992.

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The data presented in the attached report was analyzed, using a Geographic Information System, to illustrate the spatial distribution of reported withdrawals and water rights in reference to the ground-water management areas. It is not our intent to make any interpretation of the data, rather we are simply supplying you with the information that has been collected to date.

Also, keep in mind that all information presented in this report is preliminary. In instances where we have been unable to contact the owner, a site inspection will be necessary. We also need to encourage non-reporting water users to submit data, and we will incorporate this data as it is received. We are working with the U.S. Geological Survey to refine our estimates of domestic and non-reported water use in the valley.

I want to thank those of you who have submitted data. If you have not yet submitted your 1992 data, please send it in as soon as possible. If there is some problem, or your well is not in use, please notify our office. The priority lists for the Salt Lake Valley have been updated and will be available the first week in June 1993. If you have water rights related questions, contact the Division's Utah Lake/Jordan River Regional Office (538-7421). If you need a copy of the Interim Ground-Water Management Plan, or have any questions regarding the data presented in this report, please contact the Division's Technical Services Section (538-7419).

Sincerely,



Robert L. Morgan, P. E.
State Engineer

RLM:nj

Update Report
To
Salt Lake Valley Ground-Water Users

May 1993

Utah Department of Natural Resources
Division of Water Rights

Introduction

In accordance with the Salt Lake Valley Interim Ground-Water Management Plan, all water users are requested to submit the annual volume of water withdrawn from wells which potentially can withdraw over 50 acre-feet per year. For wells which have a withdrawal of over 250 acre-feet per year, a water quality sample is also required.

The ground-water management plan is considered to be "interim", until studies under way to collect the data necessary to develop a final version of the plan are completed. The purpose of this report is to summarize data submitted for 1992, and apprise the water users of some of the on-going work being done. The report is divided into four sections: 1) Reported 1992 withdrawals; 2) Potential withdrawals of active approved/perfected water rights; 3) Reported 1992 water quality data and 4) Status of on-going studies/plans for future work. Our intent is not to make interpretation of the data, rather we are only supplying preliminary information that may be useful to the water users when formulating plans to develop additional ground water.

Table 1 lists water users who submitted water use and water quality data to us by May 1, 1993, (the deadline for data submittal was March 1, 1993). Data received after May 1 of this year will be presented in the next annual report.

Distribution of Reported Withdrawals

Figure 1 shows the annual REPORTED withdrawals for 1992 in the Salt Lake Valley distributed according to management areas. For a discussion on the definition of "management areas", and how they are to be administered, please refer to the Salt Lake Valley Interim Ground-Water Management plan. The total reported withdrawal, as of May 1, 1993, for the Salt Lake Valley is 114,059 acre-feet (some wells are located out of the management area boundaries).

Fortunately, the reported withdrawals do not currently exceed the withdrawal limits set forth in the Management Plan. However, the quantity of **unreported** withdrawals could be significant. Numerous large water users have not yet supplied withdrawal data. In addition, there are many small domestic and stock watering wells. Out of approximately 10,000 active approved and perfected water rights, 70% are small domestic and stock water rights with a flow less than or equal to 0.10 cfs.

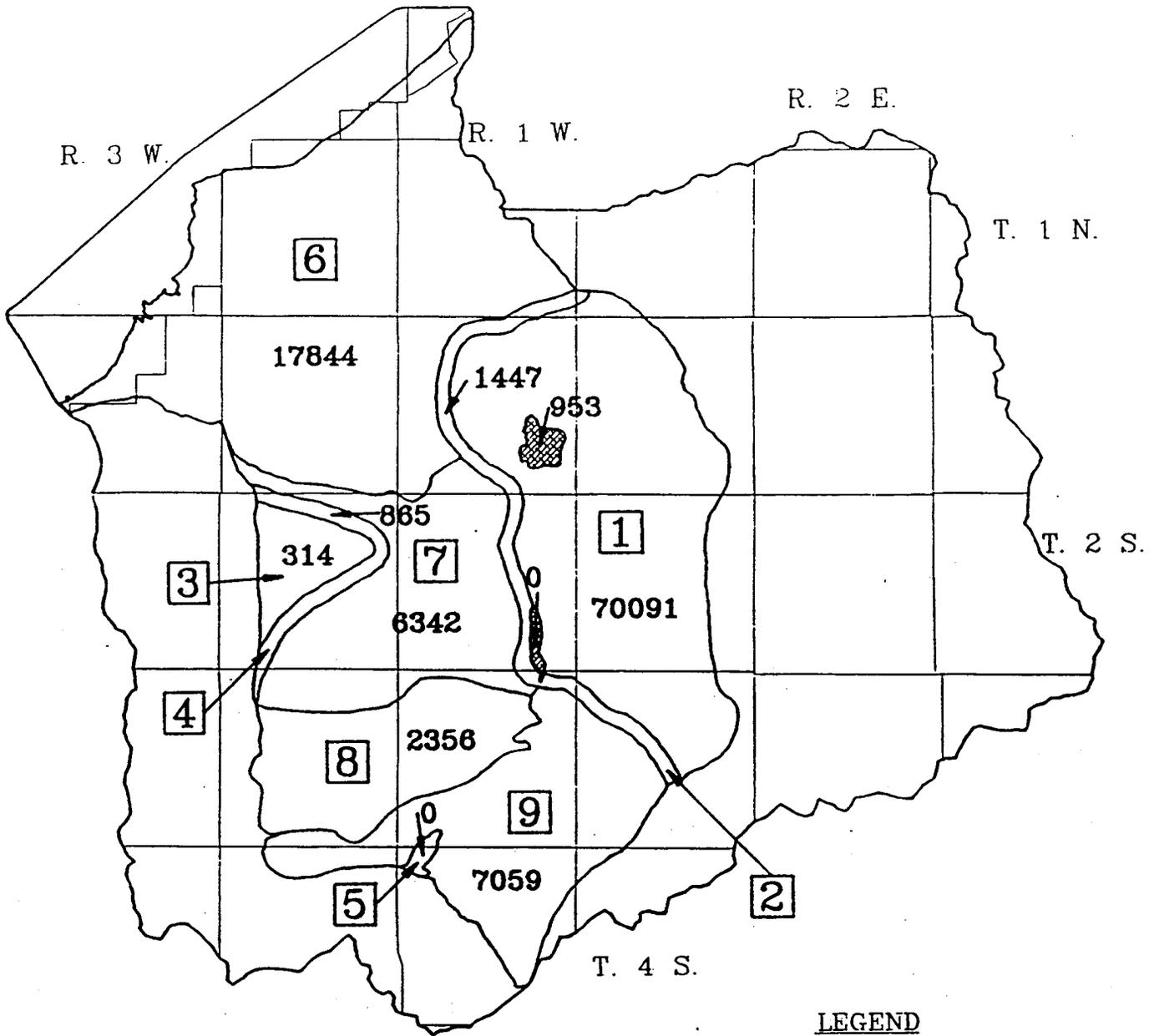
A preliminary estimate by the U.S. Geological Survey of the overall withdrawal in the Salt Lake Valley for 1992 is 138,000 acre-feet. A comparison of the reported withdrawals with the overall withdrawal estimates of the USGS, implies that there are approximately 24,000 acre-feet of unreported withdrawals in the Salt Lake Valley. The USGS estimates about 23,000 acre-feet of withdrawals from stock and domestic wells in 1992.

Table 1. Water Users Reporting Water Use and/or Water Quality for 1992 for the Salt Lake Valley Interim Ground-Water Management Plan¹

WATER USER	MAJOR USE ²	WATER USE	WATER QUALITY ³
Rushion Family Partnership	OT	X	
Arrow Industries	IN	X	
Bowles, Robert	IR	X	
Copperton Improvement District	MU	X	X
Cornelius Development Corporation	DO/MU	X	
Foot Hills Water Company	MU	X	
Draper Irrigation Company	IR	X	
Eimac - Division of Varian	IN	X	X
Fore Lakes Golf Course	IR	X	
Granger-Hunter Improvement District	MU	X	X
Hercules Incorporated	IN	X	
Herriman Pipeline & Dev. Co	IR	X	X
Holiday Water Company	IR	X	X
Keams Improvement District	MU	X	X
Kennecott Utah Copper Corporation	IN	X	X
Larsen, William Bruce	IR	X	
Latter Day Saints Hospital	DO	X	
Magna Water Company	MU	X	X
Midvale City Corporation	MU	X	
Montroc Inc.	IN	X	
Murray City	MU	X	X

WATER USER	MAJOR USE ²	WATER USE	WATER QUALITY ³
Riverton City Corporation	MU	X	X
Salt Lake County Water Conservancy District	MU	X	
Sandy City Corp.	MU	X	
Shangri-La, Incorporated	DO/MU	X	
South Salt Lake, City of	MU	X	
Slaker Paving & Construction Co. Inc	IN	X	X
State of Utah Dept. of Corrections	OT	X	
State of Utah University of Utah	IR	X	
Tateoka, Matt	IR	X	
Taylorville-Bennion Improvement District	MU	X	X
The Country Club	IR	X	X
Webb Well Users	ST/IR	X	
Utah Roses Incorporated	OT	X	X
West Jordan, City of	MU	X	
White City Water Company	MU	X	X
Ballard Farm. Prop.	IR	X	
Winder Dairy	OT	X	
SLICCAMA	OT	X	
S-Devcorp	IR	X	
Wasatch Lawn	IR	X	
Hidden Valley Country Club	IR	X	
Salt Lake City Corporation	MU	X	X

¹Received by May 1, 1993
²OT - Misc other uses
 IN - Industrial
 MU - Municipal
 ST - Stock
 DO - Domestic
 MI - Municipal



LEGEND

MANAGEMENT AREA	WITHDRAWAL LIMIT
1	124,800
2	7,500
3	14,000
4	3,000
5	700
6	33,000
7	19,000
8	13,000
9	20,000
	Restricted pumpage



Figure 1. Distribution of 1992 **REPORTED** withdrawals per Salt Lake Valley Ground-Water Management Area.

We are working on methods to more precisely estimate the unreported water use. We have plans to use municipal service area boundaries to determine which domestic wells are likely to no longer be in use. We will field inspect non-reporting water users, who potentially withdraw large amounts of water, to determine if the wells are in use. By the next "Management Plan Update", we hope to have a more complete determination of the total ground-water use in the Salt Lake Valley.

Distribution of Potential Withdrawals

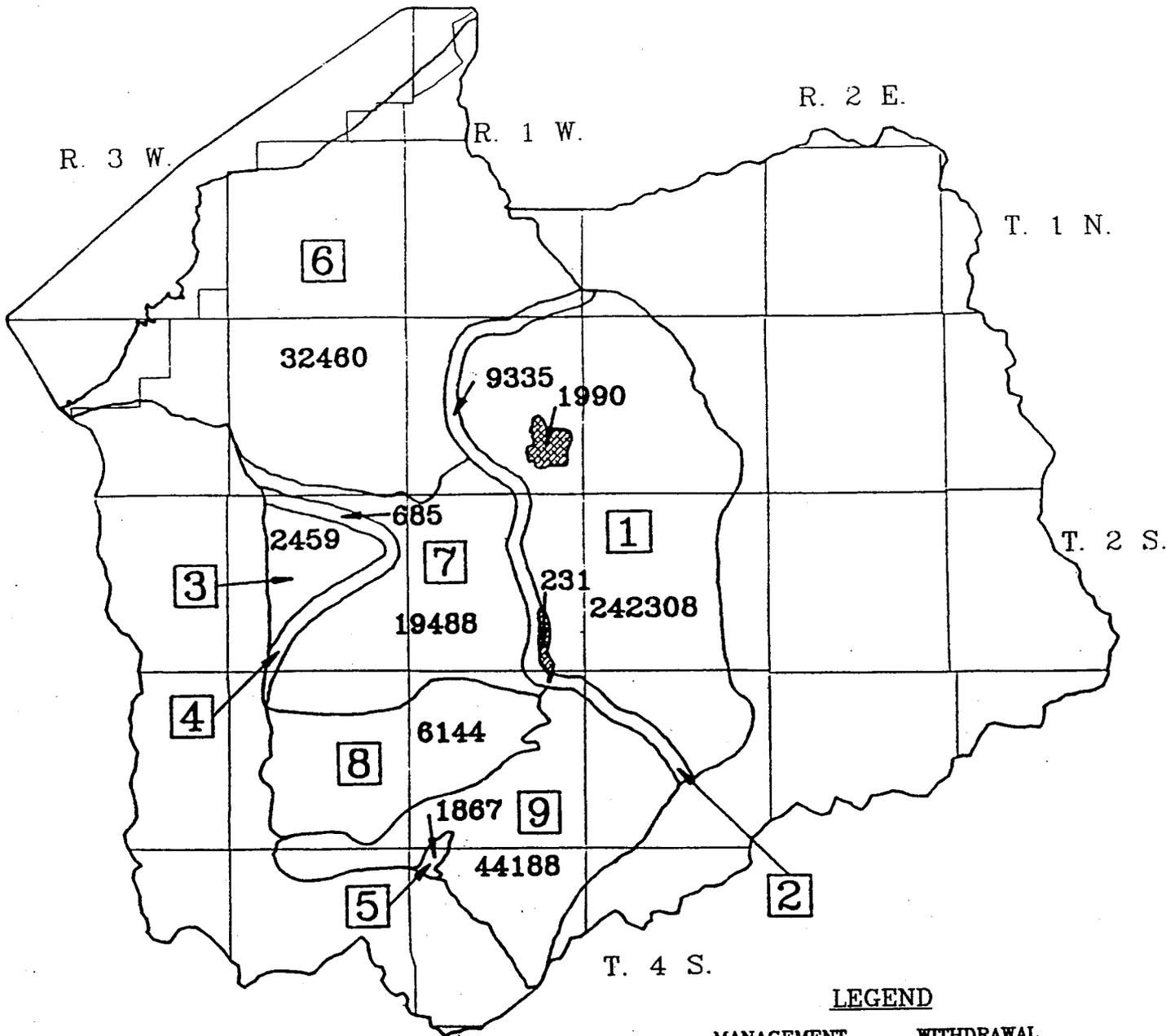
As discussed previously, it appears that current withdrawals are not exceeding the withdrawal limits set forth in the Interim Ground-Water Management Plan. However, if all the approved and perfected water rights are developed to their full potential, withdrawals will exceed the withdrawal limits in several of the management areas.

It is valuable to analyze the distribution of both developed and undeveloped water rights and their potential withdrawal from each management area. We have calculated the potential withdrawals for all active water rights in the valley on a per well basis according to beneficial use. The total potential withdrawal for the Salt Lake Valley is 387,500 acre-feet. Approximately 6.7% of the total potential withdrawal is from domestic and stock watering wells. Using Geographic Information System technology, we plotted the location of the potential withdrawals in relation to each management area, as shown in Figure 2.

Several assumptions were made to estimate the potential withdrawals:

- 1) Wells with a depth of less than 50 feet were eliminated
- 2) Water rights known to be inactive were eliminated
- 3) Only the base water right was used (no changes)
- 4) The amount of water needed to meet the beneficial uses of all water rights in each well were estimated using the following criteria:
 - a) Irrigation: a duty of 5 acre-feet/acre was used for sole supply acreage and a duty of 0.5 Acre-feet/acre was used for supplemental acreage.
 - b) Municipal: 50% of the flow rate converted to ac-ft/yr
 - c) Industrial: 25% of the flow rate converted to ac-ft/yr
 - d) Domestic: 0.45 acre-feet/yr per family
 - e) Stock: 0.028 acre-feet/yr per livestock unit
 - f) Other: 25% of the flow rate converted to ac-ft/yr

A comparison of potential withdrawal estimates with actual water use data for wells with reported data, indicates that the estimates and assumptions are reasonable.



LEGEND

MANAGEMENT AREA	WITHDRAWAL LIMIT
1	124,800
2	7,500
3	14,000
4	3,000
5	700
6	33,000
7	19,000
8	13,000
9	20,000
	Restricted pumpage



Figure 2. Distribution of **POTENTIAL** withdrawals per Salt Lake Valley Ground-Water Management Area.

Distribution of Reported Water Quality Analyses

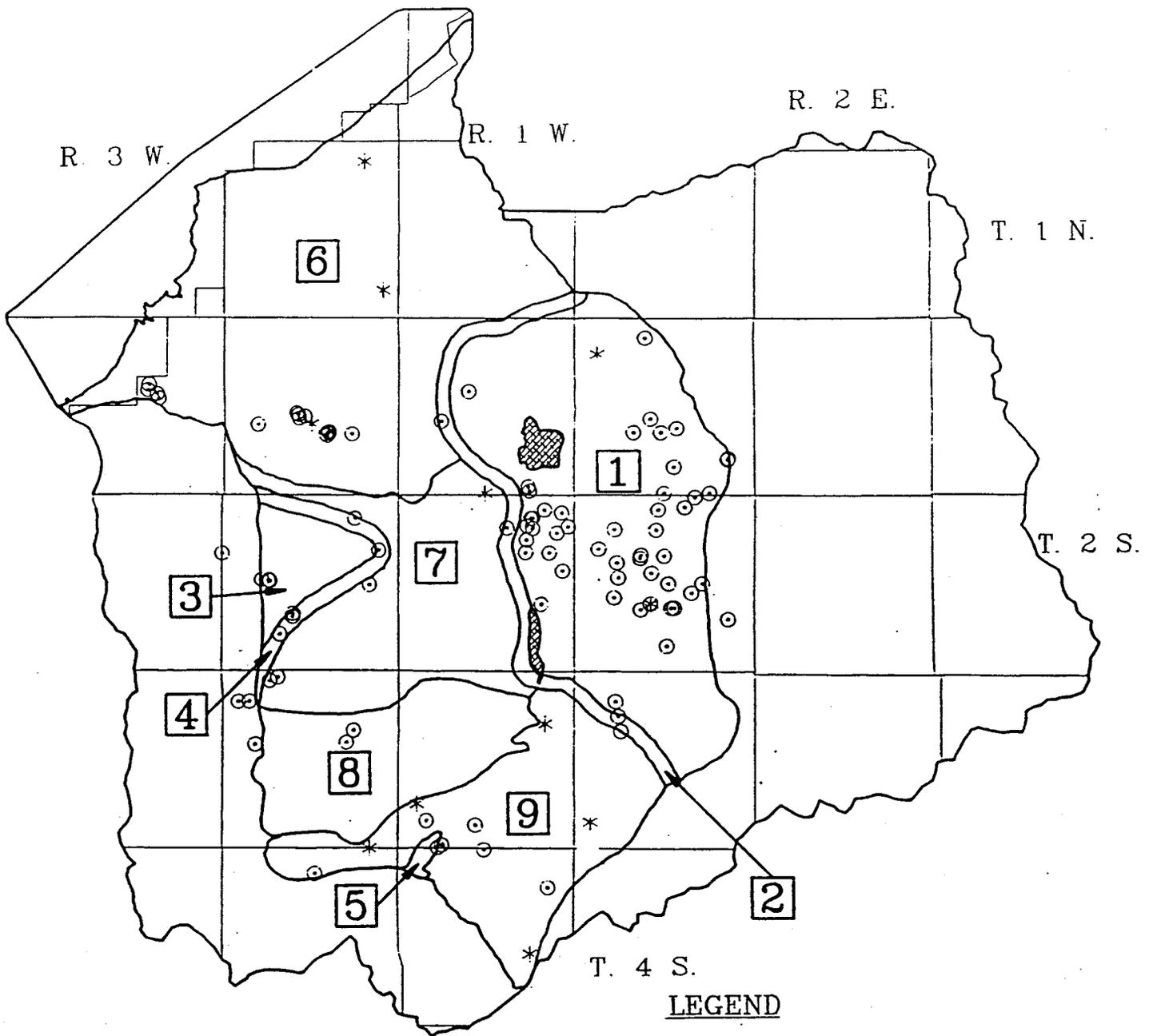
Figure 3 shows the distribution of water quality data reported to the Division of Water Rights to fulfill the 1992 requirements for water quality sampling. Figure 3 also illustrates long-term water quality monitoring locations maintained by the U.S. Geological Survey in the Salt Lake Valley. Figure 4 shows the distribution of total dissolved solids (TDS) concentrations taken from reported analyses with 1992 sampling dates.

The Division of Water Rights, in cooperation with the U.S. Geological Survey, is investigating the expansion of our existing monitoring network to include locations where additional data is needed to determine how withdrawals may be affecting water quality. We do not have funding to do any additional drilling. However, there are many wells currently in use that are not required to submit a water quality analysis. We will consider these as possible locations to do additional water quality sampling.

Status of On-going Studies/Future Work

The U.S. Geological Survey, in cooperation with the Division of Water Rights, and the Department of Environmental Quality have been conducting a study on the ground-water flow and solute migration in the Salt Lake Valley. The first report completed under the study entitled 'Selected Hydrologic Data for Salt Lake Valley, Utah 1990-1992 with Emphasis on Data from the Shallow Unconfined Aquifer and Confining Layers' was released in January 1993. Work is underway on the companion interpretive report titled 'Selected Chemical Properties of Water and Hydrologic Properties of the Basin-Fill Aquifers and Confining Layers in Salt Lake Valley, Utah'. A final draft of this report will be submitted for colleague review this summer. Work on the ground-water flow model of Salt Lake Valley is proceeding well. Calibration of the steady-state flow model is completed, and a transient flow model has been developed. The report documenting the development and calibration of the computer model is being written. A draft version of the model report should be completed by August 1993. Work will then begin on the next components of the model analysis of the ground-water flow system: particle tracking analysis and solute transport modeling. The overall study should be completed by December 1994.

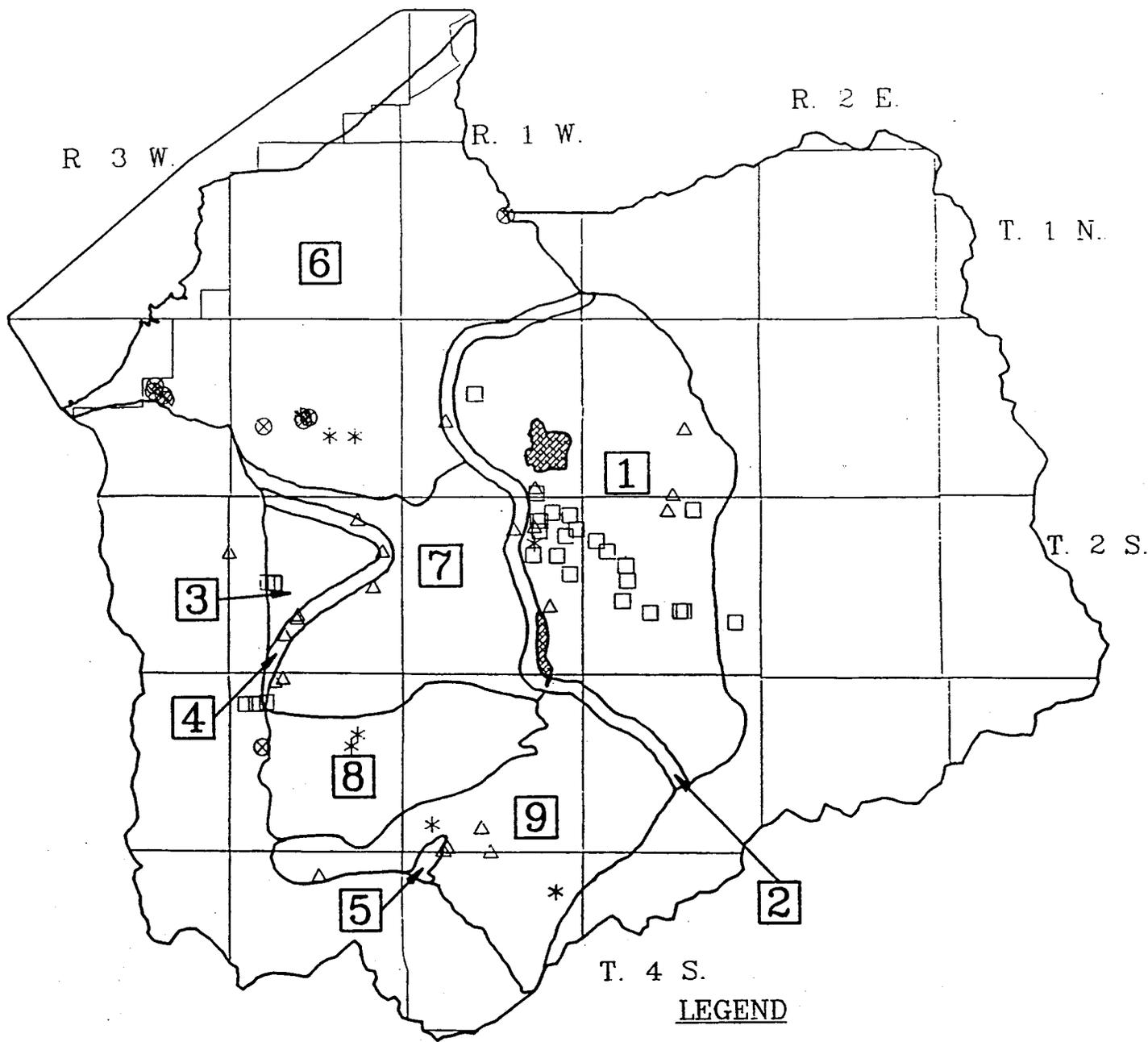
In the next year, the Division of Water Rights will be conducting field visits, in cooperation with the USGS, to better estimate non-reported withdrawals. The spatial distribution of water rights, with respect to priority, will also be examined. We will present the results of our efforts, along with data reported for 1993, in another report to the water users in the spring of 1994.



- LEGEND
- 1** Management Area #
 - ⊙ Reported under Interim Ground-Water Management Plan
 - * USGS Ground-Water Monitoring Network



Figure 3. Distribution of Reported Water Quality Data.



- LEGEND**
- < 500 mg/L TDS
 - △ 500-1000 mg/L TDS
 - * 1000-1500 mg/L TDS
 - ⊗ > 1500 mg/L TDS

Figure 4. Distribution of total dissolved solids (TDS) concentrations according to reported water quality data. Only data with 1992 sampling dates are illustrated.

Summary

This report is intended to provide water users in the valley with recently collected data, and to supply an update on the status of on-going studies. The total **REPORTED** withdrawals under the Interim Ground-Water Management Plan is 114,059 acre-feet. It is estimated that there is about another 24,000 acre-feet of unreported withdrawals. An estimate of the **POTENTIAL** withdrawal under existing water rights is 387,500 acre-feet. Figures 1 and 2 illustrate the distribution of reported and potential withdrawals in each ground-water management area. Figures 3 and 4 illustrate the distribution of reported water quality data.

All the data contained in this report is preliminary and subject to revision. Although the data was spatially distributed and analyzed according to management areas, one should not consider the management area boundaries to be rigid. These are administrative boundaries, not hydrologic boundaries.