Division of Publications,
Utah Agricultural Experiment Station,
Logan, Utah

Mimeograph Sheet No. 139
April 1, 1937

UTAH COOPERATIVE SNOW SURVEYS

And

WATER-SUPPLY FORECASTS

1937

Cooperators

Utah Agricultural Experiment Station

Utah State Engineer

United States Weather Bureau

United States Forest Service

United States Bureau of Agricultural Engineering

By

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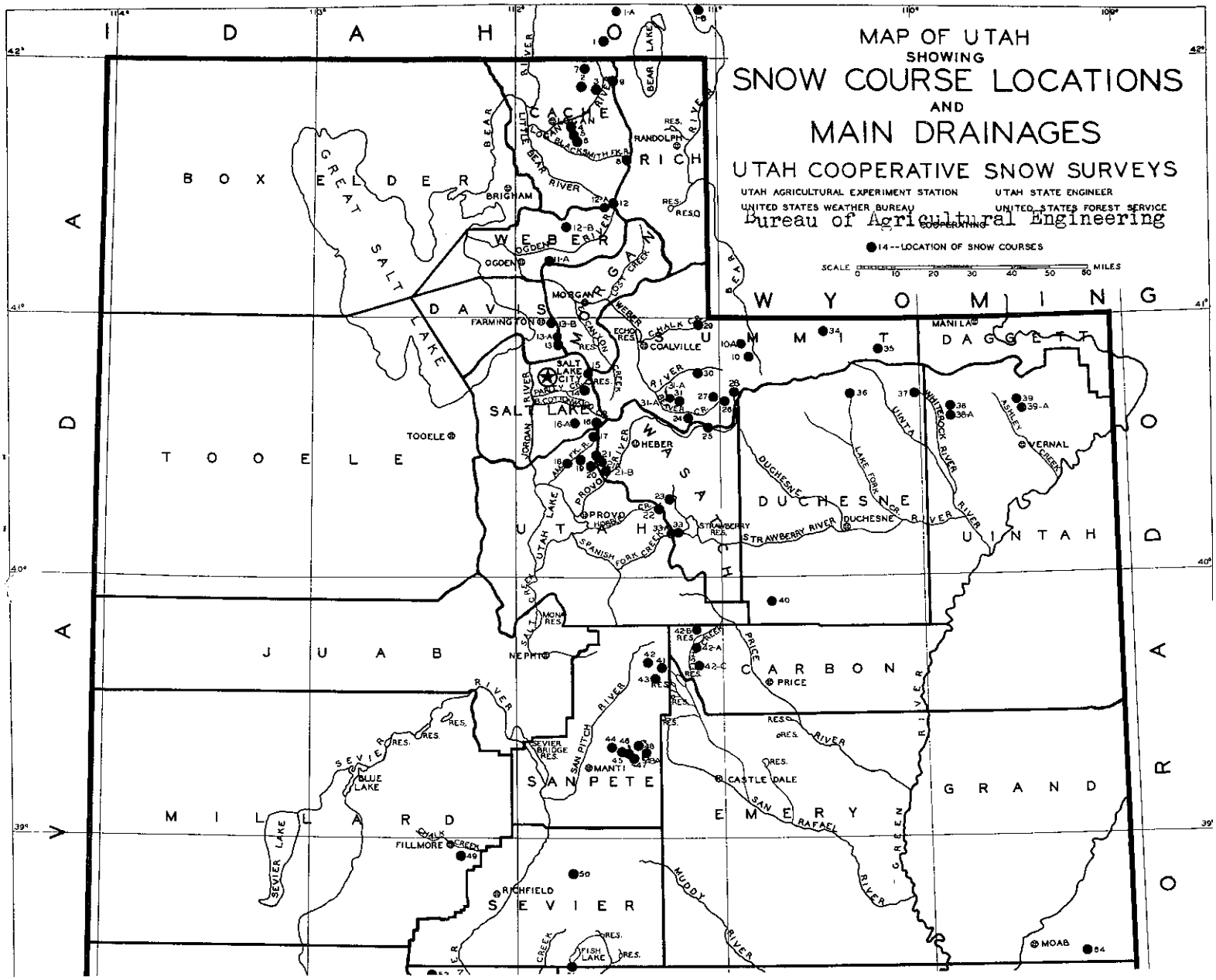
Utah Agricultural Experiment Station


MAP OF UTAH
SHOWING
SNOW COURSE LOCATIONS
AND
MAIN DRAINAGES
UTAH COOPERATIVE SNOW SURVEYS
UTAH AGRICULTURAL EXPERIMENT STATION
UTAH STATE ENGINEER
UNITED STATES WEATHER BUREAU
UNITED STATES FOREST SERVICE
Bureau of Agricultural Engineering
14--LOCATION OF SNOW COURSES
SCALE
MILES
IDAHO
WYOMING
COLORADO
ARIZONA
NEVADA
BOX ELDER
CACHE
RICH
WEBER
DAVIS
MORGAN
SALT LAKE
TOOELE
UTAH
WASATCH
SUMMIT
DAGGETT
DUCHESNE
UINTAH
JUAB
CARBON
SANPETE
EMERY
GRAND
MILLARD
SEVIER
GREAT SALT LAKE
BRIGHAM
OGDEN
FARMINGTON
SALT LAKE CITY
COALVILLE
HEBER
PROVO
NEPHI
PRICE
MANTI
CASTLE DALE
FILLMORE
RICHFIELD
MOAB
VERNAL
MANILA
RANDOLPH
TOOELE

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Mimeograph Sheet No. 139
April 1937

WATER SUPPLY FORECAST FOR UTAH, 1937

George D. Clyde, Irrigation Engineer
Utah Agricultural Experiment Station
With
Utah State Engineer, Cooperating

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During the period from March 26 to April 1, snow surveys were completed at all of the Utah Cooperative snow courses. The water content in snow storage at this time may be taken as indicative of the April-September and July-September runoff with, of course, later modification of estimates in accordance with subsequent storms and temperature conditions.

This report presents:

1. Map of state showing location of snow courses.

2. Forecasts of July-September and April-September runoff for the streams on whose drainage areas snow surveys have been conducted for a sufficient number of years to make it possible to forecast stream-flow quantitatively.

3. A brief statement of conditions on other watersheds of the state, based on available records.

4. A water forecast summary by drainage basins.

5. A comparison of runoff from principal Utah streams.

6. Available storage in reservoirs.

7. Results of annual snow surveys grouped according to stream basins.

Bear River Above Bear Lake

The snow cover measurements at the head of Bear River, Lost Lake, and Goodman Ranch are all representative of the water conditions on the Bear River. There are no low level courses on this area, but the valley precipitation at Randolph and Woodruff has been about normal this winter. The snow cover at the Goodman Ranch this year contains only about 50 per cent as much water as it did a year ago. At the head of Bear River it is 58 per cent of a year ago, and at Lost Lake on the head waters of the Provo River, it is 80 per cent of that last year.

A cold, backward spring will retard the runoff from Bear River, and the low snow will yield little or nothing to Bear Lake. With normal spring precipitation and temperature, the Bear River should discharge about 200,000 acre feet at Harer, Idaho, during the period April-September, 1937. The portion of this that is diverted into Bear Lake for storage will depend upon the rate at which the snow melts.

Bear Lake Drainage

The snow cover on the drainage area directly tributary to Bear Lake is only 56 per cent of that in 1936. The ground is open under the snow and the melting that is taking place at the lower elevations is going into the ground. No streams had started rising on April 1. With the relatively light snow cover and a late spring, the yield to Bear Lake during the April-September period will probably not exceed 65,000 acre feet.

Probable Rise of Bear Lake Level

The light snow cover, compared with 1936, and the low spring temperatures will materially reduce the seasonal rise of the level of Bear Lake. With a normal draft from the lake, the probable net rise of level will not exceed 2.5 feet.

Logan River Drainage

The distribution of precipitation on the Logan River drainage during 1936-37 has been unusual. The valley precipitation has been much heavier relatively than the mountain precipitation. The October-March precipitation at Logan was about 25 per cent above normal, while the accumulated snow cover on the high watersheds on April 1 was only 84 per cent of the long time mean. The ground under the snow cover is open and quite dry. In the absence of unusually high spring temperatures the low snow cover is not sufficient to cause excessive high water.

The estimated flow of the Logan River for the period April-September, inclusive, will probably not be less than 140,000, nor greater than 150,000 acre feet. The July-September runoff will probably not exceed 35,000 and may be as low as 30,000 acre feet.

The maximum spring discharge in 1936 approached 1800 c.f.s. with a daily flow of 1500 c.f.s. The October 1, 1936, discharge was 190 c.f.s. With normal spring temperatures the maximum spring discharge in 1937 should not exceed 1600 c.f.s. with a mean daily discharge of 140 c.f.s. It is estimated that the October 1 discharge will not be less than 150 c.f.s.

Cub River Drainage

The snow cover at Franklin Basin is representative of the snow cover on the Cub River watershed. The snow cover on this watershed this year is only 52 per cent of that in 1936 and 59 per cent of the long time normal. The soil under the snow is open and quite dry. The low snow is disappearing, but the streams are not yet beginning to rise. With normal temperature and precipitation conditions during April and May, the runoff from Cub River will probably not exceed 55 per cent of that in 1936. The relatively low density of the snow cover and the open condition of the soil indicate a rather slow runoff and no excessive spring flood flow. The light cover at high elevations indicates a late season flow that will probably not exceed 50 per cent of that in 1936.

Maple, High, Summit, and Providence Creeks

These drainage areas are all on the west side of the Bear River range and are relatively short and steep. The low snow cover is slightly below normal, and the high cover is approximately 75 per cent of normal. The

ground under the snow is open and quite dry. In the absence of excessively high temperatures the low snow will not yield as high a spring runoff as that in 1936, and the late season flow can be expected to be not more than 70 per cent of that in 1936.

Blacksmith Fork Drainage Area

Precipitation per unit of area on the Blacksmith Fork watershed is less than that on the Logan. The snow cover this year is 58 per cent of that in 1936, and approximately 50 per cent of a long time normal. The April-September discharge this year will probably not exceed 60,000 acre feet and may be as low as 55,000 acre feet. The July-September runoff will probably not exceed 12,000, but may be low as 11,000 acre feet. High flood discharges are not expected during the spring runoff.

Little Bear River Drainage

The Little Bear River watershed has an average elevation lower than the Blacksmith Fork. The Monte Cristo and Blake Ranger Station courses are indicative of the conditions on this watershed. The snow cover at these two stations is only 54 per cent of last year, and it is estimated that the runoff will be approximately 55 per cent of that in 1936.

Ogden River Drainage

Measurements at the Geertsen Creek, Huntsville-Wheeler Divide, and Monte Cristo snow courses show a snow storage only 72 per cent of that in 1936. The Ogden valley snow cover contains less water than a year ago, and at the higher elevations the water content is even more defficient. The density is relatively low. If normal temperature conditions prevail during the melting period, the spring high water discharge will be much less than a year ago and will probably not exceed 2,000 to 2500 c.f.s. The total April-September runoff will probably not exceed 80,000 acre feet, with July-September runoff approaching 5800 acre feet.

Weber River Drainage

The major portion of the water in the Weber River comes from the four main branches: Chalk Creek, Lost Creek, East Canyon, and the main Weber above Oakley. Snow courses are located on each of these tributaries, except Lost Creek. The high courses on the main fork of the Weber show a water content 76 per cent of 1936 and 94 per cent of a long time normal. The low snow cover is much less than in 1936, and less high water can be expected.

The amount, position, and condition of the snow cover on the Weber River watershed this year indicate a probable maximum April-September runoff at Oakley of 140,000 acre feet. Defficient spring rains may reduce this to as low as 125,000 acre feet. The JulySeptember runoff should equal approximately 26,000 acre feet, maximum, and may possibly be as low as 24,000 acre feet.

The Echo Reservoir contained 49,000 acre feet on April 1, 1937 as compared to 14,940 acre feet on April 1, 1936. The East Canyon Reservoir contained 20,000 acre feet on April 1, 1937, as compared to 17,000 on April 1, 1936. It is estimated that both reservoirs will fill to capacity this year.

Salt Lake Watersheds

These watersheds include City, Emigration, Parley's, Big Cottonwood, and Little Cottonwood Creeks. The only snow courses on these areas are those located at Lamb's Canyon (Elevation 6000 feet), Parley's Canyon Summit (Elevation 7800 feet), and Silver Lake (Elevation 8000 feet).

The water content of the snow cover at Silver Lake, Lamb's Canyon, and Parley's Canyon Summit is 69.3, 83, and 80 per cent, respectively, of that in 1936.

The low snow cover is light, and the little melting that has taken place has been absorbed by the ground. With normal spring temperatures and precipitation, there should be no abnormal high water on the Salt Lake streams this spring.

All reservoirs on the watershed can be expected to fill.

Provo River and Utah Lake Drainage

The snow cover on the headwaters of the Provo River as indicated by the April 1 snow surveys has a water content approximately 81 per cent of 1936 and 87 per cent of an average long time normal. There has been little melting except at the very low elevations. The ground is absorbing the water as fast as it leaves the snow, and the streams have not started to rise. With normal spring precipitation and temperature there should be no excessive high spring floods on the Provo River.

The probable runoff of the Provo, as measured at the forks, will not exceed 170,000 acre feet for the April-September period and 47,000 acre feet for the July-September period. Deficient spring precipitation may reduce the foregoing to as low as 160,000 and 43,000 acre feet, respectively.

A cold, backward spring will materially reduce the discharge into Utah Lake, but with the present available storage in Utah Lake, it is believed an ample water supply will be available this year for all users under the Utah Lake and Jordan River system. Conservation in use should be practiced, however, so that a reserve may be built up in Utah Lake to offset future dry years.

American Fork River Drainage

The snow storage on the American Fork River watershed is represented by snow measurements at the Dutchman Ranger Station, South Fork Ranger Station, Altamont, and Timpanogos Divide snow courses. The snow cover at the Dutchman Ranger Station is about 90 per cent of that last year and 100 per cent normal. At the South Fork Ranger Station there is less water in snow storage than a year ago due to early melting. At Altamont and Timpanogos Divide, the snow cover is heavier than a year ago by about 15 per cent. The low cover is not as heavy as in 1936, and excessive high water is not expected, but the late season flow should be about 10 per cent better than in 1936.

Hobble, Payson, Santaquin Creeks and Spanish Fork River

The snow cover on this watershed shows slightly less water in snow storage than a year ago. The low snow cover is light. The April-September runoff will be slightly less than in 1936, and the spring flood runoff is expected to be considerably lower.

Strawberry Reservoir

The snowcover on the drainage above the Strawberry Reservoir is about the same as in 1936. The holdover storage on April 1 was three times that for any previous year since 1932. The 1937 inflow to the reservoir should equal that in 1936, and this inflow, together with the holdover storage, should provide a full water supply for all lands under this system.

San Pitch Drainage

The snow cover on the west side of the Wasatch Plateau which drains into the San Pitch River contains approximately 78 per cent as much water as in 1936. There has been some winter melting, particularly at the lower elevations. The water, however, has been absorbed by the ground and the streams had not started to rise on April 1. The relatively light low snow cover should not cause excessively high spring runoff. The April-September flow from the streams tributary to the San Pitch River can be expected to be about 80 per cent of that in 1936.

Salina Creek Drainage

The snow storage on the Salina Creek watershed exceeds that of 1936 by 30 per cent and is the greatest since 1932. The April-September runoff for 1937 can be expected to exceed that of 1936 by at least 30 per cent, and spring floods of fairly high magnitude can be expected if the spring temperatures are unusually high.

Clear Creek Drainage

The snow storage on this watershed is 60 per cent greater than in 1936 and the highest of record since 1927. The April-September runoff in 1937 will be approximately twice that in 1936. Spring high water can be expected.

Main Sevier River Watershed

The water in snow storage on the Sevier River watershed above Salina is higher this year than in any year since records have been kept. The snow courses on the East Fork, except Fish Lake, show from two to three times as much water as was in storage a year ago. On the Main Fork of the Sevier, the water content averages 221 per cent of that in 1936.

The primary rights on the Sevier River have the best prospects for a water supply that they have had for years, and there is also a greater holdover in the storage reservoirs. The smaller reservoirs will fill and the larger ones will approach spillway capacity.

Fillmore Drainage

The snow cover on the Fillmore watersheds is approximately 150 per cent of that in 1936. The water supply will be approximately 50 per cent better than in 1936, and high spring floods can be expected if the weather turns unusually warm.

Coal Creek Drainage

The high snow cover on the Coal Creek watershed this year contains 160 per cent of that in 1936. The snow line has receded, but there is still a heavy cover in the canyons and considerable high water can be expected. The April-September runoff will probably be 50 per cent better

than in 1936.

Beaver River Drainage

The snow cover on the Beaver River watershed this year is approximately 119 per cent of that in 1936. The April-September runoff may reach as much as 45,000 acre feet and the July-September runoff may be as much as 11,000 acre feet. The holdover storage in the Rocky Ford Reservoir exceeds that in 1936 and a fairly ample water supply is assured for the water users under this project.

Virgin River

The snow cover on the headwaters of the Virgin River is the heaviest in years and averages for the high courses 181 per cent of last year. The low snow is much heavier and high spring runoff can be expected. The Virgin River can be expected to yield 110,000 acre feet during the April-September period, and at least 45,000 for the July-September period.

Price River Drainage

The water content of the snow cover on the Price River watershed at the lower elevations is approximately 90 per cent of that in 1936, but at the higher elevations, it is only 78 per cent. The ground under the snow cover is open, but it contains more moisture than a year ago, and the absorption losses will be less. The density is almost the same as a year ago, so that with similar temperature conditions the character of runoff should be about the same.

The total yield above the Scofield reservoir last year was 46,690 acre feet, or approximately 30 per cent of the water in snow storage on April 1. The precipitation during April and May (1936) on the watershed was only about 60 per cent of normal. This year with a normal precipitation during April and May, the yield should approach 50,000 acre feet. The holdover in the Scofield Reservoir this year is 15,750 acre feet, as compared to 11,000 acre feet last year. To be safe with the present prospective water supply, the present holdover should be drawn from the reservoir before the spring runoff starts.

It was estimated that the April-September runoff at Helper would be 90,000 acre feet in 1936. It was actually 80,000 acre feet. With the present snow cover, the Price River discharge at Helper, including the holdover storage that is released, should equal approximately 74,000 acre feet.

Huntington, Cottonwood, and Ferron Creeks

The snow courses representing these watersheds are all high and cover the area from the head of the Price River on the north to the head of Ferron Creek on the south. The snow cover this year contains only 74 per cent as much water as was on the watershed on April 1, 1936. The probable runoff from Huntington Creek for the April-September period will not exceed 60,000 and may be as low as 55,000 acre feet. For the July-September period it should reach 11,000 acre feet. Cottonwood Creek should yield 63,000 and 9300 acre feet for the April-September and July-September periods, respectively.

UINTAH BASIN DRAINAGE

Ashley Creek

The snow cover on the east end of the Uintah Mountains is heavier than a year ago, but it is much lighter than at points farther west in the same mountain range. The King's Cabin snow course on Brush Creek shows a water content 120 per cent of that in 1936, but only 94 per cent of a long time normal. This course is representative of conditions on Ashley Creek. The runoff from Ashley Creek for April-September period should be approximately 40,000 acre feet, and for the July-September period it should reach 15,000 acre feet.

Uintah River and Whiterocks Creek

The water in snow storage on these watersheds is the greatest in the past eight years. The snow cover at Mosby Mountain shows a water content 157 per cent of last year and at Paradise Park it is 164 per cent of that in 1936. The runoff from Whiterocks Creek for April-September will approach 85,000 acre feet, and for July-September, 39,000 acre feet. The Uintah River at Neola should yield 140,000 acre feet for April-September and 67,000 acre feet for the July-September period.

Lake Fork

The snow cover on the high areas at the head of Lake Fork is quite similar to that of last year. The runoff should be similar and possibly somewhat larger if the spring precipitation is not defficient.

Duchesne River Drainage

This stream heads in the west end of the Uintah Mountains. There are no snow courses located directly on this area, but the Lost Lake snow course on the Provo River is fairly representative of the conditions at the head of the Duchesne. The snow cover at Lost Lake this year is only 82 per cent of last year's snow cover. The runoff from the Duchesne at Tabiona for April-September will probably reach 115,000 acre feet and that for July-September 26,000 acre feet.

La Sal Mountain Area

The snow cover in Grand and San Juan Counties has been higher this year than for many years. The April 1 measurements of snow cover on the La Sal Mountains show a water content 270 per cent of that in 1936. The water supplies for irrigation purposes in this region should be ample for 1937.

Blue Mountain Area

The snow cover on this area is similar to that on the La Sal Mountains. The April 1 snow cover was over 300 per cent of that in 1936. An ample water supply for irrigation purposes in this region is assured for 1937.

-- SUMMARY --

The Utah Cooperative Snow Surveys, which were completed over a network of approximately 80 courses on April 1, snow a wide variation in water supply conditions throughout the State. In general, the water supply prospects are excellent for the entire State. The Bear River and Bear Lake are the most defficient, the probable runoff being 55 and 58 per cent, respectively, of that in 1936. The Cache Valley streams are somewhat better, averaging from 55 per cent of 1936 for Little Bear River to 70 per cent on the Logan River. On the Ogden River the runoff will probably reach 73 per cent of 1936, and on the Weber River at Oakley, 87 per cent.

The probable runoff from Big Cottonwood Creek is 80 per cent of 1936, while on the American Fork River the prospects for an April-September flow are equal to those in 1936 with an even better late season discharge. The other streams draining into Utah Lake will probably discharge, during April-September, 85 per cent of that in 1936, with a July-September flow about 80 per cent of that in 1936.

The prospects on the Sevier River are the best since 1922, and except for the northern tributaries of the San Pitch which will run about 86 per cent of 1936, it will discharge between 130 and 200 per cent of the 1936 flow. Salina Creek will discharge about 130 per cent and the East and Main Forks of the Sevier River about 200 per cent of that in 1936.

The streams draining the west slope of the main Wasatch range all have water supply prospects far in excess of those in 1936. Chalk and Corn Creeks near Fillmore, Beaver River near Beaver, and Coal Creek near Cedar City will probably discharge about 150, 110, and 150 per cent, respectively, of that in 1936 during the April-September period. The runoff from the Virgin River and Santa Clara Creek will probably reach 175 per cent of that in 1936 for the same period.

The headwaters of the Duchesne partake of the characteristics of the Provo River, and its water prospects are below those last year by about 18 per cent. The Lake Fork watershed has a heavier snow cover and will probably yield 110 per cent of the runoff in 1936. The heaviest snow cover is on the Uintah and Whiterocks watersheds, and it will yield 160 per cent of that in 1936. The snow cover diminishes to the east, and the prospective water supply in the Ashley Valley is only 120 per cent of that in 1936 for the April-September period.

The Price River and Huntington and Ferron Creeks are in a region of subnormal snow cover, and they will yield approximately 80 to 90 per cent of that in 1936.

The heaviest relative snow cover was found in the La Sal and Blue Mountains where it exceeded that last year by 170 and 200 per cent, respectively. The water supply from the La Sal and Blue Mountains should approach 270 per cent and 300 per cent of that in 1936 for the respective streams.

The low cover is not exceptionally heavy, and with normal spring temperatures and precipitation excessively high spring runoff is not expected. None of the streams have started to rise to any extent.

The ground conditions in the valleys are ideal with respect to moisture.

The available storage in reservoirs on April 1 is the best for years.

In spite of the subnormal snow cover in Northern Utah, the water supply prospects are good. In Southern and Eastern Utah the snow cover is above normal, and the water supply prospects are better than for any year since 1922.

Due to the fact that above normal precipitation and temperature may bring the snow off quickly, the following warning is justified:

1. All owners of reservoirs should examine the spillways and outlet works, and should clean and repair the trash racks and see that gate operating devices are in working order.

2. Stream channels should be cleaned of debris and headgates put in order to protect the canals.

3. Canals should be cleaned early so that they may be loaded to capacity to relieve peak flood flow through the lower areas.

There will be no water shortage in any part of the State during the forepart of the summer, but the late season flow is always less than the demand, therefore, plans should be made that will conserve the water supplies during the late summer.

The following tables show a brief summary of the water supply forecasts, reservoir storage, and the snow cover data for 1937:

TABLE I

-- FORECAST SUMMARY --

NAME OF STREAM OR BASIN	Run-off in 1000's of Acre Feet								Expected Run-off for 1937 in Per-cent of 1936	
	1937 (Estimate)		1936		1935		1934			
	I	II	I	II	I	II	I	II	I	II
BEAR RIVER										
Bear River at Harer, Idaho	200.00		356.4		117.8		19.0		55	
Bear Lake Drainage*	65.00		111.4	(Est.)	55.2		31.0		58	
CACHE VALLEY STREAMS										
Miscellaneous Small Streams										
Logan River	140	40	200.0	51.1	114.5	36.3	50.7	16.5	70	68.5
Blacksmith Fork River	60	12	89.99	20.1	35.5	11.3	18.5	8.0	67	59.7
Little Bear River									55	55
WEBER RIVER										
South Fork of Ogden River	80	5.8	109.5	8.73	46.6	6.1	12.3	4.3	73.5	67
Weber River at Oakley	140	26.0	160.54	27.86	127.0	20.3	43.3	6.6	87.5	93
SALT LAKE CITY WATERSHEDS										
Big Cottonwood Creek					33.7	6.8	12.8	2.4	80	75
PROVO RIVER AND UTAH LAKE										
American Fork River									100	110
Provo River	166.0	44.0	201.1	35.2	125.3	34.2	37.3	14.2	87	85
Hobble Creek									85	80
Spanish Fork River									85	80
SEVIER RIVER										
San Pitch Tributaries									86	86
Salina Creek									130	130
Clear Creek									200	170
East Fork of Sevier									200**	
INDEPENDENT STREAMS										
Fillmore Watersheds									150	140
Beaver River	45.6	11.6	41.23	11.64	30.6	6.9	9.6	2.7	110	100
Coal Creek near Cedar City	24.0	7.5	16.09	5.39	15.1	4.4			150	140
UINTAH BASIN STREAMS										
Duchesne River at Tabiona	115.0	26.0	139.98	32.96	73.7	15.9	38.2	10.2	82	80
Lake Fork at Myton					139.7	41.9	56.7	21.0	110	100
Whiterocks Creek at Whiterocks	85.0	39.0	52.68	26.01	55.7	14.0	21.1	8.4	160	150
Ashley Creek at Vernal	40.0	15.0	33.35	13.05	53.5	12.9	23.1	8.0	120	115

*Total for Year October to September
**Main Fork of Sevier, 195% of 1936

I - April to September, inclusive.
II - July to September, inclusive.

TABLE I (cont'd.)

-- FORECAST SUMMARY --

NAME OF STREAM OR BASIN	Run-off in 1000's of Acre Feet								Expected Run-off for 1937 in Per-cent of 1936	
	1937 (Estimate)		1936		1935		1934			
	I	II	I	II	I	II	I	II	I	II
NORTH SIDE UINTAH MOUNTAINS										
PRICE RIVER										
Price River	74.0		80.01	20.89	44.9	20.9	16.3	4.2	92.5	
Huntington Creek	60.0	11.0	74.84	14.85	53.3	13.2	15.9	3.6	80	75
Cottonwood Creek	63.0	9.7	79.28	12.96	69.6	9.9	17.7	3.2	80	75
VIRGIN RIVER										
Virgin River	110.0	45.0	63.25	27.86	89.0	17.6	33.7	15.9	175	163
LA SAL MOUNTAINS										
Mill Creek									270	
MONTICELLO AREA										
Montezuma Creek									300	

Table 2

COMPARISON OF RUNOFF FROM PRINCIPAL UTAH STREAMS
In 1000's of Acre-Feet

NAME OF STREAM	April-September Runoff									July-September Runoff								
	Average	1934		1935		1936		1937(est.)		Average	1934		1935		1936		1937(est.)	
	Apr-Sept in A.F.	A.F.	% of Mean	A.F.	% of Mean	A.F.	% of Mean	A.F.	% of Mean	Jul-Sept in A.F.	A.F.	% of Mean	A.F.	% of Mean	A.F.	% of Mean	A.F.	% of Mean
Logan River at Logan	165.2	50.7	30.7	114.6	69.4	200.0	121	140	84.8	54.6	16.5	30.2	36.4	66.7	51.1	93.6	40	73.3
Blacksmith Fork at Hyrum	75.8	18.5	24.4	35.5	46.8	90.0	119	60	79.2	25.1	8.1	32.1	11.3	45.0	20.1	80.0	12	47.8
Weber River at Oakley	150.5	43.3	28.8	127.0	84.4	160.5	107	140	93.1	31.3	6.6	21.1	20.3	64.8	27.9	89.2	26	83.1
Ogden River, S. Fork near Huntsville	63.6	12.3	19.3	46.6	73.3	109.5	172	80	126	8.5	4.3	50.6	6.1	71.8	8.73	103	5.8	68.2
Provo River at Provo	190.8	37.3	19.6	125.3	65.7	201.1	105	166	87.0	52.0	14.2	27.3	34.2	65.7	35.2	67.7	44	84.6
Price River near Helper	84.9	16.3	19.2	44.9	52.9	80.0	94.8	74	87.2	16.5	4.2	25.4	20.9	127.0	20.9	127		
Ashley Creek near Vernal	67.4	23.1	34.3	53.5	74.9	33.4	49.5	40	58.5	16.7	8.0	48.5	12.9	77.2	13.1	78	15	89.8
Whiterocks River near Whiterocks	67.6	21.1	31.2	55.7	82.5	52.7	77.9	85	126	23.8	8.4	35.2	14.0	58.8	26.0	109	39	164
Huntington Creek near Huntington	62.2	15.9	25.6	53.3	85.6	74.8	120	60	96.5	15.8	3.6	22.8	13.2	83.5	14.9	94.3	11	69.6
Beaver River at Beaver	33.4	9.6	28.8	30.6	91.6	41.2	123	45.6	136	7.4	2.7	36.5	6.9	93.2	11.6	157	11.6	157
Duchesne River at Tabiona	126.7	38.2	30.1	73.7	58.2	140.0	110.4	115	90.9	30.7	10.2	33.2	15.9	51.8	33.0	107	26	84.7
Uintah River near Neola	79.3	31.4	39.6	81.1	102.3	88.2	111.2	141	178.0	38.4	14.8	38.5	31.2	81.2	45.7	119	68.5	187
Salt Creek near Nephi	11.5	3.4	29.6	14.3	124.0	23.7	206	20.4	177	3.0	1.2	40.0	3.9	130.0	5.5	183	4.7	157
Big Cottonwood near Salt Lake City	45.9	12.8	27.9	12.8	27.9					11.9	2.4	20.2	2.4	20.2				
Virgin River at Virgin	128.2	33.7	26.3	89.0	69.5	63.3	49.5	110	85.8	33.2	15.9	47.9	17.6	53.0	27.9	84.0	45	135.5
Lake Fork at Myton	174.1	118.1	67.8	56.7	32.6	139.7	80.3			59.7	34.3	57.4	21.0	35.2	41.9	70.2		

TABLE III

AVAILABLE STORAGE IN PRINCIPAL RESERVOIRS

ACRE FEET . . . . . APRIL 1, 1937

RESERVOIR	Maximum Capacity	Content April 1, in Acre-Feet					Percent Filled
		1933	1934	1935	1936	1937	
Bear Lake	1,420,000	563,050	492,000	149,250	71,000	396,750	27.9
Utah Lake	830,000	200,000	246,000	118,000	141,000	327,000	39.4
Echo Reservoir	74,000	25,000	35,800	25,500	14,200	49,000	66.3
East Canyon	28,000	19,000	14,700	7,300	17,400*	20,000	71.5
Strawberry	278,000	13,780	8,430	12,660	15,060	61,510	22.9
Scofield	35,000	11,000	10,000	2,000	11,000	15,750	45.0
Rocky Ford	25,300	10,250	8,500	6,200	10,266	20,000	79.1
Sevier Bridge	236,000	59,500	48,200	28,600	40,200	67,600	28.6
Piute	90,000	40,650	27,600	26,600	39,630	45,500	50.6
Otter Creek	52,600		17,600	14,600	17,050	22,700	43.2
Gunnison	20,000				3,500	20,000	100.0
Hyrum	14,000				New	12,000	85.7
Pine View	41,000				New	1,500	3.8
Mt. Dell	3,514				936	2,293	65.2
Montez	1,200				New	1,200	100.0
Twin Pots-Lake Fork					None	3,500	
SUNDRY RESERVOIRS:							
Lake Fork Region					None	3,000	
Uintah Region					None	4,000	
Whiterocks							

Table IV

UTAH COOPERATIVE SNOW SURVEYS - 1936-37

(Data for all Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	Course No.	Elevation in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Density in Per cent	Corresponding Water Content 1934	1935	1936	Normal Water Content in Snow to April 1 in Inches	Water Content of Snow on Date of Survey in % of Normal	Corresponding Percent Last Year	Moisture Condition Under Snow
CACHE VALLEY STREAMS:													
Franklin Basin(Idaho)	1	8200	3/27/37	73.1	20.8	28.5	12.6	24.4	39.7	36.5	57.0	108.8	Moist
Tony Grove Lake	2	8200	3/26/37	32.1	32.5	39.6	19.2	29.1	50.5	45.6	71.4	110.7	Wet
Tony Grove Ran. Sta.	3	6250	3/26/37	39.2	15.2	38.8	0.0	8.6	21.5	10.3	147.8	208.7	Damp
Spring Hollow No. 3	4	7000	3/27/37	45.4	16.2	35.6	0.0	14.5	20.6	18.9	85.7	110.0	Moist
Spring Hollow No. 4	5	8000	3/27/37	49.8	25.0	31.3	12.4	28.9	34.8	32.9	66.1	105.8	Wet
Mount Logan	6	9000	3/27/37	80.3	27.4	34.1	18.2	27.9	38.3	39.7	69.0	96.4	Wet
Smithfield Spring	7	7000	3/28/37	62.6	23.8	38.0							
Blacksmith Fork	8	8400	3/28/37	46.8	10.9	23.3	5.5	11.7	16.3	21.4	50.9	76.2	Wet
Garden City Summit	9	8200	3/27/37	57.9	18.5	31.9	4.9	16.4	33.9	25.6	72.3	132.3	
Blake Ranger Station	12-A	8000	3/27/37	54.4	13.3	24.4			22.1				Wet
BEAR RIVER:													
Garden City Summit	9	8200	3/27/37	57.9	18.5	31.9	4.9	16.4	33.9	25.6	72.3	132.3	
Headwaters of Bear R.	10	8600	3/28/37	31.0	8.2	26.4		7.8	14.2				
Goodman Ranch	10-A	7900	3/28/37	16.3	3.7	22.8							
Monte Cristo Ran. Sta.	12	9000	3/27/37	61.7	18.8	30.5			39.6				Dry
OGDEN RIVER:													
Huntsville-Wheeler Div	11-A	5775	3/26/37	40.5	15.0	37.0		4.4	18.1				Wet
Monte Cristo Ran. Sta.	12	9000	3/27/37	61.7	18.8	30.5			39.6				Dry
Blake Ranger Station	12-A	8000	3/27/37	54.4	13.3	24.4			22.1				Wet
Geertsen Creek	12-B	8200	3/29/37	64.0	23.0	35.9			27.5				Wet
WEBER RIVER:													
Harley's Canyon Summit	15	7500	3/27/37	58.8	19.1	32.5	4.4	15.0	24.0				Wet
Beaver Creek Ran. Sta.	24	7500	3/25/37	29.2	11.0	37.7	0.0	6.2	14.0	10.0	110.0	140.0	
Washington Long Lake	27	10300	3/28/37	89.6	33.6	37.5	18.4	28.0	43.5	44.1	76.4	98.7	
Airway Beacon-Chalk CR	29	7000	3/30/37	17.6	6.0	34.1		1.8	12.9				Wet
Smith and Morehouse	30	7600	3/26/37	42.5	13.7	32.3	3.3	8.8	19.3	14.7	93.2	131.2	Moist

Table IV (Cont'd.)

UTAH COOPERATIVE SNOW SURVEYS - 1936-37
(Data for all Snow Courses)

SNOW COURSES BY DRAINAGE AREAS	Course No.	Elevation in Feet	Date of Survey	Depth of Snow in Inches	Water Content of Snow in Inches	Density in Per cent	Corresponding Water Content 1934	1935	1936	Normal Water Content in Snow To April First in Inches	Water Content of Snow on Date of Survey in % of Normal	Corresponding Percent Last Year	Moisture Condition Under Snow
WEBER RIVER:(Cont'd.)													
Redden Mine (Upper)	31	9000	3/25/37	63.3	22.1	34.9	11.1	13.1	29.1	23.0	96.2	126.5	Wet
Redden Mine (Lower)	31-A	8500	3/25/37	63.1	21.8	34.6	9.4	12.4	25.1	23.0	94.8	109.1	Wet
SALT LAKE WATERSHEDS:													
Parrish Creek Summit	13	8000	3/24/37	79.0	29.7	37.6		19.0	37.7				Damp
Barnard Creek	13-A	8000	3/26/37	85.3	33.4	39.2			42.0				
Hornet Creek	13-B	8100	3/26/37	53.8	18.8	34.9							Damp
Lamb's Canyon	14	6600	3/31/37	50.7	18.8	37.1		14.1	22.7				
Parley's Canyon Summit	15	7500	3/27/37	58.8	19.1	32.5	4.4	15.0	24.0				Wet
Silver Lake	16	8700	3/31/37	80.7	24.7	29.4	16.5	21.0	35.5				Wet
Mill D South Fork	16-A	7400	3/29/37	55.4	19.9	35.9							Wet
PROVO RIVER & UTAH LAKE:													
Dutchman Ranger Sta.	17	7500	3/26/37	65.5	25.8	39.4	4.7	9.6	28.7	25.6	100.8	112.1	
Timpanogos Cave Camp	18	5500	3/27/37	No Snow				N.S	N.S				
South Fork Ranger Sta.	19	6100	3/27/37	15.0	7.5(Est.)			4.0	10.6				Ice
Camp Altamont	20	7300	3/27/37	60.3	25.3	42.0		11.6	22.0				Wet
Timpanogos Loop Road D.	21	8200	3/27/37	82.3	32.2	39.1		16.6	28.1				Wet
Aspen Grove	21-A	6900	3/27/37	56.8	26.7	46.9							Wet
Y.L.M.I.A. Site	21-B	6000	3/27/37	36.0	16.0	44.4							Wet
Hobble Creek Summit	22	7300	3/27/37	44.2	17.6	39.8			20.7				Wet
Daniels-Strawberry Sum.	23	8000	3/29/37	54.7	20.9	38.2	3.5	12.7	19.4	20.9	100.0	92.8	Moist
Beaver Creek Ranger S.	24	7500	3/25/37	29.2	11.0	37.7	0.0	6.2	14.0	10.0	110.0	140.0	
Soapstone Ranger Sta.	25	7800	3/28/37	35.9	12.0	33.4	2.5	9.0	18.9	15.4	87.9	122.8	
Trial Lake	26	9800	3/28/37	82.9	28.9	34.8	16.4	23.5	37.2	37.1	77.8	100.3	
Washington Long Lake	27	10300	3/28/37	89.6	33.6	37.5	18.4	28.0	43.5	44.1	76.4	98.7	
Lost Lake	28	9900	3/28/37	78.0	27.6	35.4	15.2	21.5	34.5	34.2	80.7	100.9	
STRAWBERRY RESERVOIR:													
Daniels-Strawberry Sum.	23	8000	3/29/37	54.7	20.9	38.2	3.5	12.7	19.4	20.9	100.0	92.8	

Table IV (Cont'd.)

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STRAWBERRY RESERVOIR: (Cont'd)													
East Portal	33	7560	4/1/37	47.9	17.4	36.3	6.8	9.0	19.2				
East Portal-Strawberry Divide	33-A	8000	4/1/37	71.5	25.6	35.8	8.0	19.3	31.7				
NORTH SIDE UINTAH MTS.:													
Hewinta Ranger Station	34	9500	3/27/37	32.0	8.4	26.2	6.3	7.1	15.1				
Hole-in-the-Rock	35	9150	3/26/37	24.3	5.5	22.6	3.7	2.8	4.0				Wet
SOUTH SIDE UINTAH MTS.:													
Lake Fork Mountain	36	10500	3/25/37	50.6	14.1 (Est.)	27.9	4.3	10.1	15.8 (Est.)	12.3	114.7	128.4	
Paradise Park	37	10500	3/29/37	61.8	17.5	28.3	7.6	12.1	10.7	14.2	123.2	75.4	
Mosby Mountain No. 1	38	9700	3/30/37	52.5	13.5	25.7	5.5	11.1	9.7	12.6	107.1	77.0	
Mosby Mountain No. 2	38-A	9500	3/30/37	58.8	16.9	28.7	6.5	11.8	9.9	12.6	134.0	78.5	
King's Cabin No. 1	39	8800	3/26/37	43.3	12.4	28.7	4.4	9.2	9.8	13.2	93.9	74.2	
King's Cabin No. 2	39-A	8600	3/26/37	41.9	12.3	29.4	3.9	8.1	10.9	13.2	93.3	82.6	
Indian Canyon	40	9100	3/29/37	55.7	14.3	25.7	5.6	10.0	8.3	15.6	91.7	53.2	Moist
PRICE RIVER:													
Indian Canyon	40	9100	3/29/37	55.7	14.3	25.7	5.6	10.0	8.3	15.6	91.7	53.2	Moist
Gooseberry Reservoir S.	41	8700	3/26/37	72.8	24.2	33.2	10.7	14.0	33.5	31.9	75.9	105.0	Dry
Mammoth Ranger Station	42	8800	3/25/37	78.6	26.8	34.1	10.6	18.7	33.7	30.8	87.0	109.4	Damp
Staley Ranch	42-A	7600	3/30/37	26.7	10.7	40.1		6.0	11.8				Wet
Dry Valley Divide	42-B	7800	3/ 30/37	40.0	11.5	28.8		15.7	13.2				Damp
Clear Creek	42-C	8150	3/30/37	31.6	12.1	38.3			13.0				Damp
Huntington Horseshoe	43	9800	3/26/37	83.3	28.9	34.7	15.3	23.2	37.6	42.5	65.6	88.5	Dry
FILLMORE:													
Pine Creek-Chalk Creek	49	8500	3/26/37	57.9	16.2	28.0	7.2	10.9	10.7				
HUNTINGTON, COTTONWOOD, and FERRON CREEKS:													
Huntington Horseshoe	43	9800	3/26/37	83.3	28.9	34.7	15.3	23.2	37.6	42.5	65.6	88.5	Dry

Table IV (Cont'd.)

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COAL CREEK:													
Cedar Breaks	59	10200	3/31/37	109.2	41.2	37.8		23.1	24.3				
Co-op Flat	60	9500	4/3/37	84.7	31.0	36.8	7.4	18.1	16.8	25.0	124.0	67.2	
Webster Flat	61	9200	4/1/37	83.0	30.0	36.2	8.5	18.0	18.7	24.6	122.0	76.0	
VIRGIN RIVER:													
Gravel Springs Junct.	56	7500	3/25/37	41.2	13.7	33.3			3.3				
Harris Flat Ranger S.	57	7700	3/25/37	59.8	21.2	35.4	2.5	14.1	10.5	14.2	149.2	73.9	
Duck Creek Ranger St.	58	8560	3/30/37	79.8	28.9	37.5		20.5	15.3				
Cedar Breaks	59	10200	3/31/37	109.2	41.2	37.8		23.1	24.3				
Co-op Flat	60	9500	4/3/37	84.7	31.0	36.8	7.4	18.1	16.8	25.0	124.0	67.2	
Webster Flat	61	9200	4/1/37	83.0	30.0	36.2	8.5	18.0	18.7	24.6	122.0	76.0	
SANTA CLARA RIVER:													
Pine Valley	62	9150						15.8					
LA SAL & BLUE MOUNTAIN:													
La Sal Mountain	64	8500	3/29/37	37.2	11.2	29.9	0.0	7.7	4.1				
Buckboard Flat	65	9000	3/30/37	72.1	24.4	33.8	6.5	15.9	7.9				