NRCS
Natural
Resources
Conservation
Service

Utah Water Supply Outlook Report

March, 2004

East Fork of Blacks Fork Snow Course, March 1, 2004. Photo by Randy Julander

Water Supply Outlook Reports
and
Federal - State - Private
Cooperative Snow Surveys

For more water supply and resource management information, contact:

Vane O. Campbell, Area Conservationist, 340 N. 600 E., Richfield, UT 84701 - Phone: (435) 896-6441
Todd C. Nielson, Area Conservationist, 302 E. 1860 S., Provo, UT 84606 - Phone: (801) 377-5580
David M. Webster, Area Conservationist, 80 N. 500 W., Vernal, UT 84078 - Phone: (435)789-2100
Snow Survey Staff, 245 N Jimmy Doolittle Rd, SLC Utah, 84041 - Phone: (801)524-5213
Internet Address: http://www.ut.nrcs.usda.gov/snow/

How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snowcourses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

STATE OF UTAH GENERAL OUTLOOK
Mar 1, 2004

SUMMARY

Most of February was pretty nondescript from a snowpack point of view. The final ten days were spectacular. Snowpacks on the Virgin and Escalante Basins essentially doubled during that time frame. All of southern Utah had substantial increases in snow accumulation. For example the Virgin Basin actually has more snow now than it normally would on April 1 and given the past few years of abysmal runoff from this area, an above normal snowpack is extremely welcome. Northern Utah also saw large snowpack increases over most areas although not nearly the gains seen in the south. February snowpack accumulation in southern Utah was 129% to 214% of average and in the north, it ranged between 83% on the Bear and 134% over the Utah Lake Basin. Precipitation for February was near to much above average state wide, ranging from 84% to 156% of average, bringing seasonal precipitation, (Oct-Feb) to 118%. Soil moisture remains a concern as there was very little precipitation accumulation prior to the onset of snowpacks. This condition will persist until the melt season saturates the soils and in some cases, could take an above normal amount of snow. Soil moisture deficits range from 6 to 9 inches in the upper 24 inches of soil, similar to last year. Low reservoir storage is also a concern with total reservoir storage down 8% (428,000 Acre-Feet) from last year. 428,000 AF would be the entire reservoir capacity of the Sevier River Basin and then some. Areas of greatest concern are the Bear and Sevier River basins with current storage of 4% and 26% respectively. Streamflow forecasts are scattered across the spectrum, ranging from 13% to 149% of average. Surface Water Supply Indexes range from 2% on the Bear River to 64% over the western part of the Uintah Basin.

SNOWPACK

January first snowpacks as measured by the NRCS SNOTEL system range from 91% on the Bear River to115% on the Virgin watershed. This is 135% to 197% of last years snowpack, so Utah is doing far better than the recent past. The lowest snowpacks are on the Bear which needs 141% of average snowpack accumulation during March to reach average by April 1. The probability of getting that amount of snow is about one in five. Other areas across the state require 40% to 93% of average March accumulation to reach a normal April 1 snowpack with the exception of the Virgin which already has more snow than the typical April 1 peak. Depending on wetter/drier March conditions, snowpacks could range between 70% and 170% of average by April 1.

PRECIPITATION

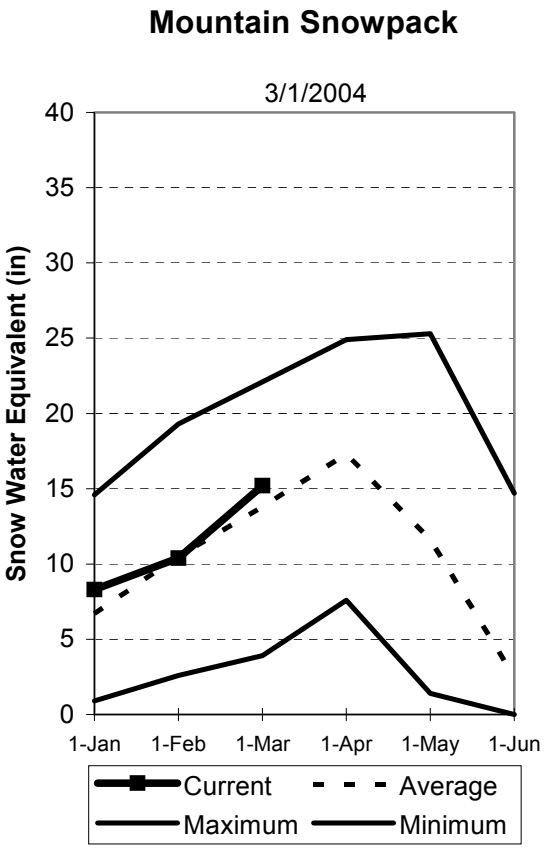
Mountain precipitation during February was above average statewide (118%). In the north it was actually below normal (84%) and in the south, much above average (156%). This brings the seasonal accumulation (Oct-Feb) to 99% of average statewide.

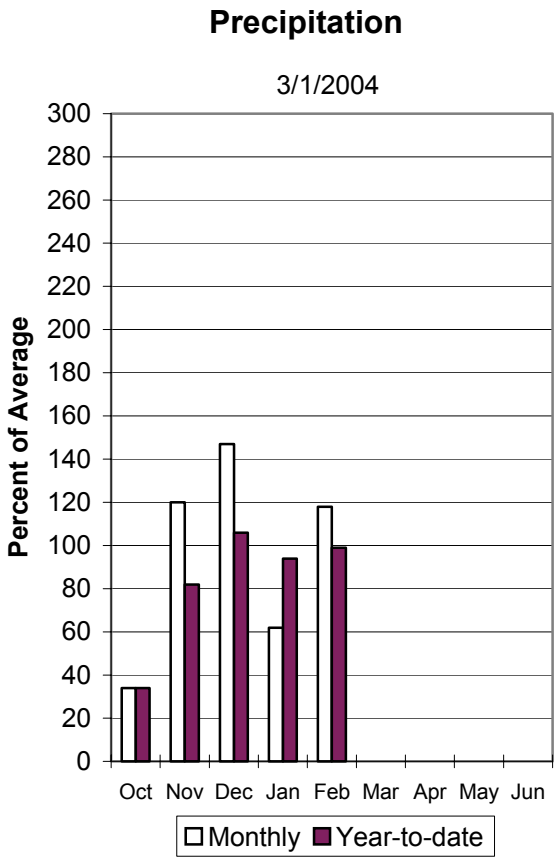
RESERVOIRS

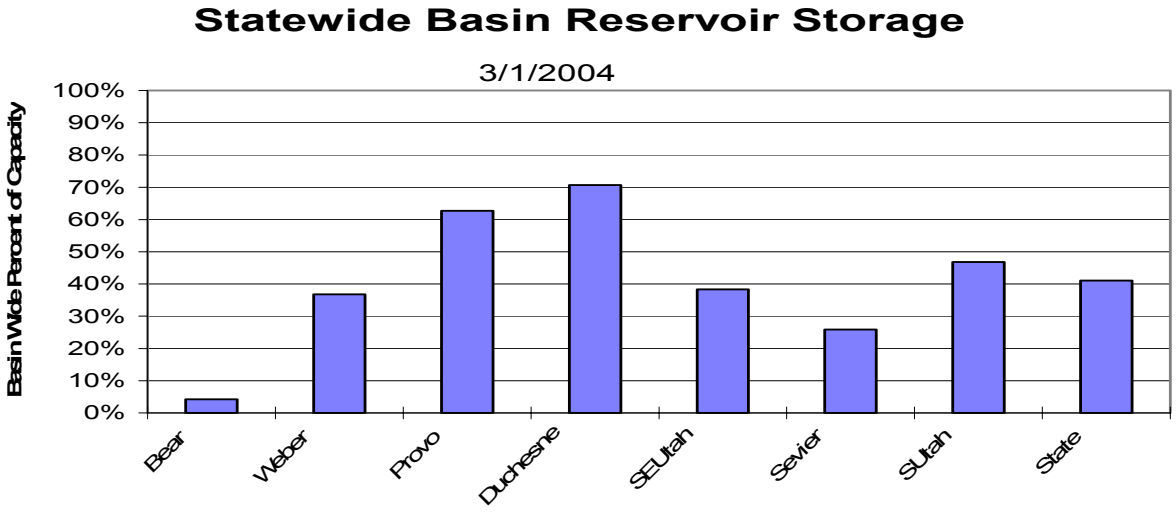
Storage in 41 of Utah's key irrigation reservoirs is at 41% of capacity, up 2% from last month. This is down substantially (8%) from last year indicating heavy use of reservoir storage to make up the streamflow deficit. Most reservoir operators are utilizing a conservative strategy, storing as much water as possible.

STREAMFLOW

Snowmelt streamflows are expected to be much below to much above average across the entire state of Utah this year. Forecast streamflows range from 13% on the Bear at Stewart dam to 149% on Vernon Creek. Most flows are forecast to be in the 60% to 100% range. Overall water supply conditions are below to near normal.

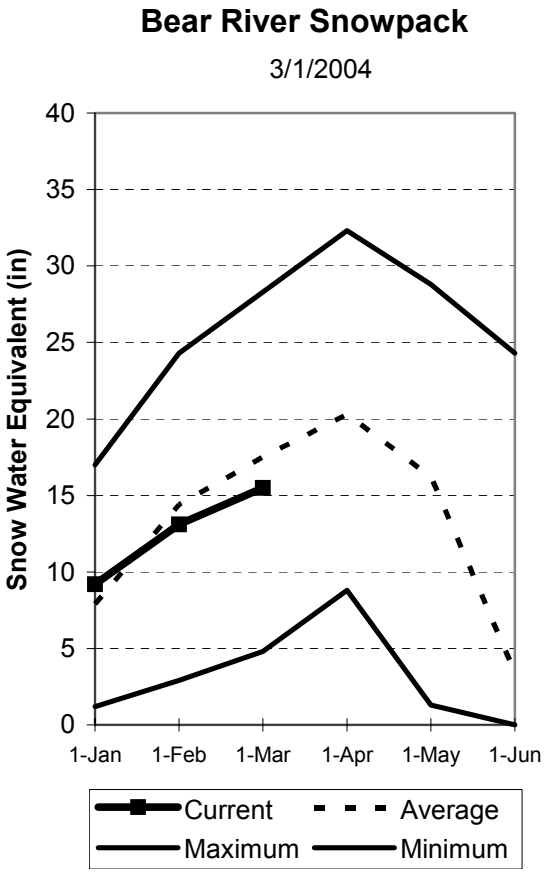


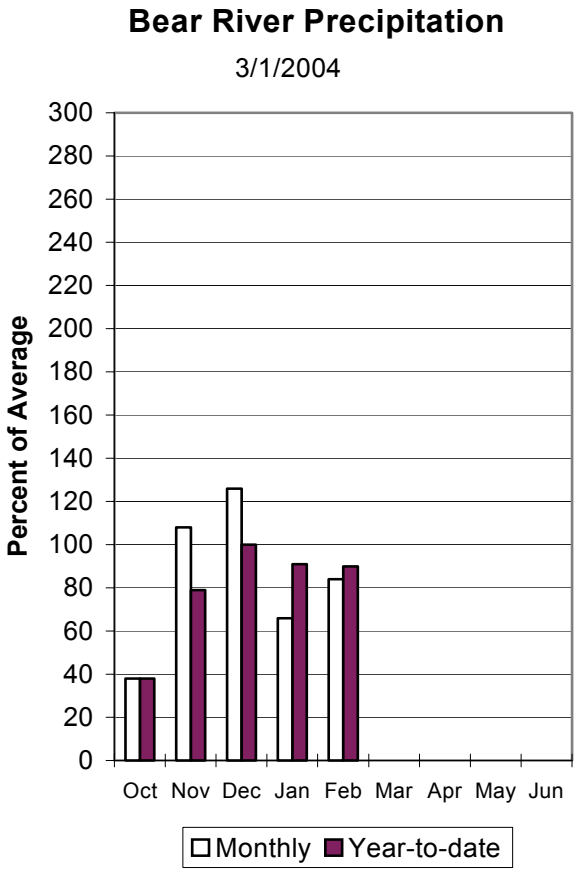


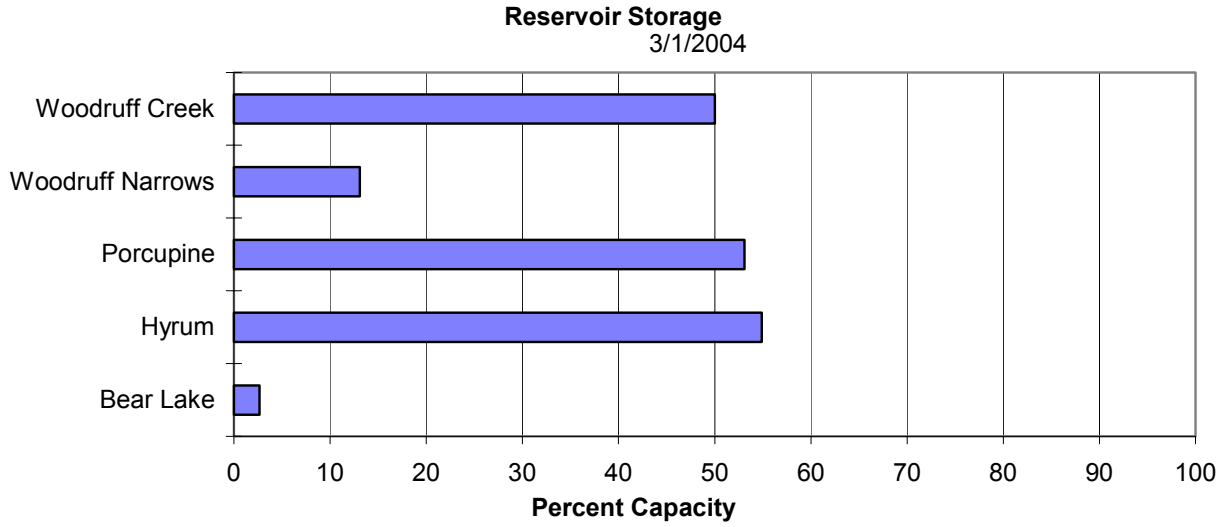


Bear River Basin
Mar 1, 2004

Snowpacks on the Bear River Basin are near average at 91% of normal, about 135% of last year the same as last month. Specific sites range from 74% to 146% of normal. Low elevation snowpack is much above normal. February precipitation was below average at 84%, which brings the seasonal accumulation (Oct-Feb) to 90% of average. Soil moisture levels in runoff producing areas indicate about 7 inches of deficit in the upper 2 feet of soil. Forecast streamflows are for much below normal (13%) to near normal volumes (100%) this spring. Reservoir storage is extremely low at 4% of capacity. The Surface Water Supply Index is at 2% for the Bear River, or 98% of years have had more total water available. Water supply conditions are much below normal due to low reservoir storage and soil moisture.







BEAR RIVER BASIN
Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Bear River nr UT-WY State Line	APR-JUL	55	72	84	74	96	113	113
Bear River ab Reservoir nr Woodruff	APR-JUL	42	55	64	47	83	111	136
Big Creek nr Randolph	APR-JUL	1.22	1.62	1.90	39	2.59	3.69	4.90
Smiths Fork nr Border	APR-JUL	54	68	77	75	86	100	103
Bear River at Stewart Dam	APR-JUL	6	18	29	13	42	66	227
Little Bear River at Paradise	APR-JUL	18.4	26	32	70	39	49	46
Logan River nr Logan combined flow	APR-JUL	65	81	93	74	106	125	126
Blacksmith Fork nr Hyrum	APR-JUL	18.7	27	34	71	41	54	48

BEAR RIVER BASIN
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BEAR LAKE	1302.0	34.4	372.7	---
HYRUM	15.3	8.4	14.3	11.0
PORCUPINE	11.3	6.0	6.5	5.6
WOODRUFF NARROWS	57.3	7.5	8.0	27.6
WOODRUFF CREEK	4.0	2.0	1.6	---

BEAR RIVER BASIN
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
BEAR RIVER, UPPER (abv Ha	6	130	86
BEAR RIVER, LOWER (blw Ha	8	135	95
LOGAN RIVER	4	131	94
RAFT RIVER	1	216	119
BEAR RIVER BASIN	14	133	91

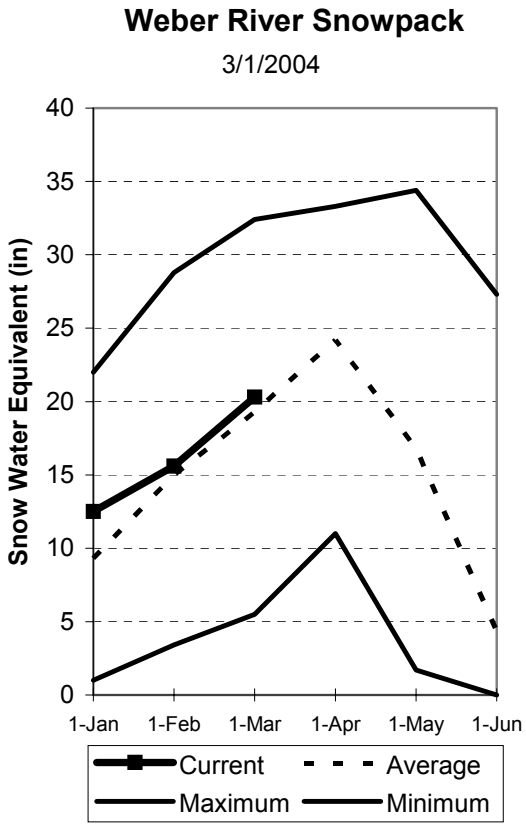
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

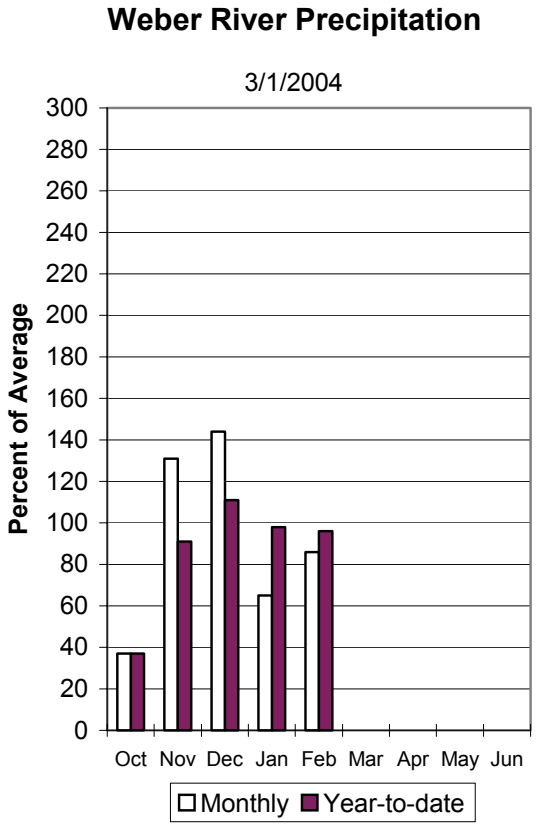
The average is computed for the 1971-2000 base period.

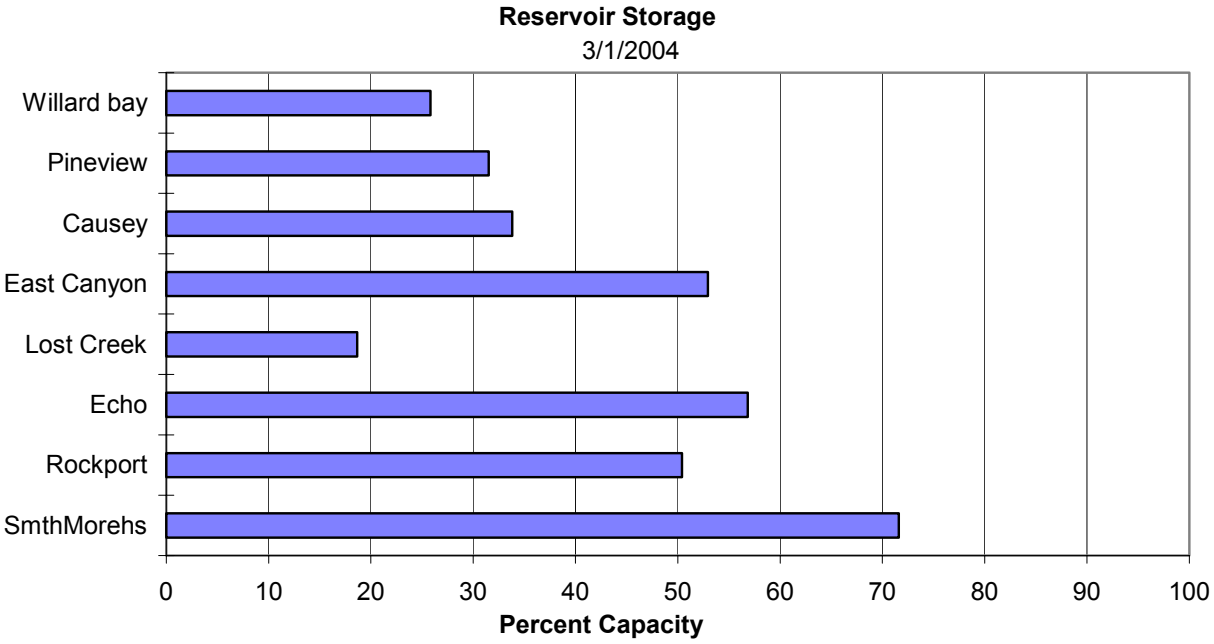
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Weber and Ogden River Basins
Mar 1, 2004

Snowpack on the Weber and Ogden Watersheds is near normal at 102% of average, about 170% of last year and down 2% relative to last month. Individual sites range from 67% to 159% of average. February precipitation was below average at 86% bringing the seasonal accumulation (Oct-Feb) to 96% of average. Soil moisture levels in runoff producing areas indicate about 7 inches of deficit in the upper 2 feet of soil. Streamflow forecasts range from 62% to 124% of average. Reservoir storage is at 37% of capacity, about 12% less than last year. The Surface Water Supply Index is at 21% for the Weber River and at 25% for the Ogden River. Overall water supply conditions are below normal due to low reservoir storage and soil moisture conditions.







WEBER & OGDEN WATERSHEDS in Utah
Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Smith & Morehouse Res inflow	APR-JUL	16.2	21	24	71	27	32	34
Weber River nr Oakley	APR-JUL	57	74	85	69	96	113	123
Rockport Reservoir inflow	APR-JUL	44	68	84	63	100	124	134
Weber River nr Coalville	APR-JUL	43	68	85	62	102	127	137
Chalk Creek at Coalville	APR-JUL	9.6	21	28	62	35	46	45
Echo Reservoir inflow	APR-JUL	62	93	114	64	135	166	179
Lost Creek Reservoir inflow	APR-JUL	7.0	10.5	13.2	75	16.2	21	17.6
East Canyon Reservoir inflow	APR-JUL	18.9	24	28	90	32	39	31
Weber River at Gateway	APR-JUL	167	228	270	76	310	375	355
SF Ogden River nr Huntsville	APR-JUL	33	46	54	84	62	75	64
Pineview Reservoir inflow	APR-JUL	65	90	107	81	124	149	133
Wheeler Creek nr Huntsville	APR-JUL	5.50	6.90	7.80	124	8.70	10.10	6.30

WEBER & OGDEN WATERSHEDS in Utah
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CAUSEY	7.1	2.4	2.1	2.6
EAST CANYON	49.5	26.2	30.2	35.4
ECHO	73.9	42.0	31.4	51.0
LOST CREEK	22.5	4.2	6.1	13.9
PINEVIEW	110.1	34.7	47.6	52.6
ROCKPORT	60.9	30.7	35.7	33.2
WILLARD BAY	215.0	55.5	107.4	154.9

WEBER & OGDEN WATERSHEDS in Utah
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OGDEN RIVER	4	178	98
WEBER RIVER	9	170	104
WEBER & OGDEN WATERSHEDS	12	174	102

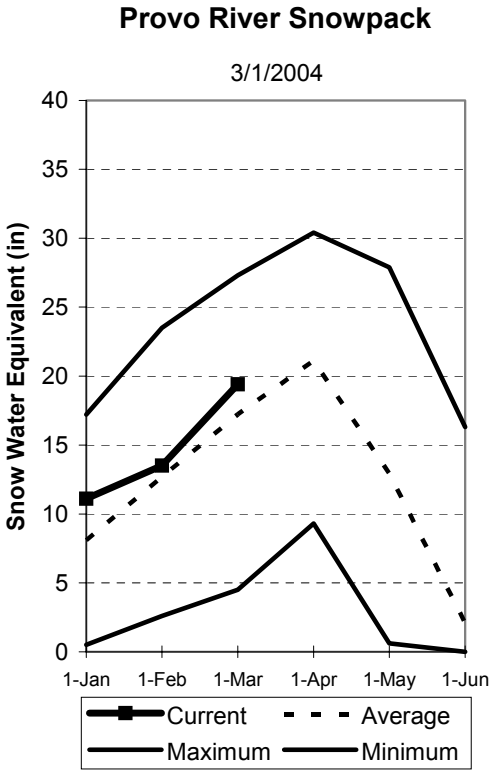
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

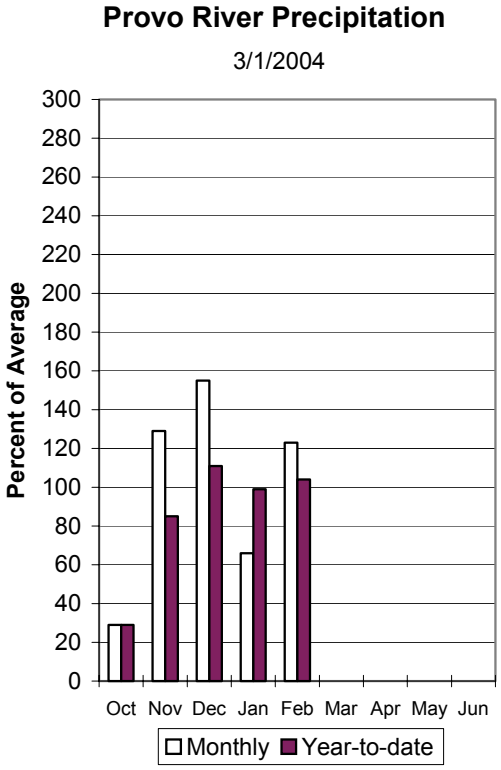
The average is computed for the 1971-2000 base period.

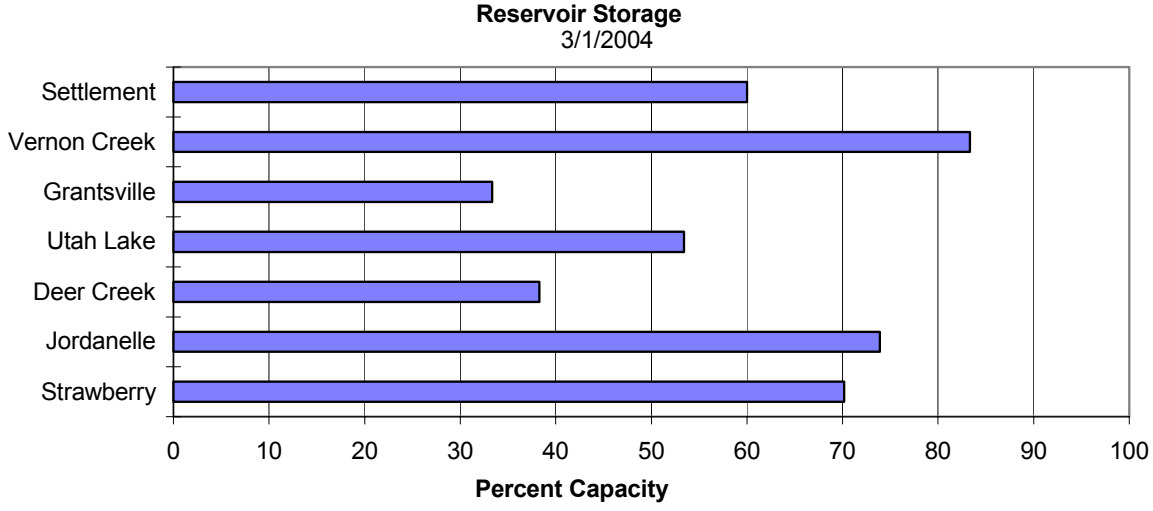
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Utah Lake, Jordan River & Tooele Valley Basins
Mar 1, 2004

Snowpacks over these watersheds are at 111% of average, 192% of last year and up 5% relative to last month. The upper Provo, the area of greatest water production, is at only 95% of average. Individual sites range from 82% to 161% of average. February precipitation was above average at 123%, bringing the seasonal accumulation (Oct-Feb) to 104% of average. Soil moisture levels in runoff producing areas indicate about 6.5 inches of deficit in the upper 2 feet of soil. Forecast streamflows range from 70% to 149% of average. Reservoir storage is at 63% of capacity, 4% less than last year. The Surface Water Supply Index is at 17%, or 83% of years would have more total water available. General water supply conditions are below normal due to low reservoir storage and soil moisture.







UTAH LAKE, JORDAN RIVER & TOOELE VALLEY
Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Spanish Fork River nr Castilla	APR-JUL	15.4	39	62	81	86	102	77
Provo River nr Woodland	APR-JUL	41	46	74	72	86	99	103
Provo River nr Hailstone	APR-JUL	33	62	76	70	91	109	109
Provo R blw Deer Creek Dam	APR-JUL	37	74	96	76	118	145	126
American Fk R nr American Fk	APR-JUL	15.7	23	26	81	29	34	32
Utah Lake inflow	APR-JUL	94	184	255	79	326	395	325
Little Cottonwood Ck nr SLC	APR-JUL	22	31	35	88	39	40	40
Big Cottonwood Ck nr SLC	APR-JUL	19.4	28	32	84	36	39	38
Mill Creek nr SLC	APR-JUL	3.00	5.62	6.80	97	7.98	8.40	7.00
Parley's Creek nr SLC	APR-JUL	5.2	11.3	15.0	90	18.7	21	16.7
Dell Fork nr SLC	APR-JUL	1.56	4.76	6.20	91	7.64	9.30	6.80
Emigration Creek nr SLC	APR-JUL	1.58	3.92	5.30	118	6.68	8.00	4.50
City Creek nr SLC	APR-JUL	4.90	8.35	10.00	115	11.65	12.70	8.70
Vernon Creek nr Vernon	APR-JUL	1.32	1.79	2.20	149	2.71	3.67	1.48
Settlement Creek nr Tooele	APR-JUL	1.45	1.93	2.30	117	2.72	3.44	1.97
South Willow Creek nr Grantsville	APR-JUL	3.30	4.20	4.70	146	5.20	6.10	3.23

UTAH LAKE, JORDAN RIVER & TOOELE VALLEY
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
DEER CREEK	149.7	60.3	83.6	107.4
GRANTSVILLE	3.3	1.1	1.6	2.2
SETTLEMENT CREEK	1.0	0.6	0.7	0.6
STRAWBERRY-ENLARGED	1105.9	776.1	807.9	637.8
UTAH LAKE	870.9	465.2	513.8	825.1
VERNON CREEK	0.6	0.5	0.6	---

UTAH LAKE, JORDAN RIVER & TOOELE VALLEY
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
PROVO RIVER & UTAH LAKE	7	174	98
PROVO RIVER	4	181	95
JORDAN RIVER & GREAT SALT	6	195	114
TOOELE VALLEY WATERSHEDS	3	255	136
UTAH LAKE, JORDAN RIVER &	16	195	111

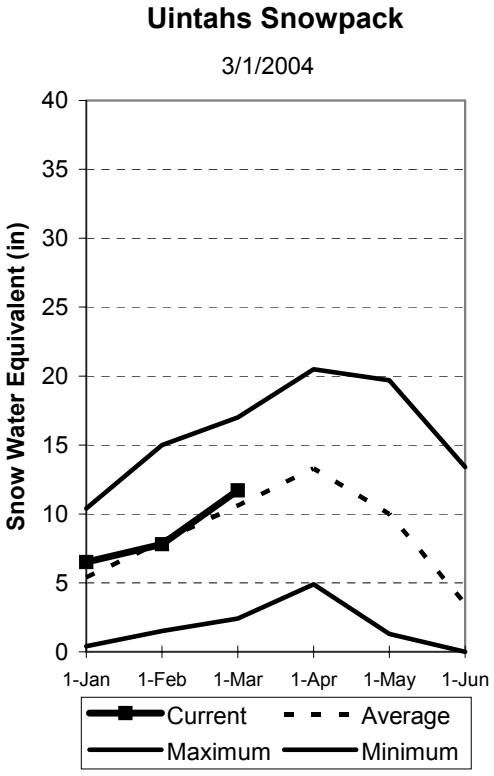
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

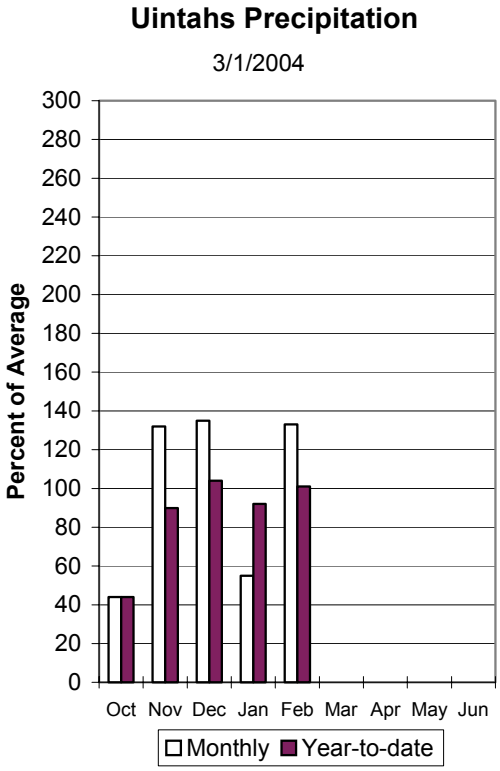
The average is computed for the 1971-2000 base period.

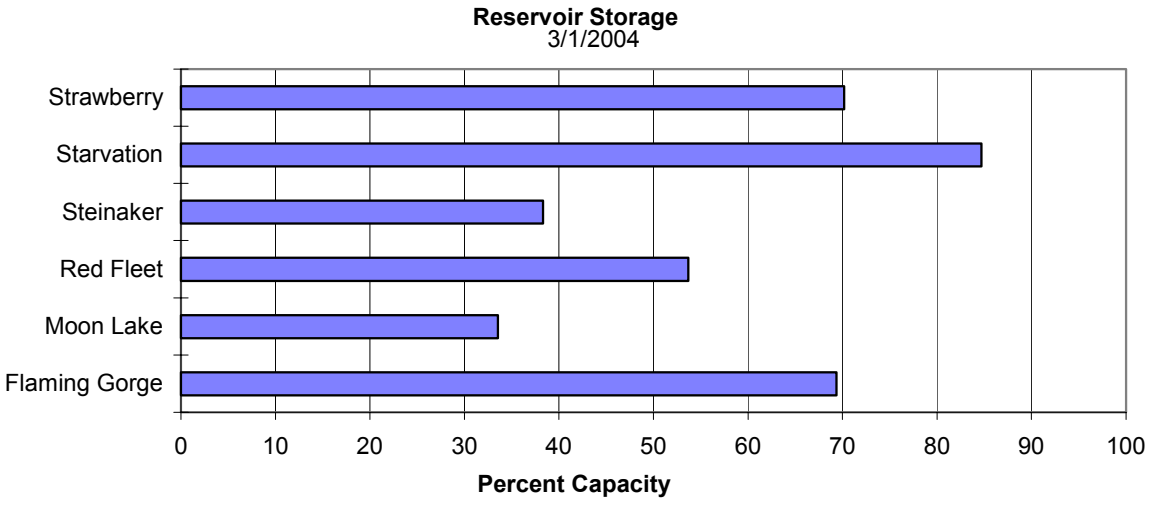
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Uintah Basin and Dagget SCD's
Mar 1, 2004

Snowpacks across the Uintah Basin and North Slope areas are near average at 107%, which is 159% of last year, up 9% relative to last month. The North Slope ranges from 70% to 113% and the Uintah Basin ranges from 89% to 124% of average. Precipitation during February was much above average at 133% bringing the seasonal accumulation (Oct-Feb) to 101% of average. Soil moisture levels in runoff producing areas indicate about 7 inches of deficit in the upper 2 feet of soil. Reservoir storage is at 71% of capacity, 2% less than last year. The Surface Water Supply Index for the western area is 64% and for the eastern area it is 50% indicating average or better conditions. Springtime runoff conditions are near normal with the exception of soil moisture.







UINTAH BASIN & DAGGET SCD'S
Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Blacks Fork nr Robertson	APR-JUL	46	63	74	78	85	102	95
EF of Smiths Fork nr Robertson	APR-JUL	16.7	19.7	22	71	25	29	31
Flaming Gorge Reservoir Inflow	APR-JUL	500	690	825	69	960	1150	1190
BIG BRUSH CK abv Red Fleet Resv	APR-JUL	15.8	20	23	110	26	30	21
Ashley Creek nr Vernal	APR-JUL	33	48	58	112	68	83	52
WF DUCHESNE RIVER nr Hanna	APR-JUL	13.2	18.7	23	96	28	36	24
DUCHESNE R nr Tabiona	APR-JUL	66	81	92	88	103	118	105
UPPER STILLWATER RESV inflow	APR-JUL	58	69	77	94	85	96	82
ROCK CK nr Mountain Home	APR-JUL	61	73	82	92	91	103	89
DUCHESNE R abv Knight Diversion	APR-JUL	108	143	167	89	191	225	188
STRAWBERRY RES nr Soldier Springs	APR-JUL	32	45	55	93	66	85	59
CURRANT CREEK RESV Inflow	APR-JUL	18.9	23	26	104	29	34	25
STARVATION RESERVOIR inflow	APR-JUL	66	89	105	87	121	144	121
Lake Fork River abv Moon Lake	APR-JUL	45	56	63	93	70	81	68
Yellowstone River nr Altonah	APR-JUL	34	49	59	95	69	84	62
DUCHESNE R at Myton	APR-JUL	110	176	220	85	265	330	260
Whiterocks River nr Whiterocks	APR-JUL	19.0	38	51	91	64	83	56
DUCHESNE R nr Randlett	APR-JUL	36	173	270	83	365	510	325

UINTAH BASIN & DAGGET SCD'S
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
FLAMING GORGE	3749.0	2600.0	2610.0	2919.0
MOON LAKE	49.5	16.6	20.4	29.8
RED FLEET	25.7	13.8	11.6	18.4
STEINAKER	33.4	12.8	8.6	22.8
STARVATION	165.3	147.0	139.1	135.9
STRAWBERRY-ENLARGED	1105.9	776.1	807.9	637.8

UINTAH BASIN & DAGGET SCD'S
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
UPPER GREEN RIVER in UTAH	6	144	106
ASHLEY CREEK	2	174	129
BLACK'S FORK RIVER	2	123	87
SHEEP CREEK	1	173	110
DUCHESNE RIVER	11	165	108
LAKE FORK-YELLOWSTONE CRE	4	156	100
STRAWBERRY RIVER	4	182	111
UINTAH-WHITEROCKS RIVERS	2	149	118
UINTAH BASIN & DAGGET SCD	17	159	107

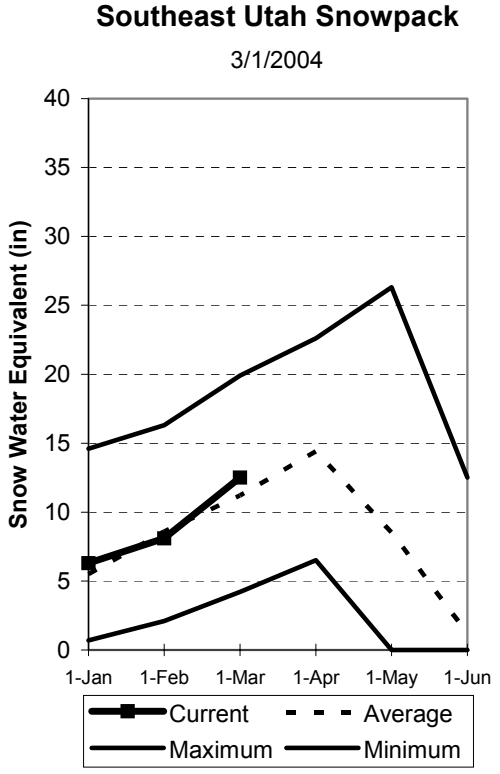
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

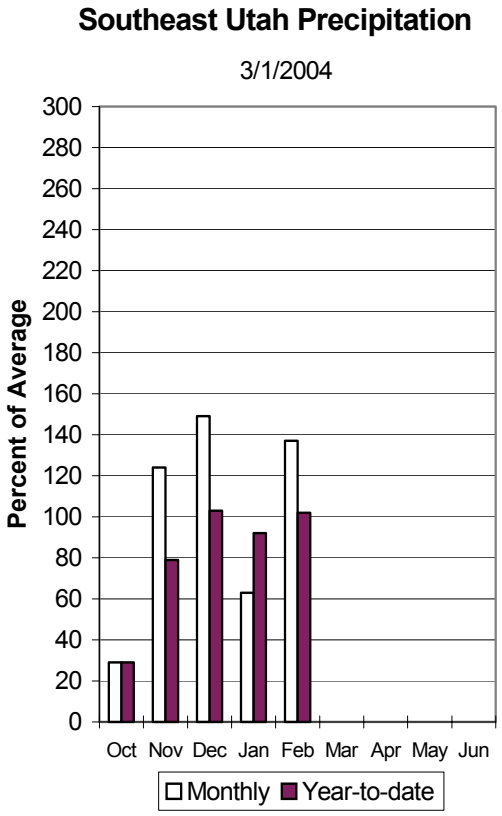
The average is computed for the 1971-2000 base period.

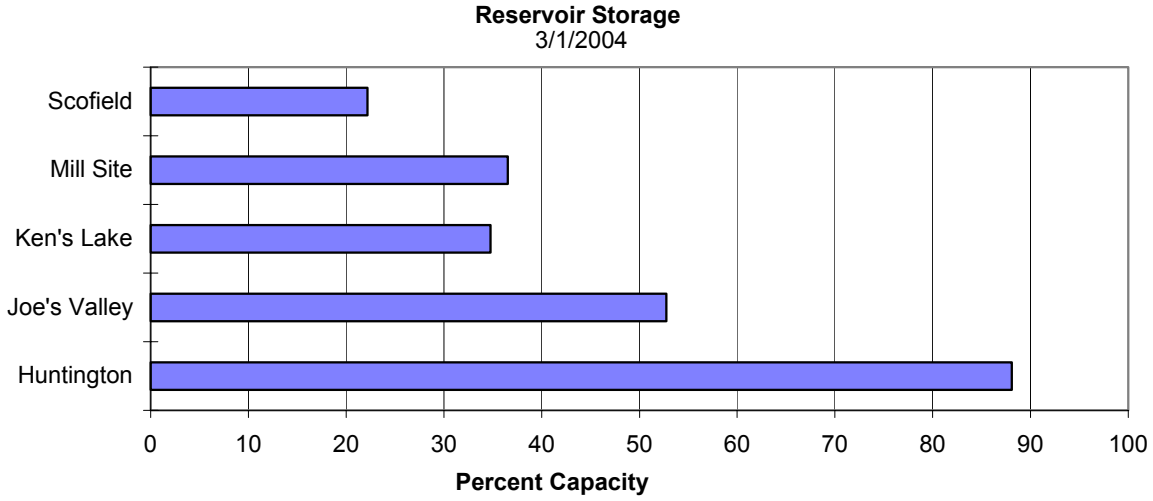
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Carbon, Emery, Wayne, Grand and San Juan Co.
Mar 1, 2004

Snowpacks in this region are near normal at 104% of average, about 145% of last year, up 11% relative to last month. Individual sites range from 76% to 128% of average. Precipitation during February was much above average at 137%, bringing the seasonal accumulation (Oct-Feb) to 102% of normal. Soil moisture levels in runoff producing areas indicate about 7 inches of deficit in the upper 2 feet of soil. Forecast streamflows range from 78% to 111% of average. Reservoir storage is at 38% of capacity, up 4% from last year. Surface Water Supply Indeces for the area are: Price 28%, (below normal) San Rafael area 52% (average) and Moab 44% (average). General runoff and water supply conditions are below to near normal due to low reservoir storage and soil moisture.







CARBON, EMERY, WAYNE, GRAND, & SAN JUAN Co.
Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Gooseberry Creek nr Scofield	APR-JUL	5.7	8.5	10.3	87	12.1	14.9	11.9
Scofield Reservoir inflow	APR-JUL	31	38	42	91	46	53	46
White River blw Tabbyune Creek	APR-JUL	7.4	11.5	14.8	85	18.5	25	17.4
Green River at Green River, UT	APR-JUL	1460	2110	2550	80	2990	3640	3170
Electric Lake inflow	APR-JUL	7.9	10.9	13.3	85	16.1	21	15.7
HUNTINGTON CK nr Huntington	APR-JUL	29	37	42	84	47	55	50
JOE'S VALLEY RESV Inflow	APR-JUL	27	42	52	90	62	77	58
Ferron Creek nr Ferron	APR-JUL	24	32	37	95	43	52	39
Colorado River nr Cisco	APR-JUL	2140	3070	3700	80	4330	5260	4650
Mill Creek at Sheley Tunnel nr Moab	APR-JUL	2.00	3.70	4.80	96	5.90	7.60	5.00
Seven Mile Creek nr Fish Lake	APR-JUL	2.90	5.60	7.40	106	9.20	11.90	7.00
Muddy Creek nr Emery	APR-JUL	11.1	17.6	22	111	26	33	19.9
North Ck ab R.S. nr Monticello	MAR-JUL	0.02	0.46	1.08	111	1.96	3.73	0.97
South Ck ab Lloyd's Res nr Monticell	MAR-JUL	0.62	1.11	1.52	111	2.00	2.82	1.37
Recapture Ck bl Johnson Ck nr Blandi	MAR-JUL	1.40	3.90	5.60	111	7.30	9.80	5.05
San Juan River nr Bluff	APR-JUL	900	1170	1350	110	1530	1800	1230

CARBON, EMERY, WAYNE, GRAND, & SAN JUAN Co.
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
HUNTINGTON NORTH	4.2	3.7	3.5	3.4
JOE'S VALLEY	61.6	33.3	22.6	41.5
KEN'S LAKE	2.3	0.8	0.8	1.3
MILL SITE	16.7	6.1	8.7	84.9
SCOFIELD	65.8	14.6	16.2	34.8

CARBON, EMERY, WAYNE, GRAND, & SAN JUAN Co.
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
PRICE RIVER	3	133	92
SAN RAFAEL RIVER	3	148	103
MUDDY CREEK	1	157	120
FREMONT RIVER	3	144	106
LASAL MOUNTAINS	1	124	98
BLUE MOUNTAINS	1	174	128
WILLOW CREEK	1	170	120
CARBON, EMERY, WAYNE, GRA	13	145	104

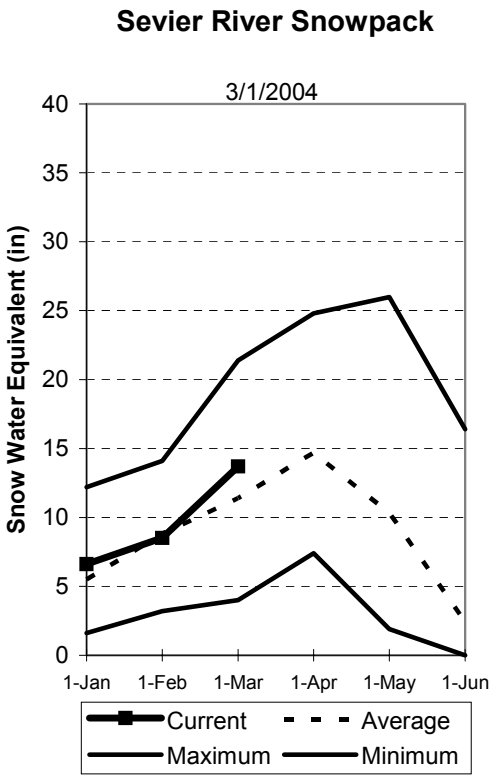
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

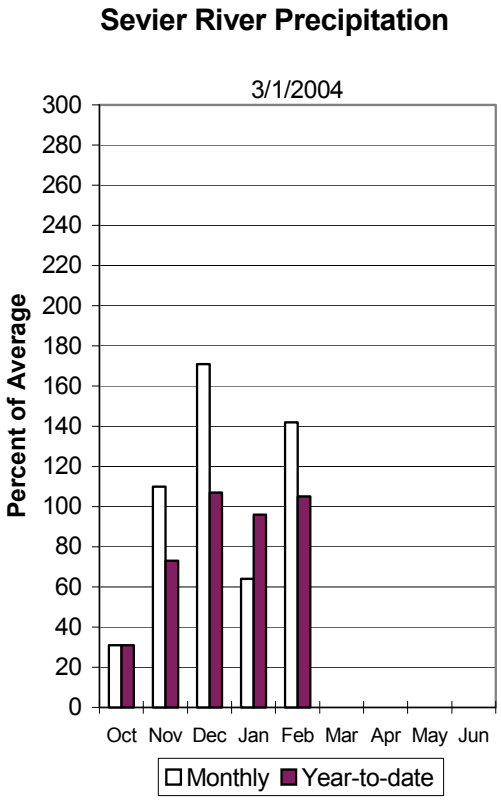
The average is computed for the 1971-2000 base period.

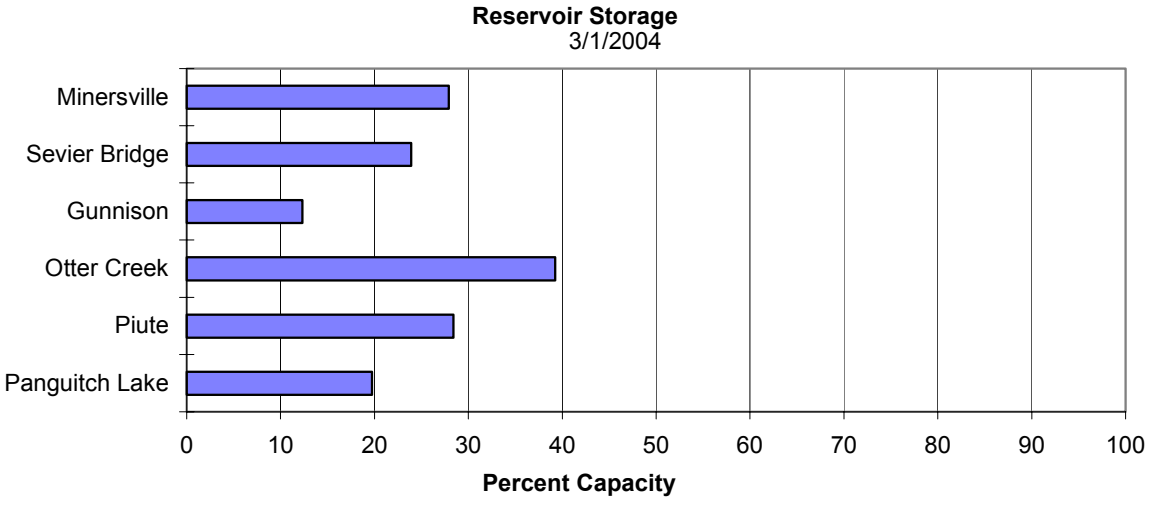
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Sevier and Beaver River Basins
Mar 1, 2004

Snowpacks on the Sevier River Basin are above normal at 112% of average, about 166% of last year, up 16% relative to last month. Individual sites range from 84% to 203% of average. Low elevation snowpacks are much above average. Precipitation during February was much above average at 142% of normal, bringing the seasonal accumulation (Oct-Feb) to 105% of average. Soil moisture levels in runoff producing areas indicate about 7 inches (Sevier) and 9 inches (Beaver) of deficit in the upper 2 feet of soil. Streamflow forecasts range from 34% to 115% of average. Reservoir storage is at 26% of capacity, 4% less than last year. Surface Water Supply Indeces are: Upper Sevier 37%, Lower Sevier 35% and Beaver 32%. Water supply conditions remain below normal due to low reservoir storage and soil moisture.







SEVIER & BEAVER RIVER BASINS
Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Sevier River at Hatch	APR-JUL	18.1	38	47	86	57	70	55
Sevier River nr Kingston	APR-JUL	31	58	72	81	86	105	89
EF Sevier R nr Kingston	APR-JUL	5.3	23	32	84	41	53	38
Sevier R blw Piute Dam	APR-JUL	30	78	104	83	130	166	126
Clear Creek nr Sevier	APR-JUL	4.2	13.7	18.0	82	22	31	22
Salina Creek at Salina	APR-JUL			11.8	60			19.7
Sevier R nr Gunnison	APR-JUL	64	126	210	75	294	425	280
Chicken Creek nr Levan	APR-JUL	2.33	3.76	5.00	111	6.49	9.18	4.50
Oak Creek nr Oak City	APR-JUL	1.16	1.58	1.90	115	2.25	2.82	1.66
Beaver River nr Beaver	APR-JUL	13.6	17.2	20	74	23	28	27
Minersville Reservoir inflow	APR-JUL	0.9	3.2	5.6	34	8.6	14.2	16.6

SEVIER & BEAVER RIVER BASINS
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
GUNNISON	20.3	2.5	2.4	14.6
MINERSVILLE (RkyFd)	23.3	6.5	5.7	16.2
OTTER CREEK	52.5	20.6	27.6	40.0
PIUTE	71.8	20.4	2.5	53.3
SEVIER BRIDGE	236.0	56.4	87.0	175.6
PANGUITCH LAKE	22.3	4.4	3.2	146.8

SEVIER & BEAVER RIVER BASINS
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	This Year as % of Average
UPPER SEVIER RIVER (south	8	194	126
EAST FORK SEVIER RIVER	3	183	130
SOUTH FORK SEVIER RIVER	5	202	124
LOWER SEVIER RIVER (inclu	6	144	103
BEAVER RIVER	2	142	97
SEVIER & BEAVER RIVER BAS	16	166	112

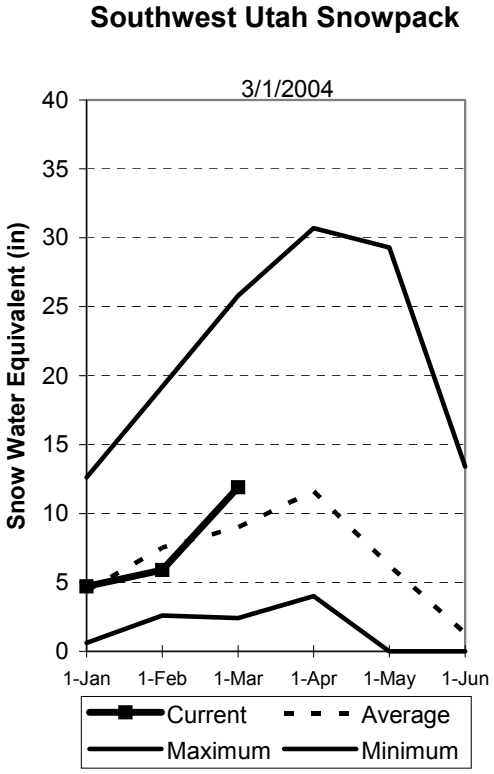
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

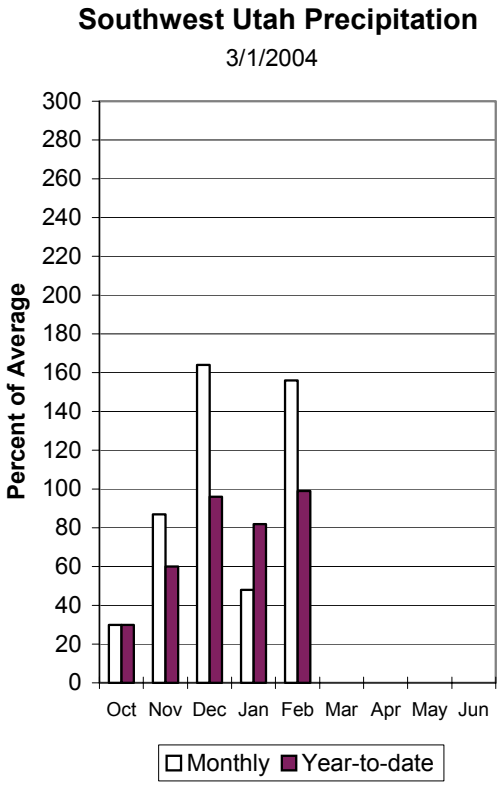
The average is computed for the 1971-2000 base period.

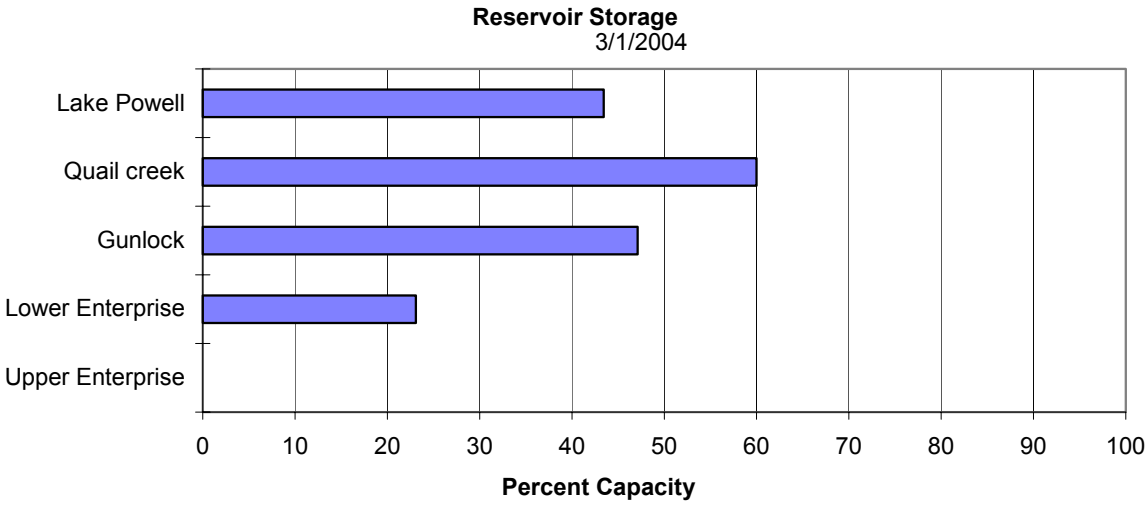
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

E. Garfield, Kane, Washington, & Iron co.
Mar 1, 2004

Snowpacks in this region are above normal at 115% of average, about 197% of last year, up 37% relative to last month. Individual sites range from 76% to 163% of average. Precipitation was much above normal during February at 156% of average, bringing the seasonal accumulation (Oct-Feb) to 99% of normal. Soil moisture levels in runoff producing areas indicate about 7 inches of deficit in the upper 2 feet of soil. Forecast streamflows range from 57% to 67% of average. Reservoir storage is at 47% of capacity, 18% more than last year. The Surface Water Supply Index is at 33%, indicating below normal water availability. Concerns remain over low reservoir storage, soil moisture and snowpacks in the lower elevations.







E. GARFIELD, KANE, WASHINGTON, & IRON Co.
Streamflow Forecasts - March 1, 2004

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
Lake Powell inflow	APR-JUL	3600	5330	6500	82	7670	9400	7930
Virgin River nr Virgin	APR-JUL	20	35	48	75	63	88	64
Virgin River nr Hurricane	APR-JUL	19.0	36	48	70	60	77	69
Santa Clara River nr Pine Valley	APR-JUL	1.49	2.89	4.10	75	5.52	8.00	5.50
Coal Creek nr Cedar City	APR-JUL	12.0	15.4	18.0	93	21	25	19.3

E. GARFIELD, KANE, WASHINGTON, & IRON Co.
Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
GUNLOCK	10.4	4.9	4.9	4.9
LAKE POWELL	24322.0	10569.0	12833.0	---
QUAIL CREEK	40.0	24.0	12.5	29.7
UPPER ENTERPRISE	10.0	0.0	0.2	---
LOWER ENTERPRISE	2.6	0.6	0.4	90.0

E. GARFIELD, KANE, WASHINGTON, & IRON Co.
Watershed Snowpack Analysis - March 1, 2004

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
VIRGIN RIVER	5	200	118
PAROWAN	2	191	119
ENTERPRISE TO NEW HARMONY	2	365	111
COAL CREEK	2	192	119
ESCALANTE RIVER	2	148	106
E. GARFIELD, KANE, WASHIN	9	194	115

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

UTAH SURFACE WATER SUPPLY INDEX Snow Surveys NRCS USDA Basin or Region SWSI/% Percentile Years with Similar SWSI 1-Mar-04			
Bear River	-3.98	2%	2003,93,92,91
Ogden River	-2.1	25%	90,02,00,91
Weber River	-2.4	21%	90,01,91,87
Provo	-2.8	17%	56,03,55,59
West Uintah Basin	1.1	64%	87,02,96,86
East Uintah Basin	0	50%	91,01,97,85
Price River	-1.9	28%	03,89,98,62
San Rafael	0.1	52%	2000,87,74,82
Moab	-.5	44%	82,97,00,96
Upper Sevier River	-1.1	37%	00,67,99,66
Lower Sevier River	-1.3	35%	72,78,90,01
Beaver River	-1.5	32%	91,92,2001,65
Virgin River	0.2	54%	86.94,01,97

Snow Surveys

245 N Jimmy Doolittle Rd
Salt Lake City, UT
(801) 524-5213

SWSI Scale: -4 to 4
Percentile: 0 - 100%

What is a Surface Water Supply Index?

The Surface Water Supply Index (SWSI) is a predictive indicator of total surface water availability within a watershed for the spring and summer water use seasons. The index is calculated by combining pre-runoff reservoir storage (carryover) with forecasts of spring and summer streamflow which are based on current snowpack and other hydrologic variables. SWSI values are scaled from +4.1 (abundant supply) to -4.1 (extremely dry) with a value of zero (0) indicating media water supply as compared to historical analysis. SWSI's are calculated in this fashion to be consistent with other hydroclimatic indicators such as the Palmer Drought Index and the Precipitation index.

Utah Snow Surveys has also chosen to display the SWSI as a PERCENT CHANCE OF NON-EXCEEDANCE. While this is a very cumbersome name, it has the simplest application. It can be best thought of as a simple scale of 1 to 99 with 1 being the drought of record (driest possible conditions) and 99 being the flood of record (wettest possible conditions) and a value of 50 representing average conditions. This rating scale is a percentile rating as well, for example a SWSI of 75% means that this years water supply is greater than 75% of all historical events and that only 25% of the time has it been exceeded. Conversely a SWSI of 10% means that 90% of historical events have been greater than this one and that only 10% have had less total water supply. This scale is far more intuitive for most people and is totally comparable between basins: a SWSI of 50% means the same relative ranking on watershed A as it does on watershed B, which may not be strictly true of the +4 to -4 scale.

For more information on the SWSI go to: www.ut.nrcs.usda.gov/snow/ on the water supply page. The entire period of historical record for reservoir storage and streamflow is available.

DATA CURRENT AS OF:03/03/04 10:12:07

S N O W C O U R S E D A T A

MARCH 2004

SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
AGUA CANYON SNOTEL	8900	3/01	50	10.9	4.6	7.3
ALTA CENTRAL	8800	3/02	104	33.1	19.0	31.1
BEAVER DAMS SNOTEL	8000	3/01	-	9.3	6.6	10.2
BEAVER DIVIDE SNOTEL	8280	3/01	38	8.4	6.0	10.2
BEN LOMOND PK SNOTEL	8000	3/01	106	35.2	19.7	34.3
BEN LOMOND TR SNOTEL	6000	3/01	74	25.1	11.5	19.0
BEVAN'S CABIN	6450	3/01	56	14.8	3.5	9.2
BIG FLAT SNOTEL	10290	3/01	64	13.7	10.9	15.0
BIRCH CROSSING	8100	2/26	29	8.3	3.4	6.7
BLACK FLAT-U.M. CK S	9400	3/01	41	9.1	5.5	8.5
BLACK'S FORK GS-EF	9340	3/01	35	8.8	6.8	7.8
BLACK'S FORK JUNCTN	8930	3/01	38	8.7	6.2	7.7
BOX CREEK SNOTEL	9800	3/01	60	13.4	8.0	11.0
BRIAN HEAD	10000	2/26	58	15.3	9.3	16.5
BRIGHTON SNOTEL	8750	3/01	76	18.6	12.6	20.4
BRIGHTON CABIN	8700	2/27	78	23.4	16.0	23.1
BROWN DUCK SNOTEL	10600	3/01	74	15.5	10.1	15.0
BRYCE CANYON	8000	2/25	31	6.4	3.1	4.9
BUCK FLAT SNOTEL	9800	3/01	68	15.9	11.9	15.3
BUCK PASTURE	9700	3/01	51	9.8	10.0	14.0
BUCKBOARD FLAT	9000	2/26	40	10.8	6.8	11.0
BUG LAKE SNOTEL	7950	3/01	52	15.6	12.1	17.1
BURT'S-MILLER RANCH	7900	3/01	23	5.8	3.8	4.7
CAMP JACKSON SNOTEL	8600	3/01	58	16.5	9.5	12.9
CASCADE MOUNTAIN SNO	7770	3/01	67	19.0	9.5	-
CASTLE VALLEY SNOTEL	9580	3/01	65	13.8	6.7	11.8
CHALK CK #1 SNOTEL	9100	3/01	68	16.7	13.2	19.9
CHALK CK #2 SNOTEL	8200	3/01	48	11.7	10.0	12.9
CHALK CREEK #3	7500	3/01	28	6.9	4.7	6.8
CHEPETA SNOTEL	10300	3/01	-	12.1	8.6	11.4
CLAYTON SPRINGS SNTL	10000	3/01	60	12.2	7.0	-
CLEAR CK RIDG #1 SNT	9200	3/01	57	16.6	11.7	16.7
CLEAR CK RIDG #2 SNT	8000	3/01	49	12.9	9.1	12.3
CORRAL	8200				-	-
CURRANT CREEK SNOTEL	8000	3/01	48	11.6	3.3	9.6
DANIELS-STRAWBERRY S	8000	3/01	59	16.6	10.8	15.1
DILL'S CAMP SNOTEL	9200	3/01	64	14.8	9.4	12.3
DONKEY RESERVOIR SNO	9800	3/01	36	5.0	5.8	6.6
DRY BREAD POND SNTL	8350	3/01	55	12.7	9.4	19.0
DRY FORK SNOTEL	7160	3/01	-	17.6	8.0	14.5
EAST WILLOW CREEK SN	8250	3/01	45	8.5	5.0	7.1
FARMINGTON U. SNOTEL	8000	3/01	106	40.3	18.9	27.3
FARMINGTON LOWER SC	6950	2/27	78	28.4	12.6	21.2
FARMINGTON L. SNOTEL	6780	3/01	94	30.8	-	-
FARNSWORTH LK SNOTEL	9600	3/01	68	15.7	11.5	14.8
FISH LAKE	8700	2/25	31	9.1	4.6	7.5
FIVE POINTS LAKE SNO	10920	3/01	69	14.9	8.7	13.8
G.B.R.C. HEADQUARTER	8700	2/25	44	14.3	10.1	13.8
G.B.R.C. MEADOWS	10000	2/25	61	19.6	13.8	19.0
GARDEN CITY SUMMIT	7600	2/27	50	15.3	10.1	13.5
GEORGE CREEK	8840	2/27	64	19.6	12.8	17.3
GOOSEBERRY R.S.	8400	2/25	34	10.2	7.6	9.9
GOOSEBERRY R.S. SNTL	7900	3/01	38	9.4	7.0	7.9
HARDSCRABBLE SNOTEL	7250	3/01	-	20.6	10.1	14.3
HARRIS FLAT SNOTEL	7700	3/01	45	10.0	5.0	6.9
HAYDEN FORK SNOTEL	9100	3/01	46	10.4	11.8	13.2
HENRY'S FORK	10000	3/01	43	7.9	8.1	10.5
HEWINTA SNOTEL	9500	3/01	39	8.4	6.6	9.1
HICKERSON PARK SNTL	9100	3/01	39	6.4	3.7	5.8
HIDDEN SPRINGS	5500	3/02	34	9.4	1.4	5.9
HOBBLE CREEK SUMMIT	7420	2/25	42	12.7	6.9	13.1
HOLE-IN-ROCK SNOTEL	9150	3/01	31	5.8	5.4	5.7
HORSE RIDGE SNOTEL	8260	3/01	62	18.1	13.3	20.2
HUNTINGTON-HORSESHOE	9800	2/25	48	16.3	12.5	19.4
INDIAN CANYON SNOTEL	9100	3/01	53	11.3	7.9	9.6
JOHNSON VALLEY	8850	2/25	30	7.7	4.1	6.4
JONES CORRAL G.S.	9720				-	-

SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 71-00
KILFOIL CREEK	7300	2/27	51	14.7	8.4	12.4
KILLYON CANYON	6300	3/02	39	12.9	1.0	8.7
KIMBERLY MINE SNOTEL	9300	3/01	60	14.9	8.8	13.3
KING'S CABIN SNOTEL	8730	3/01	46	12.3	7.6	9.4
KLONDIKE NARROWS	7400	2/27	50	15.8	12.4	16.8
KOLOB SNOTEL	9250	3/01	88	17.0	10.4	17.8
LAKEFORK #1 SNOTEL	10100	3/01	58	11.0	7.2	10.5
LAKEFORK BASIN SNTL	10900	3/01	67	14.7	9.9	16.6
LAKEFORK MOUNTAIN #3	8400	3/01	40	8.9	3.6	6.1
LAMBS CANYON	7400	2/27	53	14.7	10.1	14.5
LASAL MOUNTAIN LOWER	8800	2/27	30	8.9	6.2	8.1
LASAL MOUNTAIN SNTL	9850	3/01	49	10.5	8.5	10.7
LILY LAKE SNOTEL	9050	3/01	45	9.2	9.0	10.8
LITTLE BEAR LOWER	6000	2/27	46	14.9	5.8	10.2
LITTLE BEAR SNOTEL	6550	3/01	-	13.7	5.2	12.8
LITTLE GRASSY SNOTEL	6100	3/01	-	5.3	2.0	5.8
LONG FLAT SNOTEL	8000	3/01	-	9.3	2.0	7.4
LONG VALLEY JCT. SNT	7500	3/01	-	8.9	1.8	5.8
LOOKOUT PEAK SNOTEL	8200	3/01	-	27.6	15.2	20.1
LOST CREEK RESERVOIR	6130	2/27	29	9.4	2.0	5.9
LOUIS MEADOW SNOTEL	6700	3/01	69	22.3	9.1	-
MAMMOTH-COTTONWD SNT	8800	3/01	52	14.7	13.1	17.6
MERCHANT VALLEY SNTL	8750	3/01	57	12.0	7.2	11.4
MIDDLE CANYON	7000	3/01	72	18.7	7.2	12.2
MIDWAY VALLEY SNOTEL	9800	3/01	100	23.2	12.7	19.4
MILL CREEK	6950	2/27	59	19.5	10.0	16.6
MILL-D NORTH SNOTEL	8960	3/01	-	22.0	12.4	21.0
MILL-D SOUTH FORK	7400	2/27	56	17.4	9.9	16.9
MINING FORK SNOTEL	8000	3/01	84	22.3	9.0	14.9
MONTE CRISTO SNOTEL	8960	3/01	71	21.6	12.4	24.7
MOSBY MTN. SNOTEL	9500	3/01	54	12.4	7.8	9.3
MT.BALDY R.S.	9500	2/25	61	18.3	16.5	19.9
MUD CREEK #2	8600	2/26	49	11.6	7.2	12.0
OAK CREEK	7760	2/25	39	11.4	6.6	10.0
PANGUITCH LAKE R.S.	8200	2/27	35	8.1	1.8	4.0
PARLEY'S CANYON SNTL	7500	3/01	58	15.4	7.4	15.3
PARRISH CREEK SNOTEL	7740	3/01	88	28.2	12.6	-
PAYSON R.S. SNOTEL	8050	3/01	74	18.2	8.3	17.2
PICKLE KEG SNOTEL	9600	3/01	67	15.0	10.9	14.1
PINE CREEK SNOTEL	8800	3/01	-	22.4	10.8	19.3
RED PINE RIDGE SNTL	9200	3/01	65	13.8	9.5	14.2
REDDEN MINE LOWER	8500	3/01	51	13.7	8.6	15.1
REES'S FLAT	7300	2/25	41	12.4	6.9	11.2
ROCK CREEK SNOTEL	7900	3/01	-	8.8	5.1	7.9
ROCKY BN-SETTLEMT SN	8900	3/01	92	25.6	10.9	21.2
SEELEY CREEK SNOTEL	10000	3/01	53	13.2	7.5	12.3
SMITH MOREHOUSE SNTL	7600	3/01	45	9.9	7.7	12.4
SNOWBIRD SNOTEL	9700	3/01	119	35.2	16.5	28.3
SPIRIT LAKE	10300	3/01	57	11.1	6.8	10.5
SQUAW SPRINGS	9300	2/25	35	8.4	4.2	6.6
STEEL CREEK PARK SNO	10100	3/01	55	10.6	8.8	12.7
STILLWATER CAMP	8550	3/01	34	7.0	6.9	8.8
STRAWBERRY DIVIDE SN	8400	3/01	60	16.5	8.8	16.3
SUSC RANCH	8200	2/26	50	13.2	.7	8.1
TALL POLES	8800	2/26	48	12.3	6.6	12.1
TEMPLE FORK SNOTEL	7410	3/01	50	13.7	12.1	-
THAYNES CANYON SNTL	9200	3/01	74	19.2	12.1	19.3
THISTLE FLAT	8500				-	-
TIMBERLINE	9100				-	-
TIMPANOGOS DIVIDE SN	8140	3/01	76	21.3	8.8	20.4
TONY GROVE LK SNOTEL	8400	3/01	83	29.2	24.7	30.0
TONY GROVE R.S.	6250	2/27	40	12.0	8.6	11.3
TRIAL LAKE	9960	3/01	65	19.2	13.1	20.3
TRIAL LAKE SNOTEL	9960	3/01	64	16.8	10.3	20.6
TROUT CREEK SNOTEL	9400	3/01	53	10.2	5.3	8.1
UPPER JOES VALLEY	8900	2/25	38	10.5	7.1	9.3
VERNON CREEK SNOTEL	7500	3/01	56	15.1	4.8	10.1
VIPONT	7670	2/27	54	17.4	6.6	12.2
WEBSTER FLAT SNOTEL	9200	3/01	65	16.0	7.7	13.5
WHITE RIVER #1 SNTL	8550	3/01	48	11.1	7.2	11.6
WHITE RIVER #3	7400	2/25	28	8.4	5.3	7.8
WIDTSOE #3 SNOTEL	9500	3/01	63	12.2	7.0	9.7
WRIGLEY CREEK	9000	2/25	47	11.7	7.4	9.6
YANKEE RESERVOIR	8700	2/25	46	10.5	4.8	8.4

Issued by

Bruce I. Knight
Chief
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by

Harry Slawter
State Conservationist
Natural Resources Conservation Service
Salt Lake City, Utah

Prepared by
Snow Survey Staff
Randall Julander, Supervisor
Ray Wilson, Hydrologist
Timothy Bardsley, Hydrologist
Jennifer Erxleben, Hydrologist
Bob Nault, Hydrologic Technician
Electronics Technician

YOU MAY OBTAIN THIS PRODUCT AS WELL AS CURENT SNOW, PRECIPITATION, TEMPERATURE AND SOIL MOISTURE, RESERVOIR, SURFACE WATER SUPPLY INDEX, AND OTHER DATA BY VISITING OUR WEB SITE @:
http://www.ut.nrcs.usda.gov/snow/

Snow Survey, NRCS, USDA
245 North Jimmy Doolittle Road
Salt Lake City, UT 84116
(801) 524-5213

Utah Water Supply Outlook Report

Natural Resources Conservation Service
Salt Lake City, UT