Mountain Snow Conditions and Water Supply Forecasts for Alberta

November 2001

Notes

Alberta Environment publishes the **"Mountain Snow Conditions and Water Supply Forecasts for Alberta"** monthly, usually from February to August. These reports are prepared by the Hydrology Branch, Forecasting Section of the Department's Environmental Operations Division.

Alberta Environment is grateful for the assistance of Environment Canada's Climatological Services Unit and Water Resources Branch in providing weather, precipitation and streamflow data. Snow survey data are also provided by the United States, Soil Conservation Service of Montana and the British Columbia Ministry of Environment, Lands and Parks. The assistance of a number of private citizens who diligently report observations of precipitation and other data is also appreciated.

Alberta Environment and the National Resources Conservation Service (NRCS) from Portland, Oregon are collaborating on the Water Supply Forecasts for the Milk and St. Mary Rivers. Water Supply forecasts for the Western United States are available through the NRCS web page: http://www.wcc.nrcs.usda.gov/water/w_qnty.html

All data summarized in this publication are preliminary and subject to revision.

Data used in this report are available on request from: Alberta Environment, Hydrology Branch, 10th Fl, Oxbridge Place, 9820 -106 Street, Edmonton, Alberta, T5K 2J6, Fax: (780) 422-8606

This report is also available through Alberta Environment's automated streamflow information/fax-on-demand service. To access this service toll-free, please call the Alberta Government RITE Operator at 310-0000, available 24 hours a day from anywhere in the province. At the prompt, enter the phone number **207-2718** for our streamflow information/fax on demand service.

Historical Streamflow Information: Environment Canada, Calgary, (403) 292-5317

Equivalents of Measure

Parameter	Metric Unit	Conversion to Imperial Units
Snow depth	**centimetres**	**2.54 cm = 1 inch**
Water Equivalent	**millimetres**	**25.4 mm = 1 inch**
Elevation	**metres**	**1 m = 3.2808 feet**
Streamflow	**cubic metres per second**	**1 cms = 35.3 cfs**
Volume	**cubic decametre (dam^3)**	**1 dam^3=1000 m^3= 0.8107 acre-feet**

Explanation of Descriptions

Much-above-average	In the upper 15% of recorded values
Above-average	Between the upper 15% and 35% of recorded values
Below-average	Between the lower 15% and 35% of recorded values
Much-below-average	In the lower 15% of recorded values

Overview of Current Conditions

Precipitation was variable in the province during the month of October with the majority of the province recording below-normal precipitation except in the Edmonton, Edson and Calgary areas, where precipitation was above-normal. Precipitation in the fall period (September and October) is below-normal in most areas of the province with southern areas recording much-below-normal values.

Environment Canada's long-lead precipitation forecast for November indicates above-normal precipitation in the northern third of the province, normal precipitation in central areas, and below-normal in the southern third of the province. The same precipitation pattern is forecast for the December to February period. The National Oceanic and Atmospheric Administration (NOAA) is forecasting normal precipitation for the province from November through the winter.

Water storage as of November 1, 2001 in the major irrigation and hydroelectric reservoirs in the Bow and Oldman River basins is below-normal for this time of the season, with the exception of Keho Lake and Lake Newell, which are normal. Storage conditions in the Oldman and Bow River basins are less than last year at this time. Water storage in the Red Deer and North Saskatchewan River basins are normal for this time of the season.

The Water Supply report will continue throughout the winter and will focus on the reporting of current conditions. In February, the Plains Runoff Outlook will be added to provide insight on runoff conditions for the plains area.

October Climatic Conditions

Precipitation was variable in the province during the month of October (Figures 1 and 2). Many areas of the province experienced below-normal precipitation. Precipitation in the Edmonton, Edson and Calgary areas was above-normal for October. Precipitation in the fall period (September and October) is below-normal in most areas of the province with southern areas recording much-below-normal values (Figures 3 and 4).

Long-Lead Precipitation Outlook

Environment Canada's long-lead precipitation forecast for November indicates above-normal precipitation in the northern third of the province, normal precipitation in central areas, and below-normal in the southern third of the province. The same precipitation pattern is forecast for the December to February period. The National Oceanic and Atmospheric Administration (NOAA) is forecasting normal precipitation for the province during November and the winter (December to February) period.

Reservoir Storage Conditions

Water storage in the major irrigation reservoirs of the Oldman River basin is below-normal for this time of the season, with the exception of Keho Lake, which is normal (Table 1).

Table 1 Status of Major Water Storage Reservoirs as of November 1, 2001 – Oldman River Basin

Reservoirs	Current Live Storage			Remarks	November 1, 2000 Live Storage	
	Volume in dam^3	Volume in acre-feet	Volume as % of Capacity		dam^3	acre-feet
Keho Lake	79,700	64,600	83	normal	81,300	65,900
Waterton Reservoir	62,000	50,200	37	below-normal	71,900	58,300
St. Mary Reservoir	31,700	25,700	8	below-normal	40,600	32,900
Ridge Reservoir	21,600	17,500	17	below-normal	28,300	22,900
Total	115,000	93,500	17	below-normal	141,000	114,000
Chin Reservoir	22,400	18,200	12	below-normal	89,100	72,200
Forty Mile Reservoir	9,250	7,500	11	below-normal	42,800	34,700
Total	31,700	25,700	11	below-normal	132,000	107,000
Oldman Reservoir	116,000	94,400	24	below-normal	283,000	229,000

Water storage in most of the major hydroelectric and irrigation reservoirs in the Bow River basin is below-normal for the season, except for Lake Newell which is normal (Table 2).

Table 2 Status of Major Water Storage Reservoirs as of November 1, 2001 - Bow River Basin

Reservoirs	Current Live Storage			Remarks	November 1, 2000 Live Storage	
	Volume in dam^3	Volume in acre-feet	Volume as a % of Capacity		dam^3	acre-feet
Lake Minnewanka	151,000	123,000	68	below-normal	162,000	132,000
Spray Lake	101,000	81,800	57	below-normal	159,000	129,000
Upper Kananaskis Lake	65,200	52,900	63	below-normal	74,200	60,200
Lower Kananaskis Lake	49,000	39,700	78	below-normal	55,100	44,700
Total	366,000	297,000	65	below-normal	450,000	365,000
Lake McGregor	164,000	133,000	45	below-normal	309,000	250,000
Travers Reservoir	52,600	42,700	50	below-normal	58,900	47,800
Total	216,000	175,000	46	below-normal	368,000	298,000
Lake Newell	152,000	123,000	86	normal	159,000	129,000
Crawling Valley Reservoir	68,100	55,200	61	below-normal	102,000	82,400
Total	220,000	178,000	76	normal	260,000	211,000

Water storage in Glennifer Lake (Red Deer River basin) is normal for this time of the season (Table 3).

Table 3 Status of Major Water Storage Reservoirs as of November 1, 2001 – Red Deer River Basin

Reservoirs	Current Live Storage			Remarks	November 1, 2000 Live Storage	
	Volume in dam^3	Volume in acre-feet	Volume as a % of Capacity		dam^3	acre-feet
Glennifer Lake	176,000	143,000	87	normal	198,000	161,000

Water storage in the North Saskatchewan River basin major hydroelectric reservoirs is normal for this time of the year (Table 4).

Table 4 Status of Major Water Storage Reservoirs as of November 1, 2001
North Saskatchewan River Basin

Reservoirs	Current Live Storage			Remarks	November 1, 2000 Live Storage	
	Volume in dam^3	Volume in acre-feet	Volume as a % of Capacity		dam^3	acre-feet
Lake Abraham	1,095,000	888,000	78	normal	1,161,000	941,000
Brazeau Reservoir	375,000	304,000	77	normal	453,000	368,000

Total	1,470,000	1,192,000	78	normal	1,614,000	1,309,000

Milk River Basin

Precipitation in the headwaters of the Milk River basin was above-normal for October as indicated by the accumulation of snow on the snow pillows at the higher elevations of the basin. Snow pillow information can be found on the department website, located at http://www3.gov.ab.ca/env/water/WSWaterReports/Index.html. Precipitation in the plains area was much-below-normal (Figures 1 and 2). Fall precipitation (September and October) was much-below-normal in the plains area (Figures 3 and 4) and near normal at the higher elevations (as shown by the snow pillows).

Oldman River Basin

Precipitation in the headwaters of the Oldman River basin was normal to above-normal for October as indicated by the accumulation of snow on the snow pillows at the higher elevations of the basin. Snow pillow information can be found on the department website, located at http://www3.gov.ab.ca/env/water/WSWaterReports/Index.html. Precipitation in the plains area was much-below-normal (Figures 1 and 2). Fall precipitation (September and October) was much-below-normal in the plains area (Figures 3 and 4) and near normal at the higher elevations (as shown by the snow pillows).

Bow River Basin

Precipitation in the headwaters of the Bow River basin was below-normal to normal for October as indicated by the accumulation of snow on the snow pillows at the higher elevations of the basin. Snow pillow information can be found on the department website, located at http://www3.gov.ab.ca/env/water/WSWaterReports/Index.html. Precipitation in the plains area was much-below-normal except in the Calgary area, where normal precipitation was recorded (Figures 1 and 2). Fall precipitation (September and October) was below-normal to much-below-normal in the Bow River basin (Figures 3 and 4).

Red Deer River Basin

Precipitation during October in the Red Deer River basin was below-normal to much-below-normal (Figures 1 and 2) except at higher elevations, where normal to above-normal accumulation of snow on the snow pillows was recorded. Snow pillow information can be found on the department website, located at:

http://www3.gov.ab.ca/env/water/WSWaterReports/Index.html.

Fall precipitation (September and October) was below-normal to much-below-normal in the Red Deer River basin (Figures 3 and 4).

North Saskatchewan River Basin

Precipitation in the North Saskatchewan River basin ranged from below-normal in the eastern areas to above-normal in the west (Figures 1 and 2). There is no snow pillow information in the North Saskatchewan River basin. Fall precipitation (September and October) was below-normal in the basin due to September being very dry (Figures 3 and 4).

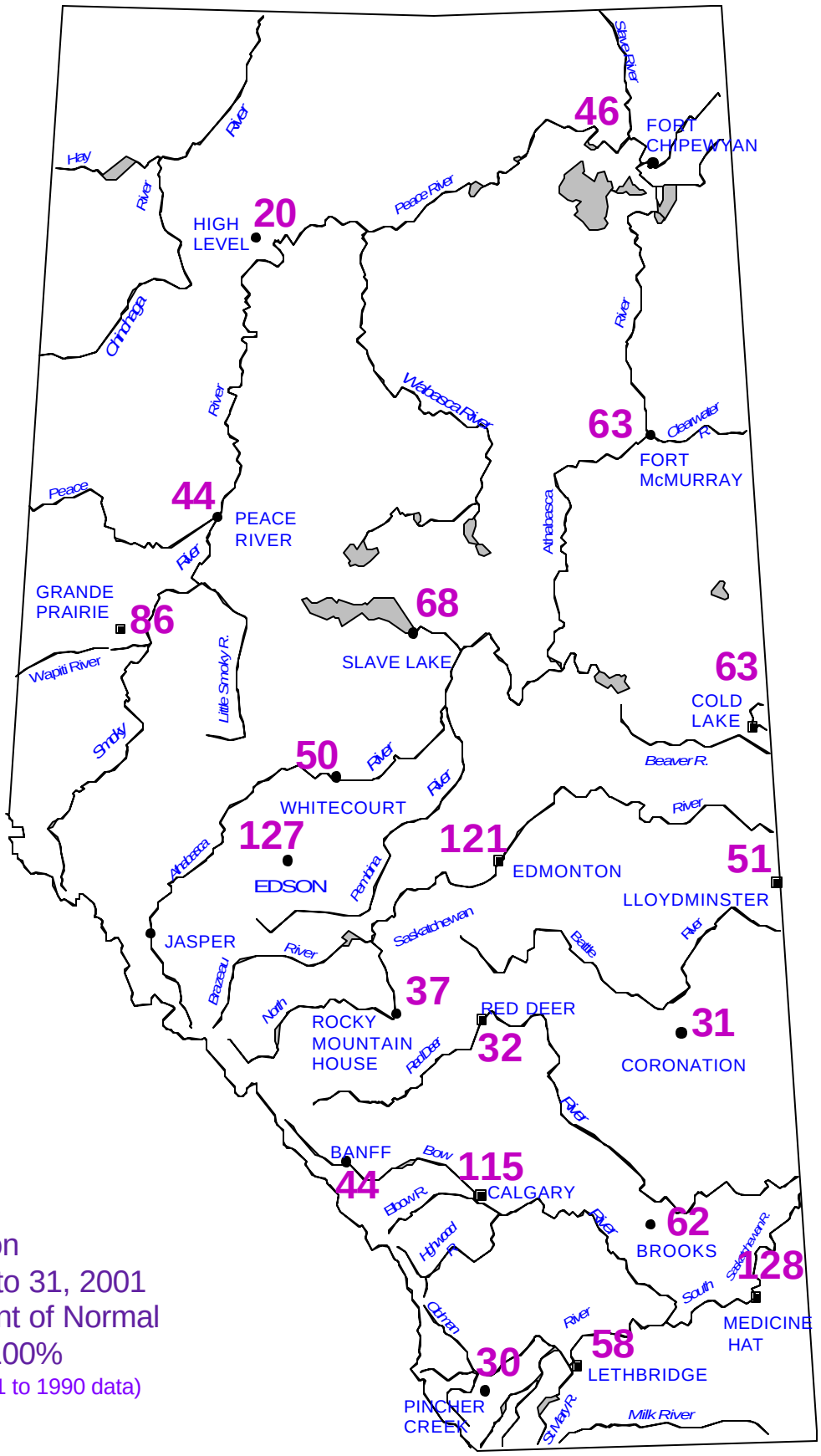

Figure 1
Precipitation
October 1 to 31, 2001
as a percent of Normal
Normal = 100%
(based on 1961 to 1990 data)

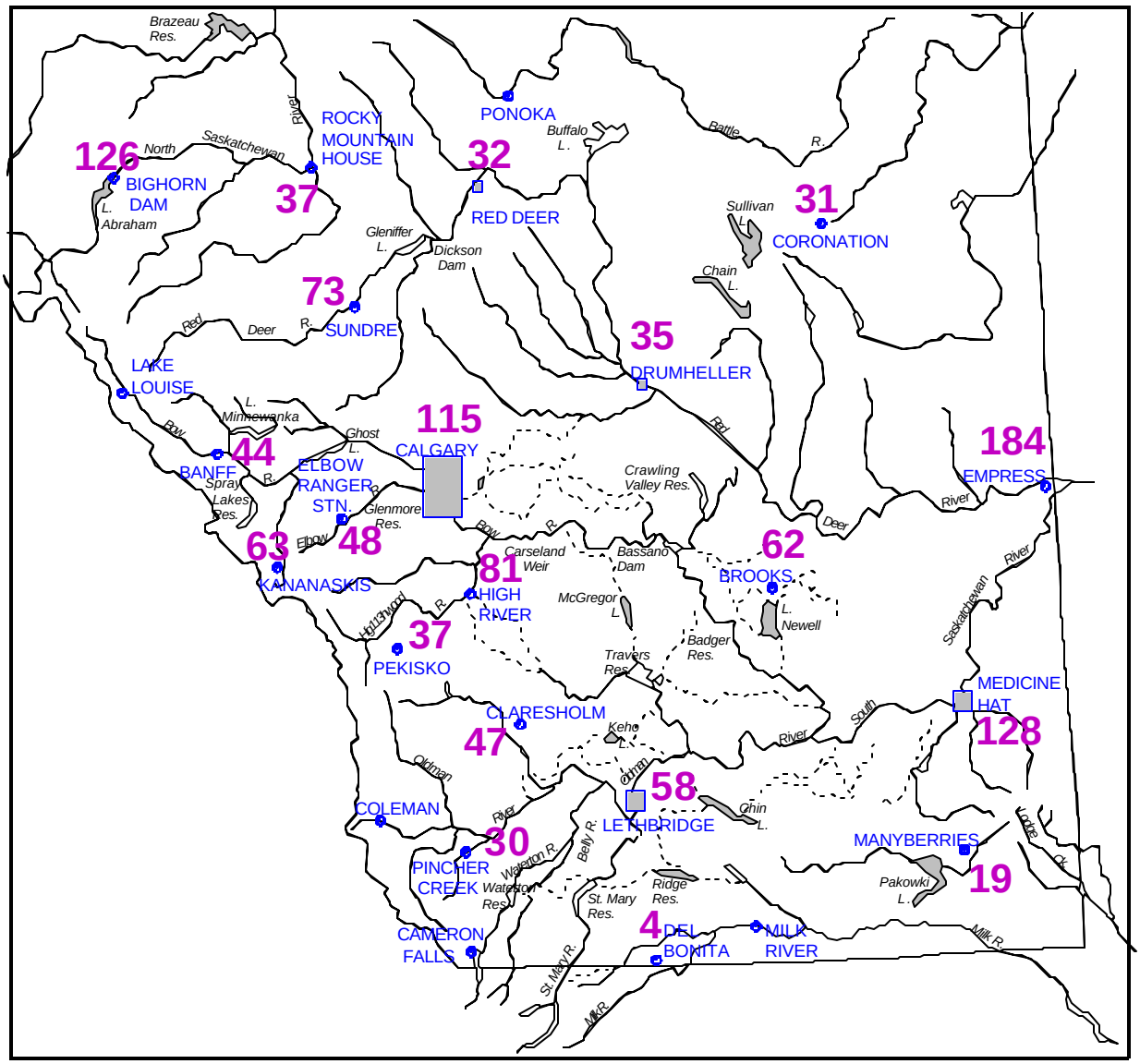

Figure 2
Precipitation
Southern Alberta
October 1 to 31, 2001
as a percent of Normal
Normal = 100%

(based on 1961 to 1990 data)

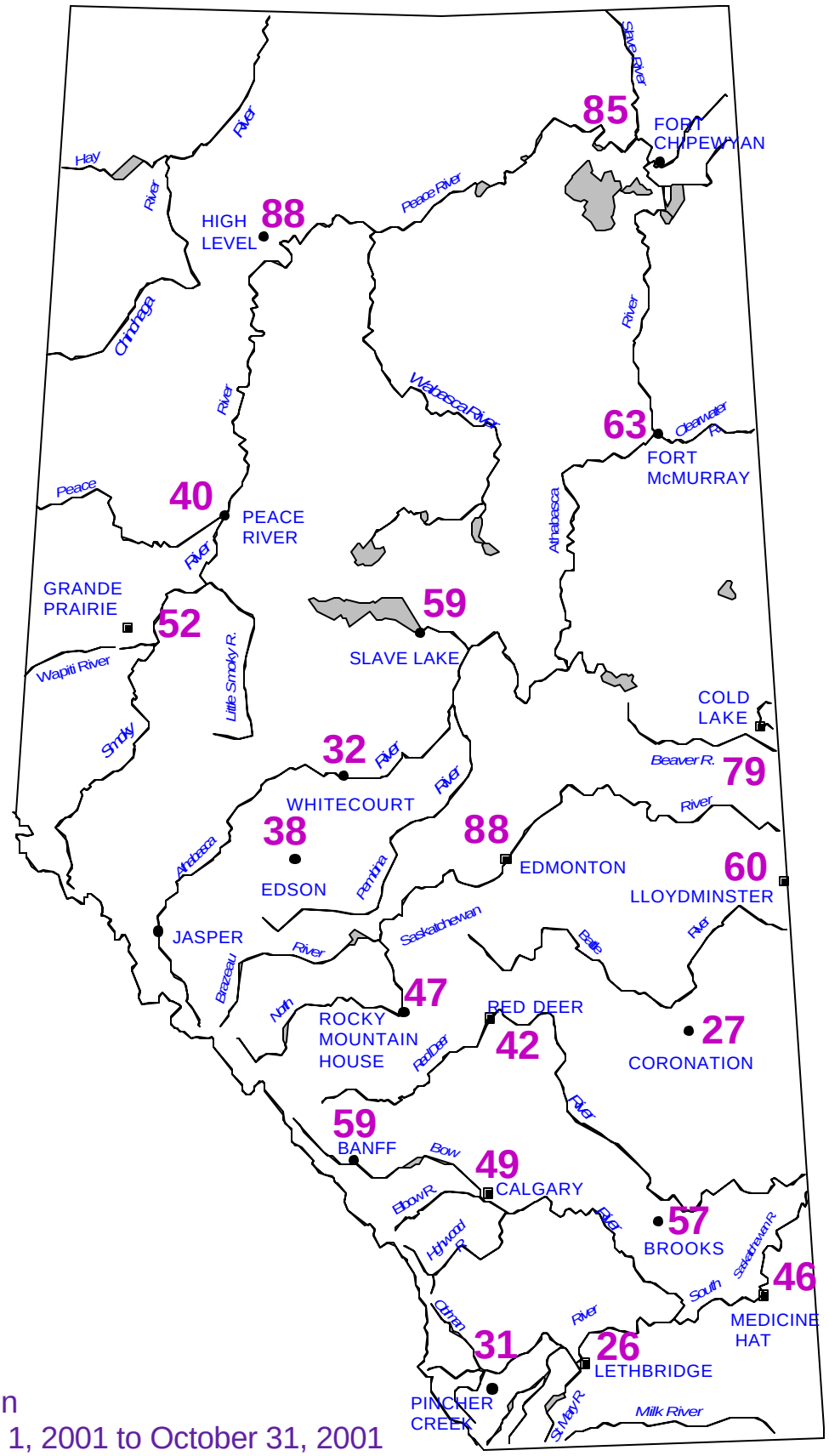

Figure 3
Precipitation
September 1, 2001 to October 31, 2001
as a percent of Normal
Normal = 100%
(based on 1961 to 1990 data)

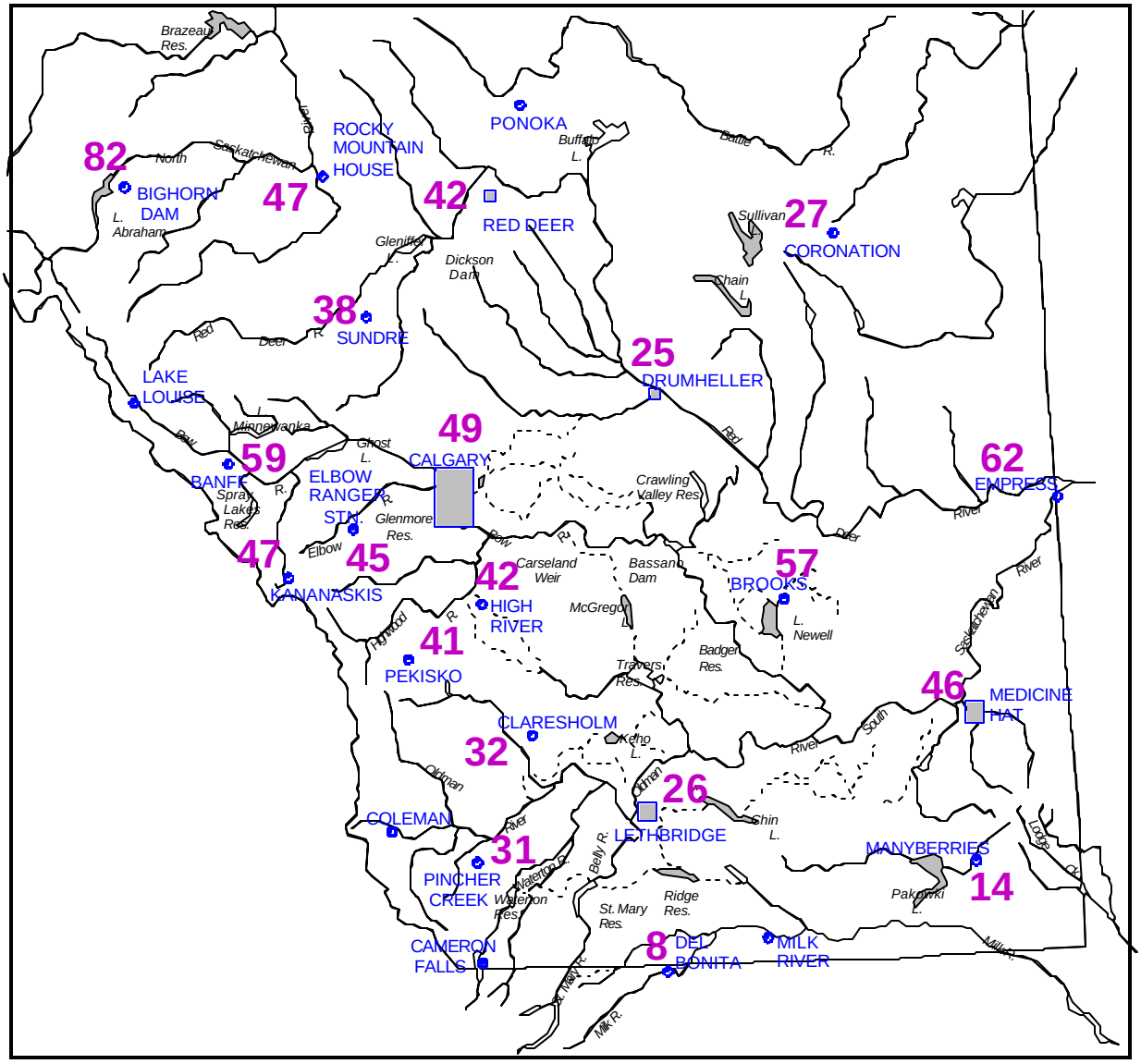

Figure 4
Precipitation
Southern Alberta
September 1, 2001 to October 31, 2001
as a percent of Normal
Normal = 100%

(based on 1961 to 1990 data)