

S A S K A T C H E W A N



Spring Runoff Update

April 1, 2024

Prepared By: Flow Forecasting and Operations Planning – Water Security Agency

General Overview

- The spring runoff is dependent on fall soil moisture, snowpack water content and how quickly the snowpack melts.
- Above freezing temperatures throughout the middle of March resulted in snowmelt runoff either beginning, or in some instances being complete, over much of southern Saskatchewan.
- Observed peaks from the spring runoff to date have ranged from near to well below normal.
- In some southern areas, including the Big Stick Lake Basin and the south-central area of the province, persistent drier than normal conditions may lead to drier than normal conditions and localized water supply shortages this spring. The runoff seen so far in these areas has been well below normal. The Big Stick Lake Basin is expected to implement restrictions for irrigation use if conditions do not improve.
- Out of the 45 water supply reservoirs across the province that we have real time data on, 33 are currently at or are expected to be at or near full supply when the runoff is over. Six reservoirs are expected to be in the 70 to 90 per cent full range. Only six are expected to remain low, this includes four in the Maple Creek area (Harris, Junction, McDougald and Downie reservoirs) along with Roughbark Reservoir in the southeast and Highfield Reservoir in the southwest.
- In mid-March, a snowstorm brought significant precipitation to a good portion of southern Alberta and to southwestern Saskatchewan. Much of this area across both provinces was snow free prior to this storm. This snowfall event improved the expected additional runoff volumes to some degree across Southern Alberta and southwestern Saskatchewan. How quickly the snow melts will impact how much additional runoff will be experienced in these basins. With the area being so dry prior to the snowfall event, if a slow melt occurs, a lot of the water will infiltrate into the soil.
- In areas south of the Cypress Hills, including the Frenchman River Basin, a significant snowpack currently exists, and it is expected that this week's forecasted warm temperatures will generate additional streamflow in these areas. In all other areas of the southwest, minimal additional snowmelt runoff is expected.
- Another snowstorm in late March brought 5 to 15 centimetres (cm) of snow across most of eastern Saskatchewan, with the heavier snow falling in the northeastern portions of the grain belt.
- A decent snowpack still exists in the Assiniboine Basin. In this area, ice layers were present during the snow surveys done the end of February, and with the additional snow received over the past month, a near normal runoff is still expected.
- The agency is monitoring hydrological conditions in the South Saskatchewan River Basin. In anticipation of potential dry spring conditions, WSA implemented a conservative winter operating plan that focused on limiting the drawdown on Lake Diefenbaker to ensure an adequate water supply for all users in the system this spring and summer.
- With the conservative winter plan implemented, the water level at Lake Diefenbaker was at 552.39 metres (m) on April 1, which is above normal for this time of year. Normal April 1 elevations are around 551.56 m.
- The current snowpack accumulation in the Rockies currently varies significantly from well below to near normal. The amount of runoff that we see from the mountains this year will depend on the timing of the melt event as well as May and June rains. These rains can quickly change the conditions in the basin. The high flow events that we often see during these months are a result of the rainfall events. Based on the current snowpack in the mountains and the low water supply levels in Alberta, there is a higher probability that the inflows into Lake Diefenbaker this spring and summer will be below normal.

- The river is still ice-covered in North Saskatchewan and the Saskatchewan River System. Flows are slightly above the median for this time of year. With most snowpack melted in the prairie and foothills of the basin, flows are not expected to pick up until the mountain runoff occurs.
- Snowmelt runoff has not yet occurred in the north. Winter flows throughout most of the Churchill River Basin remain low for this time of year. Due to record low inflows into Reindeer Lake this past fall and winter, the lake is currently well below normal for this time of year, being near the bottom of its operating range.
- Indicators suggest that there is a higher risk of agricultural and hydrological drought this year. The Water Security Agency will monitor landscape conditions and water supply reservoirs closely to allow for a timely response to dry conditions.
- The agency continues to work internally and across government to identify opportunities and programming to support residents in times of drought.
- Figure 1 shows the runoff potential as of April 1. Note that a lot of the south already saw initial runoff peaks from the melt in March. The new runoff potential in this map is based on the potential runoff from the snow received in the last half of March.

Cover Photo: Pipestone Creek, March 18, 2024
(Heather Sauer, Water Security Agency)

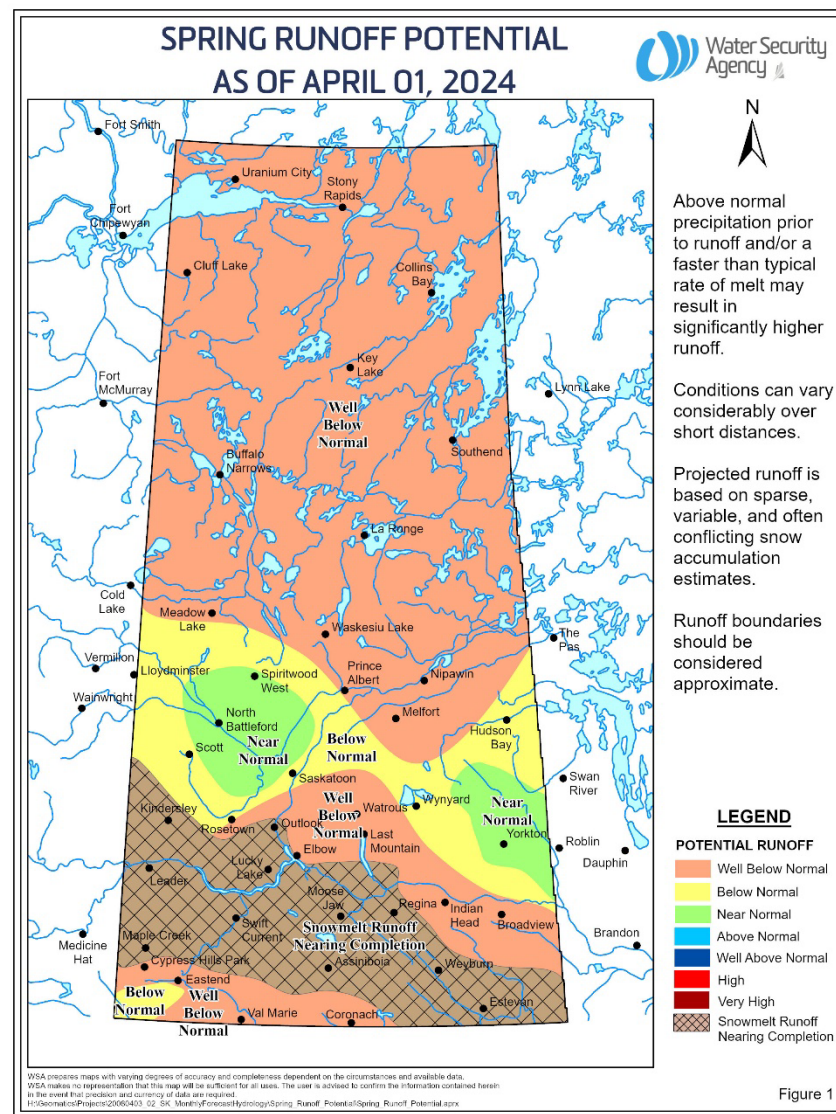


Figure 1: Spring Runoff Potential as of April 1, 2024

Category	Description	Approximate Frequency of Expected Flow
Well Below Normal	Little to no runoff is expected	<< 1:2 year event
Below Normal	Some runoff is expected	< 1:2 year event
Normal	Flows are expected to be average and will generally not exceed channel capacity in most reaches	≈ 1:2 year event
Above Normal	Flows from snowmelt runoff will exceed natural channel capacity in some areas	≈ 1:5 year event
Well Above Normal	Significant out of channel flow and some flooding will likely occur	≈ 1:10 year event
Very High	Significant flooding is likely to occur	≈ 1:25 year event or greater

- Above normal precipitation prior to runoff (especially if it occurs as rainfall), and/or a faster than normal melt, could result in significantly higher runoff than presently forecast.
- Below normal precipitation prior to runoff, and/or a slow melt, could result in a significantly lower runoff than presently forecast.
- Mid-winter melt events or rain events on frozen soils can increase runoff yields and estimates from snowmelt accumulation.
- Figure 1 applies to local runoff as opposed to the main stem river flows on major systems, such as the Qu'Appelle and Saskatchewan rivers.
- This forecast is based on limited data and should be used as a general guide for large geographical areas. Local conditions may vary significantly from the regional conditions and boundaries. Figure 1 should be considered approximate.
- Ice jamming can result in out-of-bank flows and flooding, even for below normal flows.

Current Reservoir Conditions

April 01, 2024

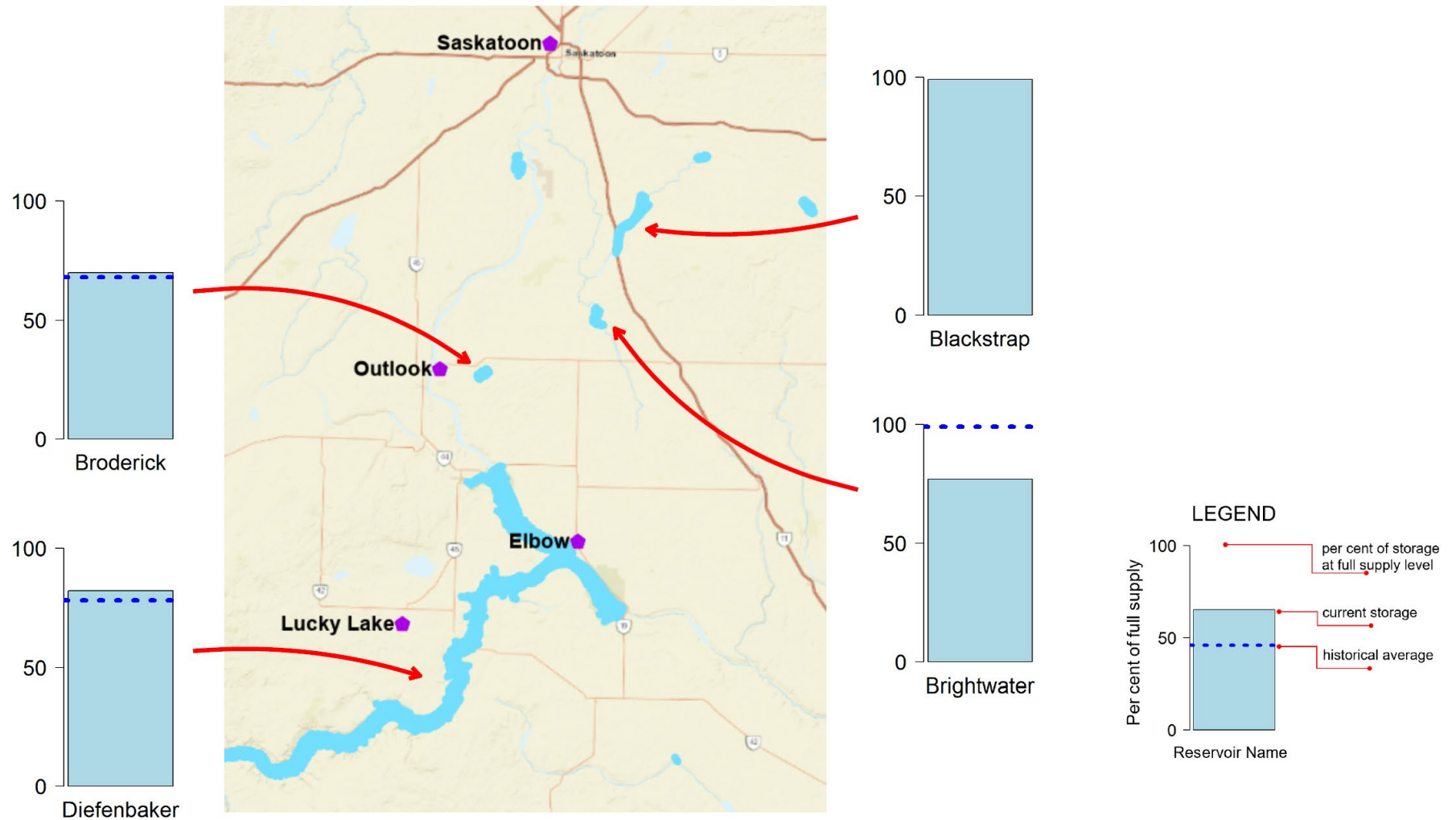


Figure 2: Reservoir Conditions in Central Saskatchewan as of April 1, 2024

Current Reservoir Conditions

April 01, 2024

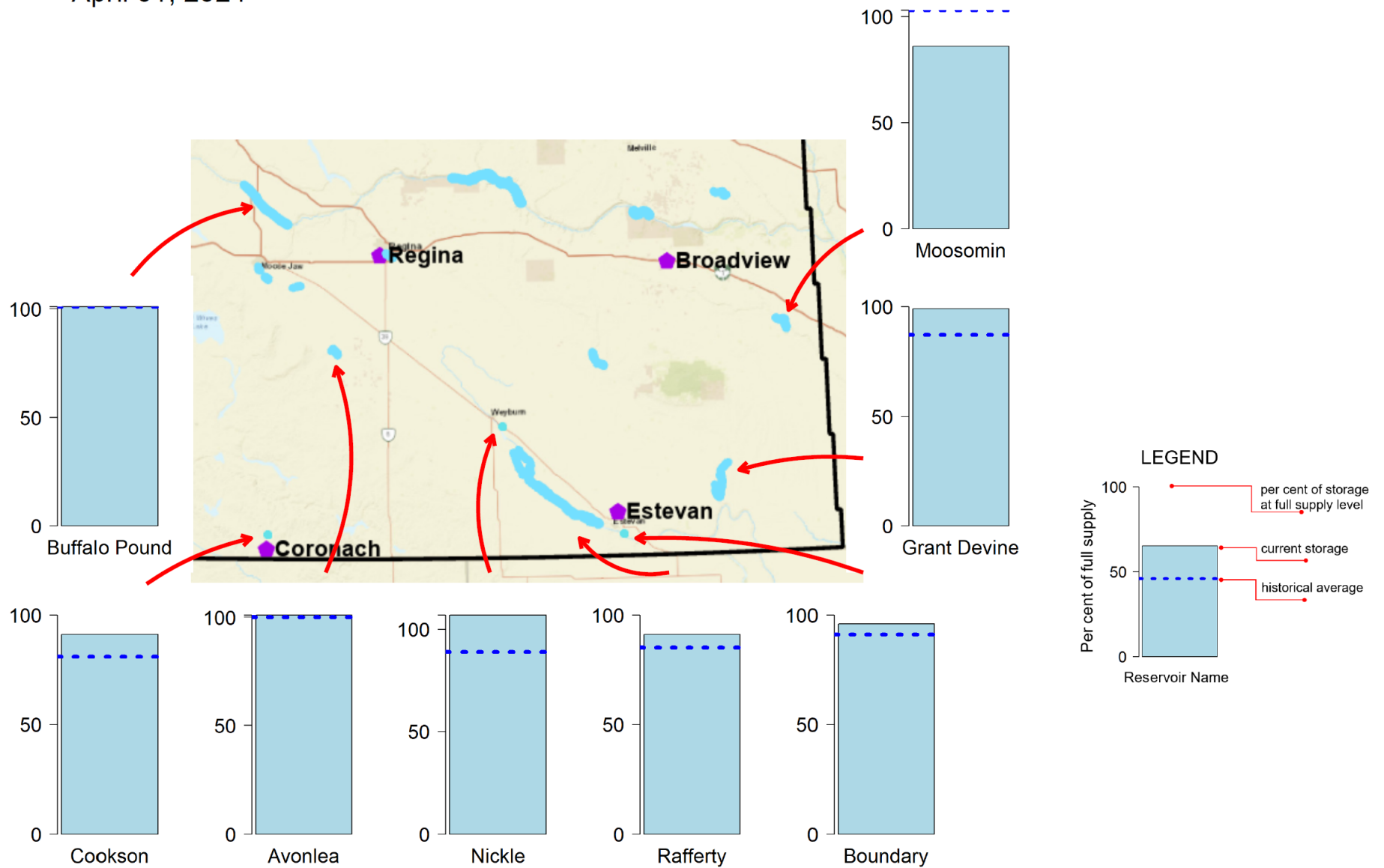


Figure 3: Reservoir Conditions in Southeastern Saskatchewan as of April 1, 2024

Current Reservoir Conditions

April 01, 2024

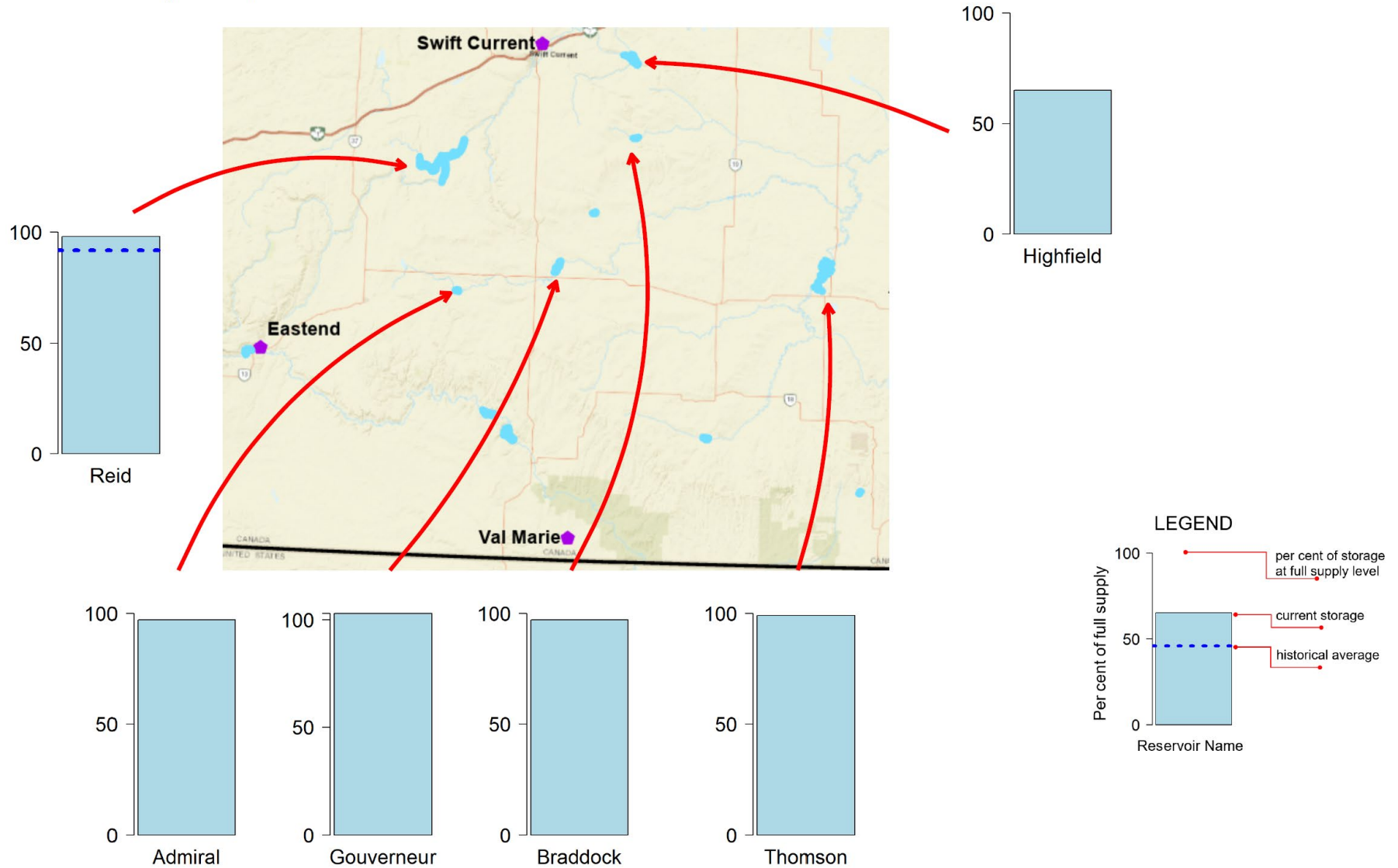


Figure 4: Reservoir Conditions in Southcentral Saskatchewan as of April 1, 2024

Current Reservoir Conditions

April 01, 2024

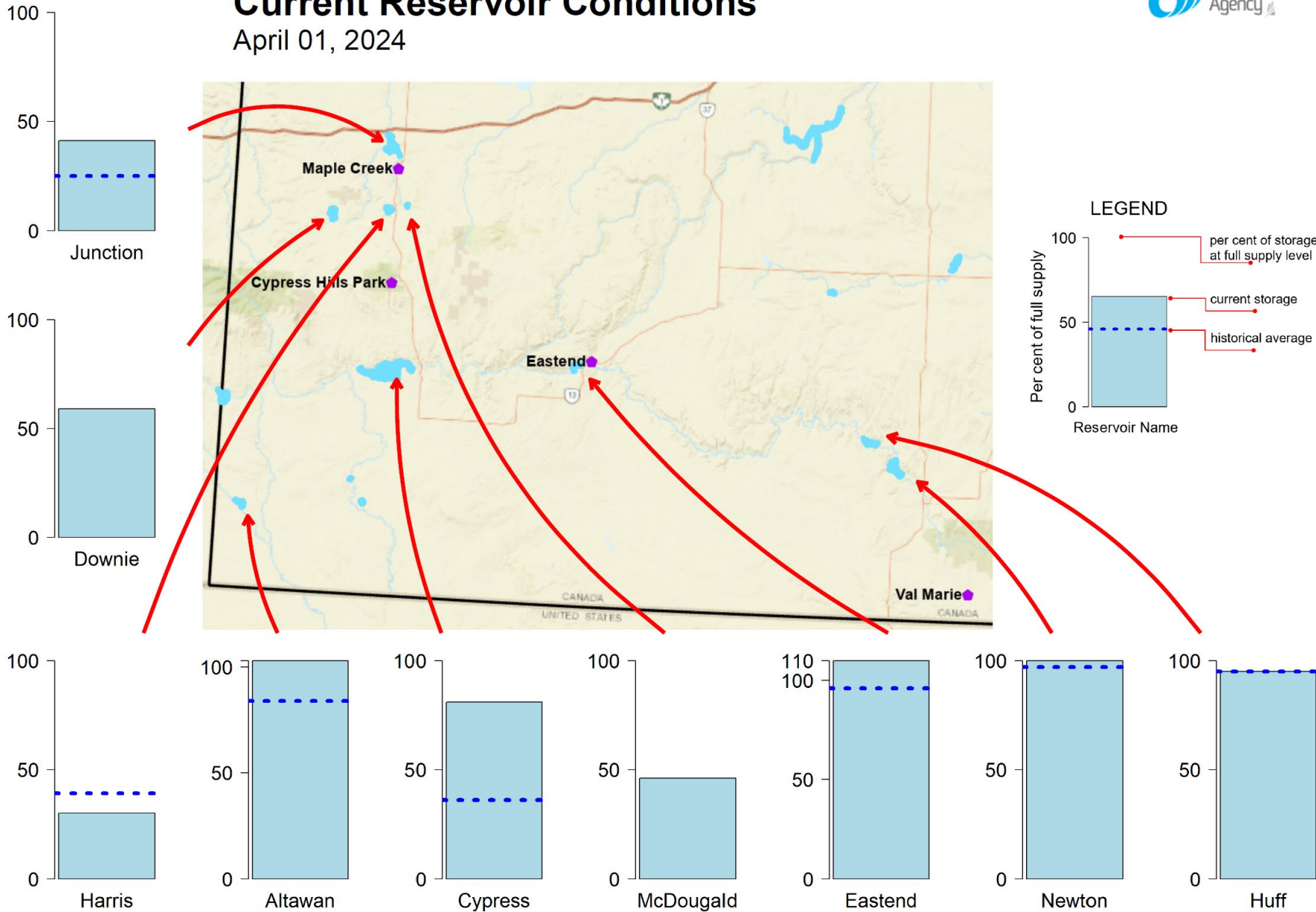


Figure 5: Reservoir Conditions in Southwestern Saskatchewan as of April 1, 2024