WATER SUMMARY UPDATE

No. 43

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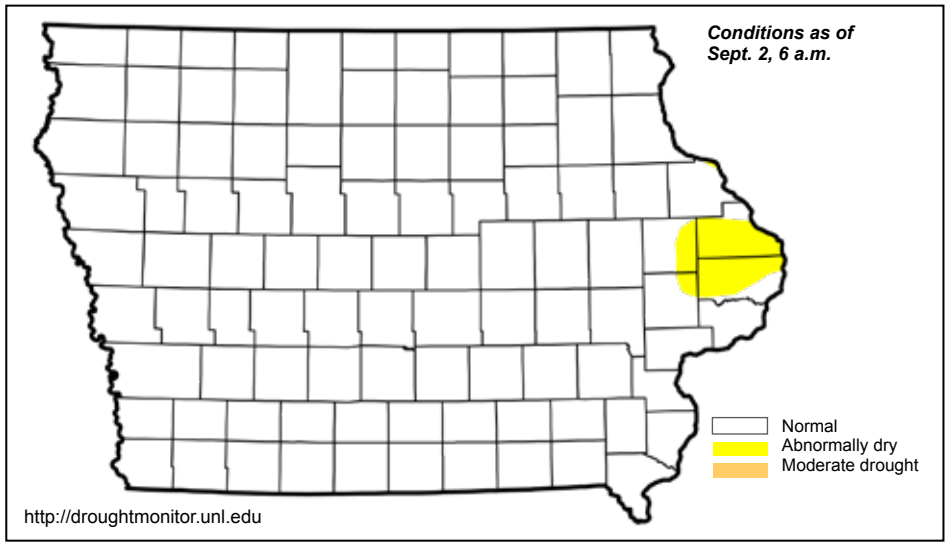
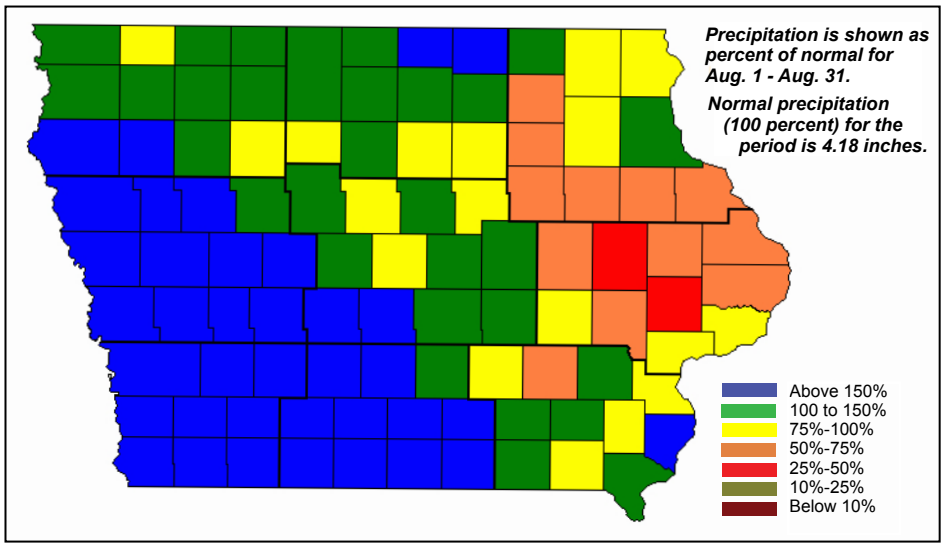
Drought Monitor

National Drought Mitigation Center and partners



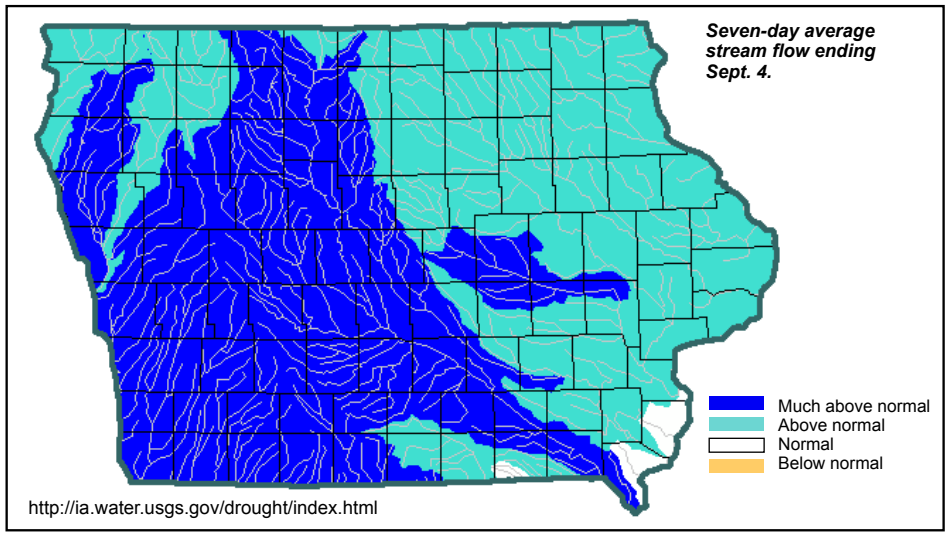
Precipitation

State Climatologist



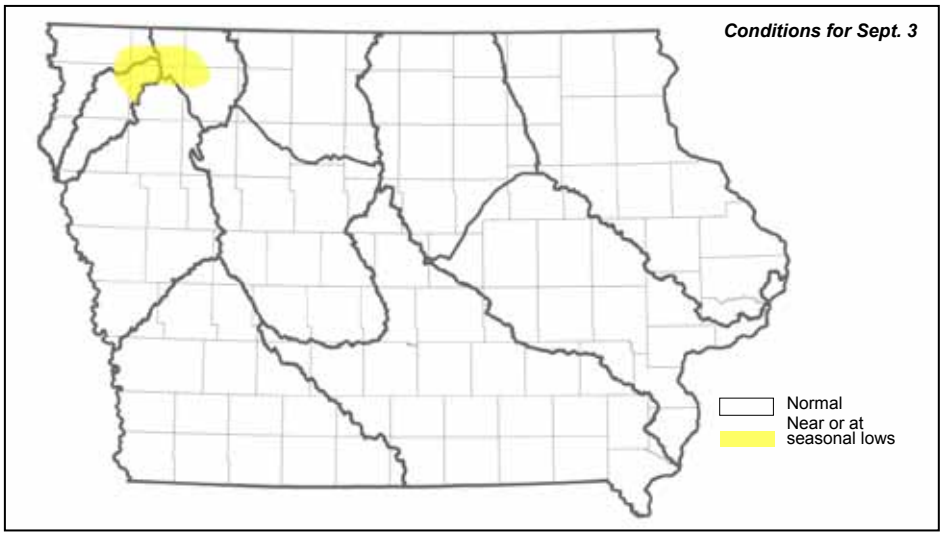
Stream Flow

US Geological Survey



Shallow Groundwater

Iowa DNR and IIHR-Hydroscience and Engineering



Recent Developments and Changes

Overall Conditions
With most conditions normal for this time of the year, the Water Summary Update will be issued on a monthly basis until spring 2015. These monthly updates will include a special focus topic each month, beginning with the explanation of normal groundwater and pumped groundwater levels and how these affect drinking water supplies.

Precipitation
The relatively dry weather that began across much of Iowa early in July gradually came to an end during August with a statewide average of 6 inches of rain — 1.82 inches above normal. Greenfield received nearly 18 inches of rain in August while parts of northeast Iowa received below normal August rainfall. August temperatures averaged right at normal.

Shallow Groundwater
In many places shallow groundwater levels recovered during the wet month of August. However, in parts of Lyon, Sioux, O'Brien, Osceola, Dickenson and Clay counties, groundwater levels have dropped to below normal.

Drought Monitor
This week's Drought Monitor shows nearly all of Iowa is free from drought — the exception is a small area of eastern Iowa indicated as abnormally dry.

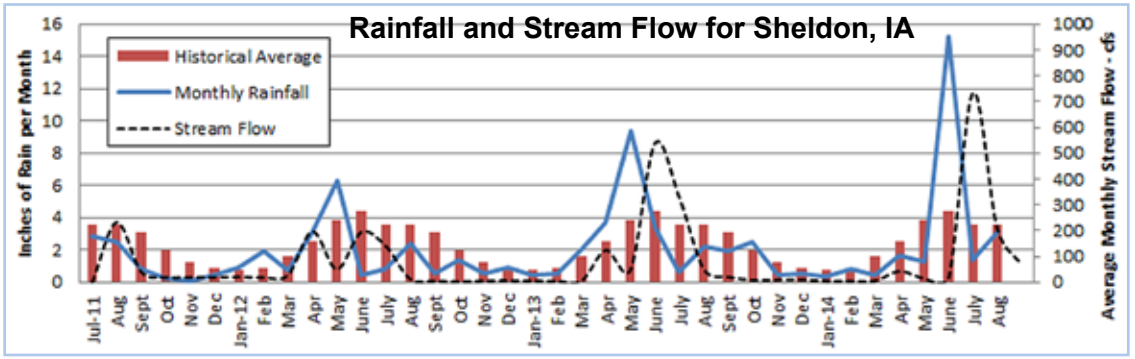
Stream Flow
Stream flow conditions are normal to above normal for the majority of the state. This is the time of the year when streams are typically dryer, so normal flows tend to be lower during fall months.

Year-To-Date Totals
The August rains brought the statewide precipitation for 2014 to 30 inches. This is four inches above normal and nearly a foot more than this time in 2012. National Weather Service models suggest continued above normal precipitation into mid-October.

Prepared by the Iowa DNR in collaboration with the Iowa Department of Agriculture and Land Stewardship, the U.S. Geological Survey, IIHR–Hydroscience and Engineering and The Iowa Homeland Security and Emergency Management Department.

Lots of Rain — Not Enough Water?
Despite rainfall higher than normal, there are a few water utilities in Iowa still challenged to meet customer demand. Recent Water Summary Updates and the National Drought Monitor both indicate "normal" conditions in northwest Iowa, yet in some places, like the city of Sheldon, voluntary water restrictions are still in place. Here's a simplified explanation as to why:

The **natural groundwater level** in an aquifer location is the normal level not influenced by pumping. When groundwater is pumped from an aquifer, the level of water in and around a well is lowered resulting in a **pumped groundwater level**. When a pump is turned off, the pumped groundwater level eventually returns to the natural groundwater level as water seeps back into the underground aquifer. This return of the natural groundwater level is referred to as "recovery."



High flows in the Floyd River in June 2012 and June 2013 were followed by long periods of very low flow, affecting recovery of natural groundwater levels. July 2014 streamflows appear to follow the same pattern.

Sheldon, with a population of over 5,000, operates its own water utility. The source of most of its drinking water is thirteen 20- to 30-foot shallow wells drawing from groundwater in sand and gravel deposits along the Floyd River. The shallow wells rely on recovery from the Floyd River to provide ongoing drinking water.

For the past two years, low precipitation and the Floyd River's low stream flows resulted in lower levels of groundwater in the city's shallow wells, because recovery could not keep up with customer demand. This year's weather brought river levels back to normal and even above normal. However, the "natural" groundwater levels in the wells, particularly those located farther from the river, have not recovered.

Fortunately the city has another drinking water source: a deep well drilled into the underlying bedrock 600 ft. deep. Because the shallow well water is of higher quality than the deep water, water from both sources must be mixed before supplied to customers.

The Water Summary Update looks at normal (natural) groundwater levels in regions of the state. However, a smaller localized area such as Sheldon, can experience low pumped groundwater levels. In cases like this, a city can increase its supply of water by adding new wells, and can decrease demand by enacting water restrictions or other conservation measures.

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