

Drought Management Water Conservation

Planning Documents

Rod Stroh

One reason that I like working with Drought Management Plans is that when I was a kid I enjoyed listening to my Grandfather tell stories of the “Dirty Thirties”. The tumble weeds and putting weeds up for hay.

- Garrison Diversion Conservancy District Funds the Development of these Planning Documents for Water Systems
- ND Rural Water Systems Association has a Contract with Garrison Diversion to Assist Rural Water Systems (Under 10,000 in Population) in Compiling these Documents

Why Drought and Conservation Planning?

- These documents offer water systems some strategies of response to a prolonged period of deficient precipitation
- Many federal/state grants or loans require completion of these documents
- Development of these documents are free of charge at the present time for water systems
- Help take the “crisis” out of a drought situation and enhance public acceptance of actions taken



Overview of Water System

Water Source
Climate

Total Water Usage (Commercial or Residential)

Inventory of Highest Water Users



A common question is when is the next drought due?

Tree Ring Studies in North Dakota, by George F. Will, Sr. (1946)

Found a Bur Oak along the Missouri River that was 373 years old

The State Historical Society had in storage Bur Oak from agrarian Mandan village ruins

Progressively overlapped rings and recorded an estimation of precipitation going back 5 centuries

For over five centuries (1406-1940)
tree-rings shown nearly equal wet
and dry years

The longest wet period was 39
years (1663-1702)

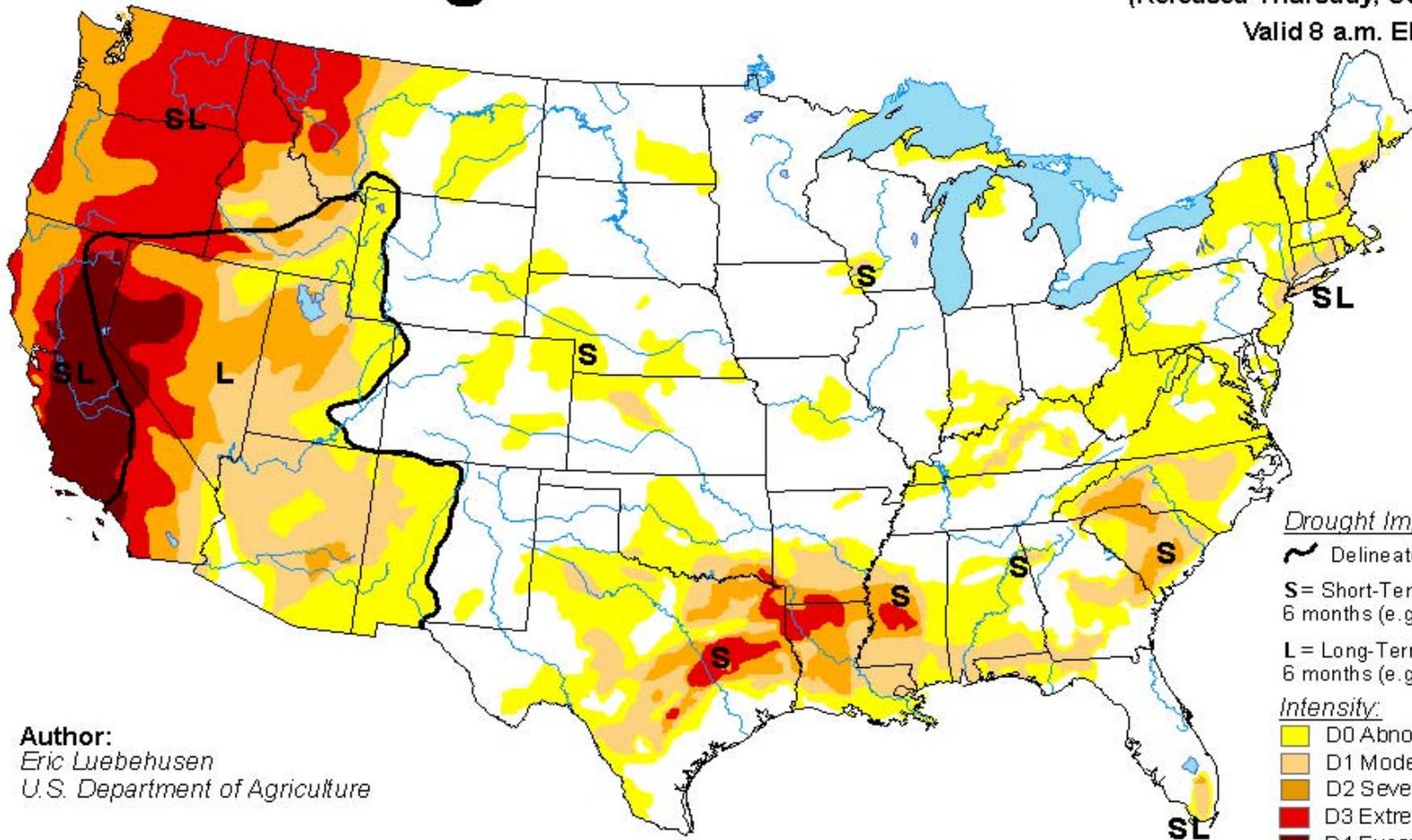
The longest dry period (drought)
was 16 years (1633-1649)

“Tree-rings can record historical droughts, but at the present time, the interpretation of ring chronologies cannot predict future droughts.”

Rod Stroh

U.S. Drought Monitor

September 22, 2015
 (Released Thursday, Sep. 24, 2015)
 Valid 8 a.m. EDT

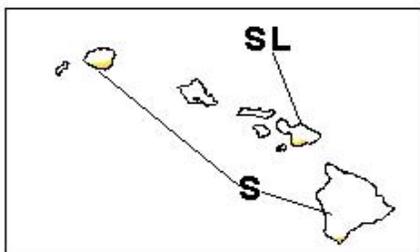
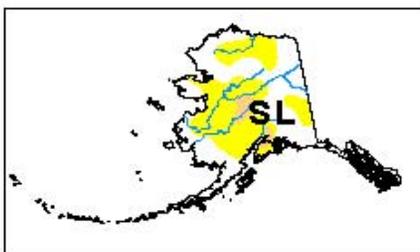


Author:
 Eric Luebbehusen
 U.S. Department of Agriculture

Drought Impact Types:
 ~ Delineates dominant impacts
 S= Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
 L= Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



<http://droughtmonitor.unl.edu/>

The drought document outlines mitigation strategies that make wise use of local water resources for each increasing level of a drought's magnitude.

Normal Conditions

Drought Watch

Drought Warning

Drought Emergency

Normal Conditions

City Ordinances that address
Drought Conditions

Drought Watch

- Xeriscaping
 - Creating a water efficient landscape





Drought Warning

Restrictions/Bans may be enforced on non-essential uses of water

Drought Emergency

Buy Bottled Water
Short Term



Bedrock
Water

The water conservation plan follows the federal guidelines set forth in the 1998 Environmental Protection Agency's (EPA) *Water Conservation Plan Guidelines* for water systems serving populations of 10,000 or fewer.

Estimated Water Savings from Conservation Measures

Retrofits – Toilet retrofit	8-14 gpcd
Retrofits – Showerhead aerator	4 gpcd
Retrofits – Faucet aerator	5 gpcd
Retrofits – Fixture leak repair	0.5 gpcd

Signature Pages

Each Water System has their Own Personality!