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# Appendix I

## Drought Management



# APPENDIX I

## DROUGHT MANAGEMENT

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During periods of drought, the following plan would be implemented to reduce impacts of drought on environmental resources.

1. Use **Table I-1**, Drought Severity Classification, as gross thresholds and triggers.
2. Monitor local conditions using the Climate summary – focusing on temperature.
3. Focus on droughty soils.
4. Collect soil moisture data – as needed to determine appropriate management actions.

Implement the following measures/parameters for restricting activities during drought (refer to **Table I-1**):

### **Severe (D2):**

- Send drought letters to grazing permittees and other permitted land users.
- Prepare local seasonal precipitation graphs.
- Suspend or limit seed-collecting activities.

### **Extreme (D3):**

- Prohibit new surface-disturbing activities in areas with sensitive soils, subject to valid existing rights or actions associated with other valid permitted activities.
- Base changes in livestock use on site-specific data on those allotments that are affected by drought.
- Temporarily close OHV Open Areas and designated routes as needed during periods of drought and wind events to reduce particulate matter.
- Require additional erosion-control techniques/BMPs for surface-disturbing activities (e.g., hydromulching).

- Limit prescribed burns and vegetation treatments (exceptions: pile burning and hand thinning).
- Monitor instream flow water rights for CWCB for out of priority water use or potential injury - “formal call” of water

**Exceptional (D4):**

- Base changes in livestock use on site-specific data on those allotments that are affected by drought.
- Prohibit new surface-disturbing activities, subject to valid existing rights or actions associated with other valid permitted activities.
- Consider closing areas to public entry.
- Monitor instream flow water rights

**Table I-1  
Drought Severity Classification**

Category <sup>1</sup>	Description	Possible Impacts	Ranges				
			Palmer Drought Index (mimics soil moisture)	Climate Prediction Center Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index	Objective Short and Long-term Drought Indicator Blends (Percentiles) <sup>2</sup>
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30	21-30	-0.5 to -0.7	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20	11-20	-0.8 to -1.2	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	-1.3 to -1.5	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	-1.6 to -1.9	3-5

**Table I-1  
Drought Severity Classification**

Category <sup>1</sup>	Description	Possible Impacts	Ranges				
			Palmer Drought Index (mimics soil moisture)	Climate Prediction Center Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index	Objective Short and Long-term Drought Indicator Blends (Percentiles) <sup>2</sup>
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	0-2

Source: University of Nebraska Lincoln, National Drought Mitigation Center 2008. A partnership consisting of the US Department of Agriculture (Joint Agricultural Weather Facility and National Water and Climate Center), the National Weather Service's Climate Prediction Center, National Climatic Data Center, and the National Drought Mitigation Center at the University of Nebraska Lincoln produces the Drought Monitor. However, advice from many other sources is incorporated in the product, including virtually every government agency dealing with drought.

<sup>1</sup>Drought intensity categories are based on five key indicators and numerous supplementary indicators. This drought severity classification table shows the ranges for each indicator for each dryness level. Because the ranges of the various indicators often do not coincide, the final drought category tends to be based on what the majority of the indicators show. The analysts producing the map also weight the indices according to how well they perform in various parts of the country and at different times of the year. Also, additional indicators are often needed in the West, where winter snowfall has a strong bearing on water supplies.

D0-D4: The drought monitor summary map identifies general drought areas, labeling droughts by intensity, with D1 being the least intense and D4 being the most intense. D0, drought watch areas, are either drying out and possibly heading for drought, or are recovering from drought but not yet back to normal, suffering long-term impacts such as low reservoir levels.

<sup>2</sup>Short-term drought indicator blends focus on 1- to 3-month precipitation. Long-term blends focus on 6 to 60 months. Additional indices used, mainly during the growing season, include the US Department of Agriculture/National Agricultural Statistics Service Topsoil Moisture, Keetch-Byram Drought Index, and National Oceanic and Atmospheric Administration/National Environmental Satellite, Data, and Information Service satellite Vegetation Health Indices. Indices used primarily during the snow season and in the West include snow water content, river basin precipitation, and the Surface Water Supply Index. Other indicators include groundwater levels, reservoir storage, and pasture/range conditions.

**References**

University of Nebraska Lincoln, National Drought Mitigation Center. 2008. Drought Monitor. Updated January 2, 2008. Internet Web site: <http://www.drought.unl.edu/dm/classify.htm>. Accessed on February 2, 2010.

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