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# SWL Drought Contingency Plans

Southwestern Regional Hydropower Conference  
7 June 2006

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# SWL Drought Contingency Plans

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- Plans provide a basic reference for water management decisions and coordination in response to drought induced water shortages in conformity with state water law.
- Plans are a *guide* for response to problems and needs that occur as the drought worsens.

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# SWL Drought Contingency Plans

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- Identify the foreseeable operational and physical problems that result in meeting users' needs as water is depleted.
- Users of authorized storage and/or streamflow have priority.
- Users are hydropower, storage contract water supply, and navigation.
- Plan also addresses needs of secondary users, such as recreation, fish and wildlife, and others.

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# SWL Drought Contingency Plans

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- Plans major components:
  - establishes four drought levels;
  - provides action charts and coordination scheme for each level;
  - forms two decision supporting committees.

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# SWL Drought Contingency Plans

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- Establishes 4 drought levels, with Level 1 mildest and Level 4 most severe.
- Levels based on:
  - *Duration* of drought, or the number of consecutive months the Palmer Drought Severity Index (PDSI) is below zero;
  - *Elevation* to which the lake has receded below the top of the conservation pool (for the lakes); or
  - *Mean monthly flow* (for the Arkansas River).

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# Palmer Drought Severity Index (PDSI)



PDSI	Class
> 4.0	Extremely wet
3.0 to 4.0	Very wet
2.0 to 3.0	Moderately wet
1.0 to 2.0	Slightly wet
0.5 to 1.0	Incipient wet spell
<b>0.5 to -0.5</b>	<b>Near normal</b>
-0.5 to -1.0	Incipient drought
-1.0 to -2.0	Mild drought
-2.0 to -3.0	Moderate drought
-3.0 to -4.0	Severe drought
< -4.0	Extreme drought

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# Drought Action Levels Designations – White River



Level	Duration (months)	Beaver	Table Rock	Bull Shoals	Norfolk	Greers Ferry
1	0 – 12	1120.43	915.0	654.0	552.0	461.44
		1105.00	900.0	640.0	538.0	448.00
2	12 – 24	1105.0	900.0	640.0	538.0	448.0
		1093.0	890.0	635.0	530.0	443.0
3	24 – 36	1093.0	890.0	635.0	530.0	443.0
		1083.0	885.0	632.0	515.0	438.0
4	> 36	< 1083.0	< 885.0	< 632.0	< 515.0	< 438.0
Bottom of Conservation Pool		1077.0	881.0	628.5	510.0	435.0

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# Drought Action Levels Designations – Arkansas River



		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Level 1</b>	<b>Duration of drought ranges from 0 to 12 months. Average monthly flow is between 50% and 75% flow duration.</b>												
Van Buren	50%	11,535	15,053	24,390	40,295	50,784	40,258	26,916	10,757	13,228	12,826	16,488	13,554
	75%	7,566	8,448	15,345	18,619	26,878	22,314	15,275	5,730	5,247	5,370	5,751	6,899
Little Rock	50%	23,040	30,816	45,261	52,764	70,993	46,095	29,067	12,328	14,217	16,498	19,532	20,833
	75%	13,407	17,826	24,833	31,811	38,275	28,964	16,508	6,992	5,678	6,206	7,833	11,931
<b>Level 2</b>	<b>Duration of drought ranges from 12 to 24 months. Average monthly flow is between 75% and 85% flow duration.</b>												
Van Buren	75%	7,566	8,448	15,345	18,619	26,878	22,314	15,275	5,730	5,247	5,370	5,751	6,899
	85%	5,309	5,306	9,220	12,208	19,466	16,678	11,320	4,788	3,715	4,248	4,100	3,860
Little Rock	75%	13,407	17,826	24,833	31,811	38,275	28,964	16,508	6,992	5,678	6,206	7,833	11,931
	85%	12,199	11,820	21,652	21,155	26,779	19,036	11,513	5,423	4,655	4,209	5,999	6,522
<b>Level 3</b>	<b>Duration of drought ranges from 24 to 30 months. Average monthly flow is between 85% and 95% flow duration.</b>												
Van Buren	85%	5,309	5,306	9,220	12,208	19,466	16,678	11,320	4,788	3,715	4,248	4,100	3,860
	95%	3,165	3,443	3,776	5,729	11,630	8,727	5,060	3,782	3,030	2,327	2,268	3,138
Little Rock	85%	12,199	11,820	21,652	21,155	26,779	19,036	11,513	5,423	4,655	4,209	5,999	6,522
	95%	5,368	7,999	8,269	10,659	19,854	11,633	5,547	3,749	3,437	3,036	3,368	4,688
<b>Level 4</b>	<b>Duration of drought is greater than 30 months. Average monthly flow is less than 95% flow duration.</b>												
Van Buren	95%	3,165	3,443	3,776	5,729	11,630	8,727	5,060	3,782	3,030	2,327	2,268	3,138
Little Rock	95%	5,368	7,999	8,269	10,659	19,854	11,633	5,547	3,749	3,437	3,036	3,368	4,688

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# Drought Action Level 1 "Mild"

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- Not formally declared.
- Designed as an alert phase.
- Water managers monitor the onset of an apparent drought.
- Plan requires normal operating procedures and coordination.

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# Drought Action Level 2 "Moderate"

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- Declared by District Engineer.
- Activate Corps Drought Management Committee (CDMC).
  - Chiefs: Engineering; Planning; Real Estate; Operations.
  - Advisors: Office of Counsel; Public Affairs; Emergency Management; Hydraulics; Safety.

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# Drought Action Level 3

## "Severe"

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- Declared by District Engineer.
- Activate Interagency Drought Management Committee (IDMC).
  - State and Federal representatives:
    - AR Natural Resources Commission; Department of Environmental Quality; Department of Parks and Tourism; Game and Fish Commission; Waterways Commission; Health Department; and Office of Emergency Services.
    - MO Department of Natural Resources; and Department of Conservation.
    - Little Rock District, Army Corps of Engineers; U.S. Fish and Wildlife Service; and Southwestern Power Administration.
- Corps begins determining availability of surplus water.

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# Drought Action Level 4 "Extreme"

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- Declared by District Engineer.
- Use of inactive storage must be considered.
- Corps and/or the State, but not necessarily the President, will have declared that an emergency situation exists.

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# White River Status

(as of 5 June 2006)



Project	Drought Duration (months)	Elevation	Level 1 Drought (elev plus 0-12 month drought duration)	Drought Level
Beaver	13	1113.9	1120.0 – 1105.0	1
Table Rock	12	916.1	915.0 – 900.0	
Bull Shoals	16	654.4	654.0 – 640.0	
Norfolk	16	553.7	552.0 – 538.0	
Greers Ferry	16	462.4	461.0 – 448.0	

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# Arkansas River Status

(as of 5 June 2006)



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Project	Drought duration (months)	Average May Flow (cfs)	Relative to flow duration	Drought Level
Trimble (L&D 13)	16	38,400	between 50% and 75% flow duration	2
Murray (L&D 7)	16	49,300	between 50% and 75% flow duration	2

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# To-Date Actions

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- Conducted 2 CDMC meetings and 1 Ad-hoc IDMC meeting.
- In-house communication plan developed.
- Continued monitoring of elevations and releases.
- Continued monitoring of water supply withdrawals.
- Water supply users notified of remaining storage.
- Continued coordination with SWT; SWD; and SWPA.

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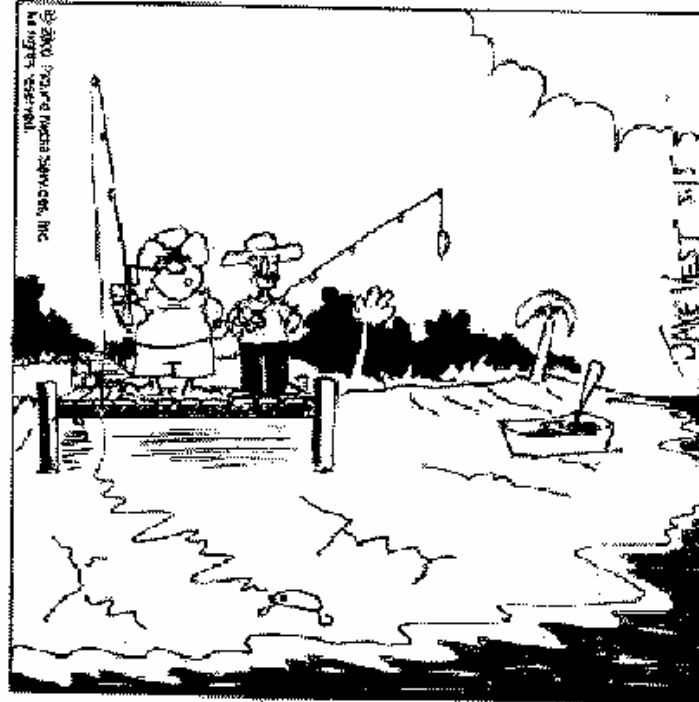
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# Drought Contingency Plan?



**That's Jake**

**Jake Vest**



'You gotta put a little more oomph into  
your casting during the dry season.'

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