

**U.S. Army Corps of Engineers  
Omaha District  
Quarterly Drought Report  
September 2008**



**US Army Corps  
of Engineers  
Omaha District**

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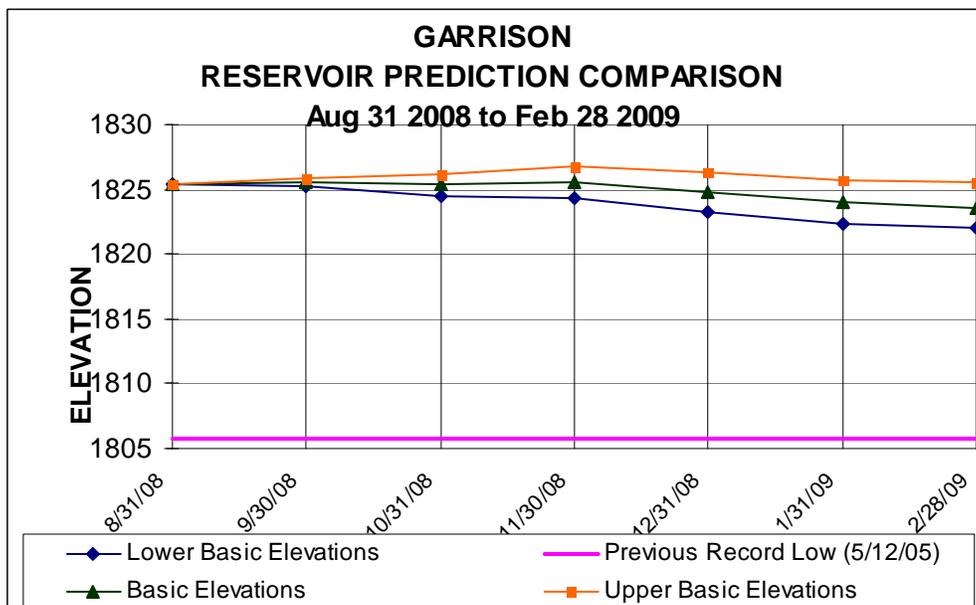
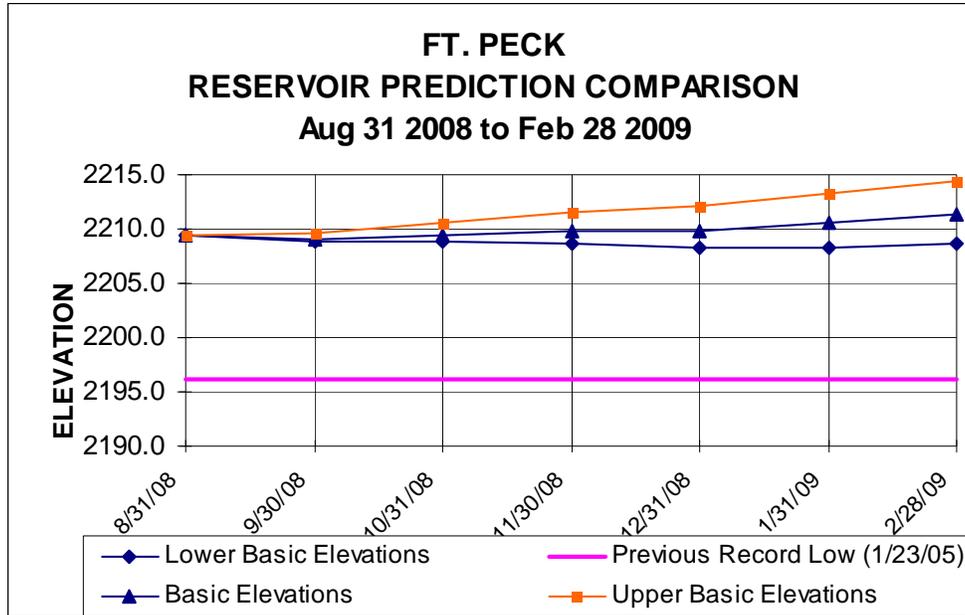
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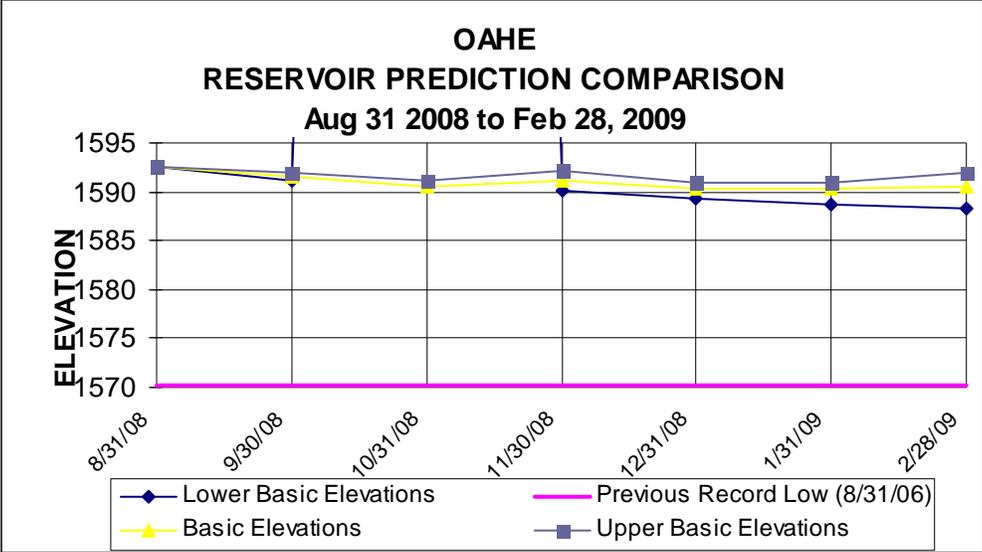
## **CURRENT CONDITIONS**

The water year 2007 ended with runoff volume at 21.5 million acre-feet, 85% of normal. The forecasted runoff for 2008 is 25.0 million acre-feet or 99% of normal, breaking a string of eight consecutive years of less than normal runoff in the basin. Mountain snowpack above Fort Peck appears to have peaked on April 27 at 111% of normal. As of July 1, 19% of this year's peak accumulation still remained. Mountain snowpack between Fort Peck and Garrison appears to have peaked on April 27 at 110% of normal. Though improved over their record lows of 2005 and 2006, the upper three reservoirs, Ft. Peck, Garrison, and Oahe continue to operate well under their base annual flood control capacities. Ft. Peck reservoir is currently at 2198.7 ft. msl (8.802 M ac-ft), Garrison is at 1808.1 ft. msl (10.517 M ac-ft), and Oahe is at 1581.9 ft. msl (12.098 M ac-ft). This compares with their base annual flood control elevations of 2234.0 (14.995 M ac-ft.), 1837.5 (18.109 M ac-ft.), and 1607.5 (18.834 M ac-ft); respectively. Finally, based on the most recent runoff conditions, lower than normal reservoir elevations are to be expected throughout 2008. The Omaha District will continue to monitor the elevations of the reservoirs and their effects on cultural resources, municipal water intakes and reservoir access. The Drought Report will continue to be prepared on a quarterly basis unless conditions warrant a more frequent effort.

## Reservoir Predictions

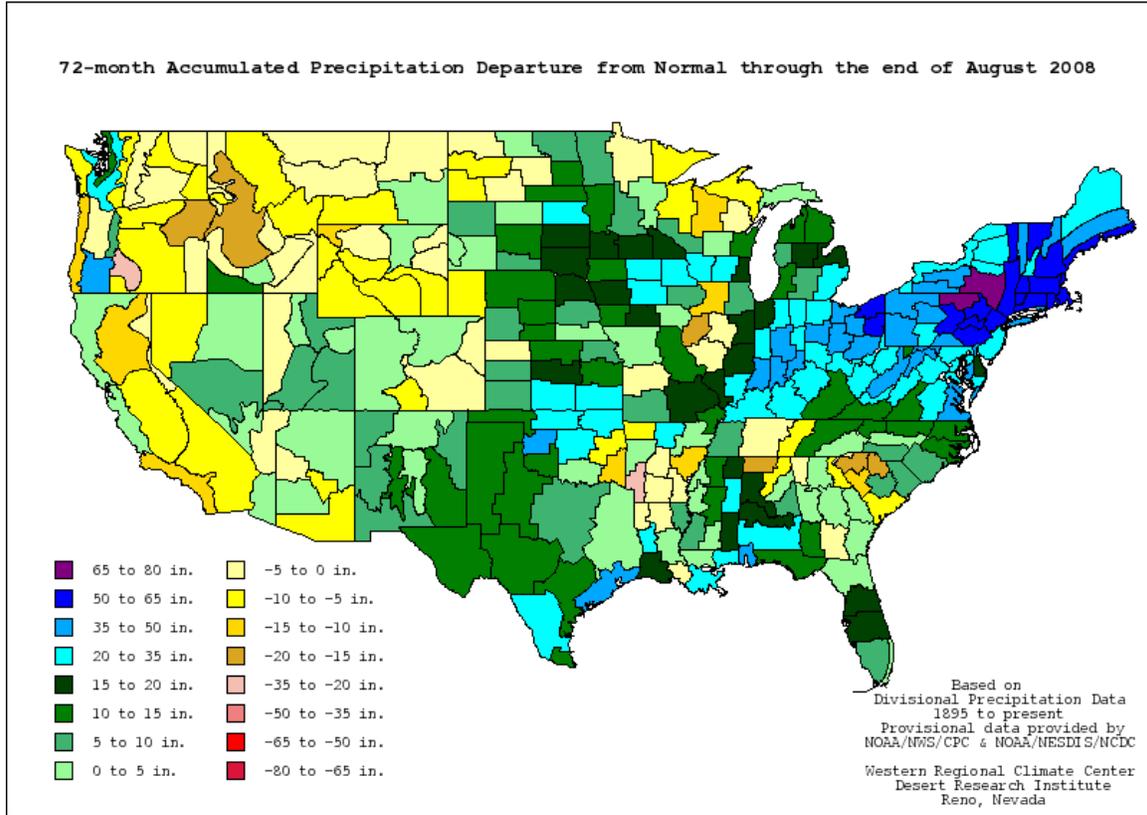
The following charts give a graphic illustration of the reservoir predictions prepared by the Northwestern Division's Missouri River Basin Water Control Division. Each line represents a simulation scenario that is prepared; the Lower Basic, the Basic and the Upper Basic simulations. The solid line in each chart is an illustration of the record low for the given reservoir. From the charts it becomes apparent that under all scenarios the reservoirs will remain well above the record lows of 2005 and 2006.





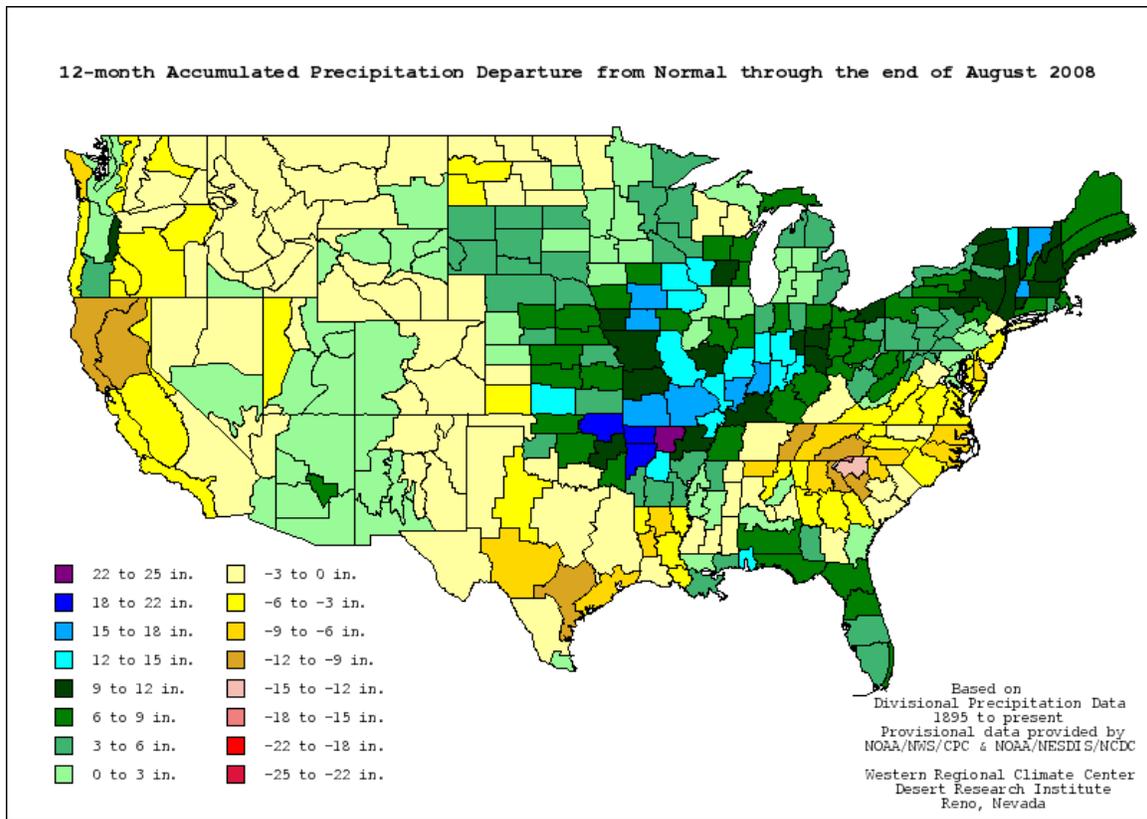
## Precipitation Departures

Precipitation departures from normal during the last 72 months for the United States are shown in Figure 1. While the majority of the basin is near normal, there are still areas that are suffering from a deficit of precipitation. Large areas of Wyoming and northwestern Nebraska still indicate a deficit of 10 to 15 inches.



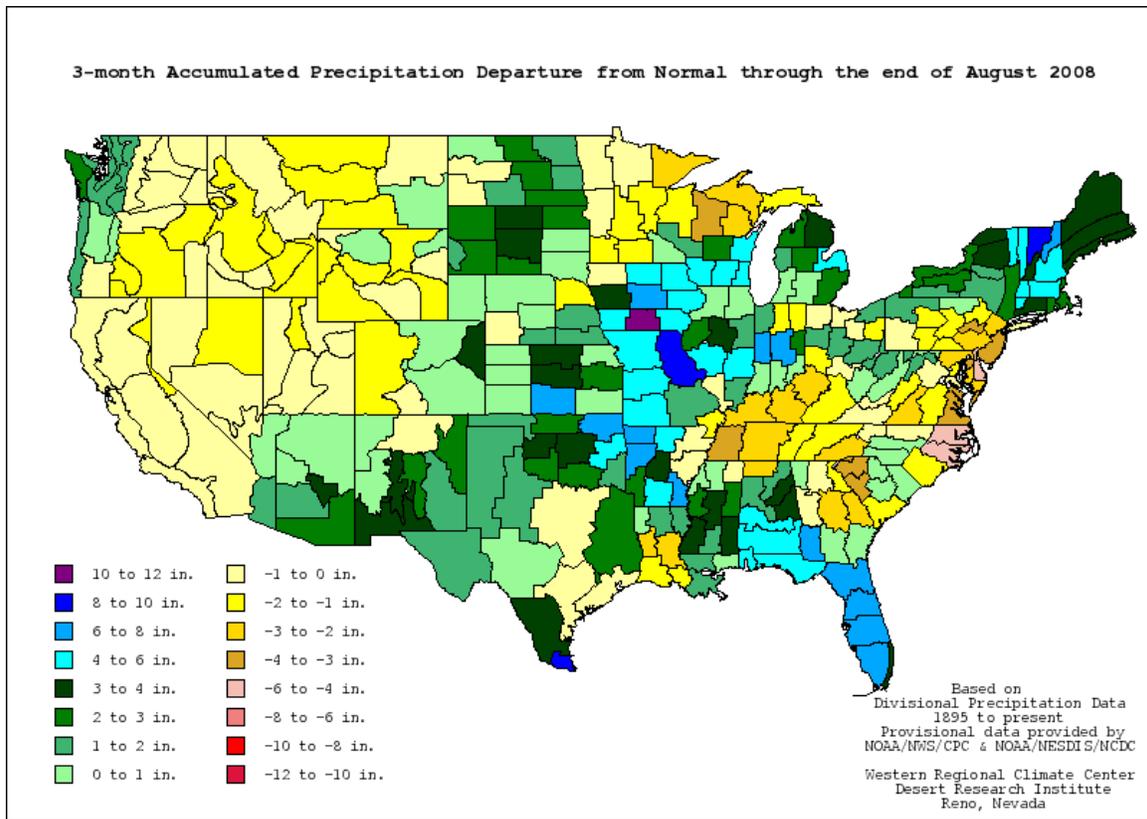
**Figure 1 – 72 month Precipitation Departure From Normal**  
<http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep72>

Figure 2 indicates that the annual precipitation accumulation in the basin is mostly normal with a mild deficit in the northern basin and a small surplus of moisture in the southern parts of the basin.



**Figure 2 – 12 month Precipitation Departure From Normal**  
<http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep12>

The three-month period (Figure 3) again shows that much of the basin is trending towards normal or slightly above normal precipitation.



**Figure 3 – 3 month Precipitation Departure From Normal**

<http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep03>

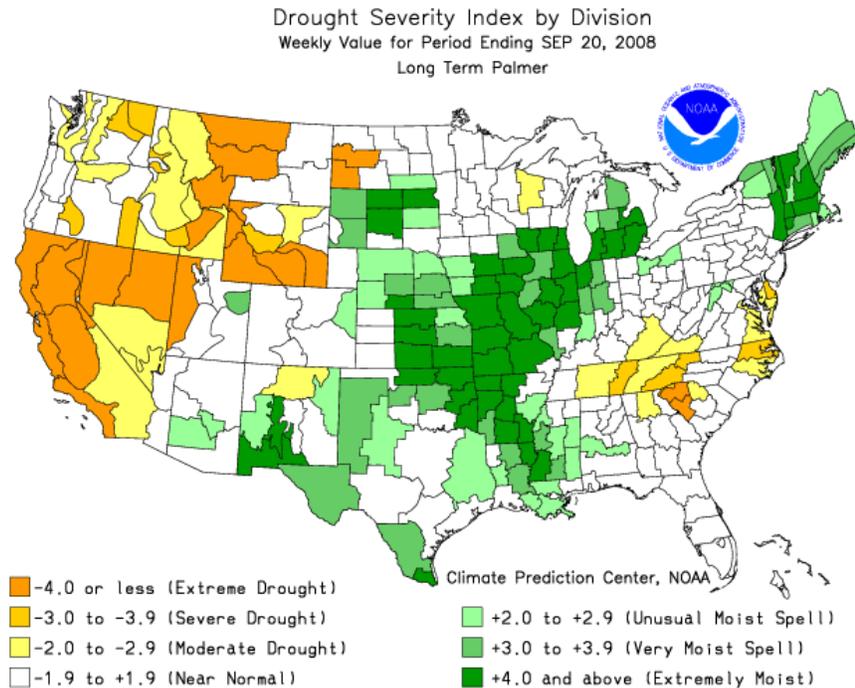
## Drought Indicators

The Palmer Drought Severity Index and the Drought Monitor are two commonly used drought-indicator products that convey both short-term and long-term drought conditions and impacts. Both the Palmer Index and Drought Monitor depict some regions exhibiting varying degrees of drought within the basin. However, comparatively it appears that the severity of the drought is less than that of recent years.

## Palmer Drought Severity Index

The Palmer Drought Severity Index (PDSI) is a meteorological drought index that monitors the hydrologic water balance including the basic terms such as precipitation, evapotranspiration, soil recharge, runoff, and moisture loss. The purpose of this index is to provide standardized measurements of the moisture balance in a region without taking into account streamflow, lake and reservoir levels, and other hydrologic impacts. PDSI is a multi-month drought index; therefore, it responds well and is more suitable for short-term droughts.

Changes to the PDSI are more immediate in response to heavy precipitation over short periods. Figure 5 indicates that the majority of the basin is experiencing “Near Normal” or even “Unusual Moist Spell or Very Moist Spell”. Furthermore, the indicators for the areas that are experiencing drought conditions are of a lesser severity when compared to the past several years.



**Figure 5 – Long-Term Palmer Drought Indicator Ending 20 September 2008**

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/regional\\_monitoring/palmer.gif](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif)

## Drought Monitor

The Drought Monitor is a multi-agency comprehensive drought classification scheme updated weekly by the National Drought Mitigation Center. The Drought Monitor combines information from the Palmer Drought Index, the Climate Prediction Center's soil moisture model, USGS weekly streamflow percentiles, the standard precipitation index, the crop moisture index, and during the snow season basin snow water content, basin average precipitation, and the surface water supply index. Since this product considers streamflow conditions and reservoir water supply, and it allows manual adjustment; it is a good depiction of long-term drought impacts to the affected areas. The Drought Monitor uses four levels of drought classification (moderate, severe, extreme, and exceptional), and it notes the type of impact caused by the drought (agricultural and hydrologic).

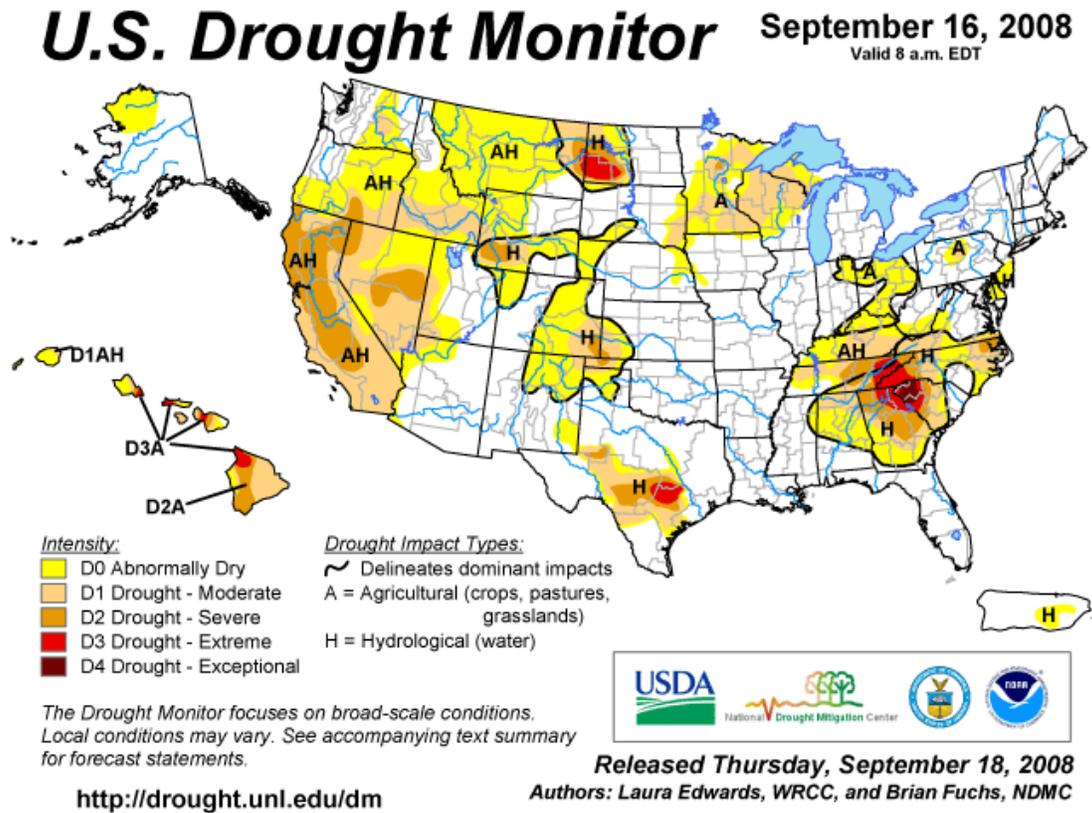


Figure 6 – U.S. Drought Monitor – September 16, 2008

<http://www.drought.unl.edu/dm/monitor.html>

In an effort to further define the drought within the basin, regional drought monitor maps have been included within this report for the states within the basin. These maps also include a table indicating the percentage of area experiencing drought and the severity within that area. Further, these tables give an areal comparison of the current status to the conditions one week ago, three months ago, the start of the calendar year, and one year ago.

# U.S. Drought Monitor

## High Plains

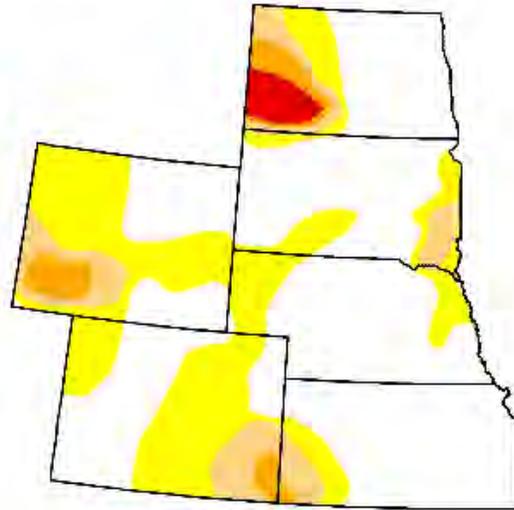
September 16, 2008  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	59.8	40.2	13.1	5.0	1.6	0.0
Last Week (09/09/2008 map)	56.9	43.1	15.8	4.7	1.1	0.0
3 Months Ago (06/24/2008 map)	63.9	36.1	17.0	5.8	1.3	0.1
Start of Calendar Year (01/01/2008 map)	46.8	53.2	29.4	11.8	0.3	0.0
Start of Water Year (10/02/2007 map)	55.8	44.2	23.3	10.8	1.0	0.0
One Year Ago (09/18/2007 map)	54.0	46.0	21.4	11.3	1.5	0.0

**Intensity:**

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



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

<http://drought.unl.edu/dm>



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**Figure 7 – U.S Drought Monitor High Plains – September 16, 2008**

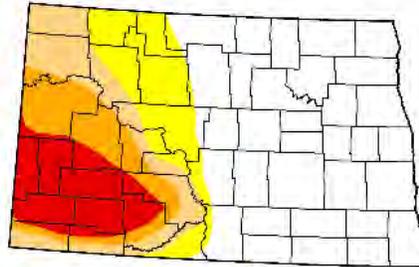
[http://www.drought.unl.edu/dm/DM\\_highplains.htm](http://www.drought.unl.edu/dm/DM_highplains.htm)

# U.S. Drought Monitor

## North Dakota

September 16, 2008  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	54.9	45.2	32.4	21.2	11.8	0.0
Last Week (09/09/2008 map)	46.7	53.3	39.0	17.9	7.8	0.0
3 Months Ago (06/24/2008 map)	33.1	66.9	38.0	10.4	0.0	0.0
Start of Calendar Year (01/01/2008 map)	19.8	80.2	55.5	16.4	0.0	0.0
Start of Water Year (10/02/2007 map)	25.6	74.4	38.1	4.4	0.0	0.0
One Year Ago (09/18/2007 map)	60.9	39.1	8.1	0.0	0.0	0.0



**Intensity:**



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

<http://drought.unl.edu/dm>



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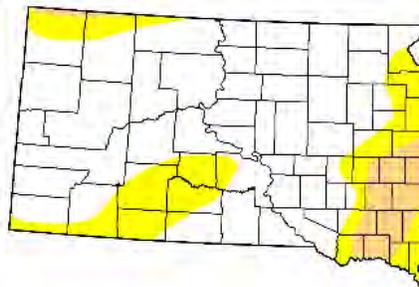
Figure 8 - U.S Drought Monitor North Dakota – September 16, 2008  
[http://www.drought.unl.edu/dm/DM\\_state.htm?ND,HP](http://www.drought.unl.edu/dm/DM_state.htm?ND,HP)

# U.S. Drought Monitor

## South Dakota

September 16, 2008  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	72.8	27.2	7.1	0.0	0.0	0.0
Last Week (09/09/2008 map)	72.8	27.2	6.5	0.0	0.0	0.0
3 Months Ago (06/24/2008 map)	97.9	2.1	0.4	0.0	0.0	0.0
Start of Calendar Year (01/01/2008 map)	55.3	44.7	34.5	8.9	0.0	0.0
Start of Water Year (10/02/2007 map)	59.7	40.3	19.2	8.6	0.0	0.0
One Year Ago (09/18/2007 map)	61.5	38.5	19.3	8.6	0.0	0.0



**Intensity:**



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

<http://drought.unl.edu/dm>



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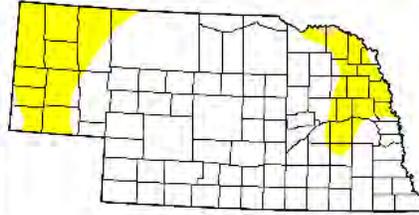
Figure 9 – U.S Drought Monitor South Dakota – September 16, 2008  
[http://www.drought.unl.edu/dm/DM\\_state.htm?SD,HP](http://www.drought.unl.edu/dm/DM_state.htm?SD,HP)

# U.S. Drought Monitor

## Nebraska

September 16, 2008  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	77.7	22.3	0.3	0.0	0.0	0.0
Last Week (09/09/2008 map)	67.3	32.7	5.8	0.0	0.0	0.0
3 Months Ago (06/24/2008 map)	77.0	23.0	9.9	0.0	0.0	0.0
Start of Calendar Year (01/01/2008 map)	66.7	33.3	15.9	7.8	1.7	0.0
Start of Water Year (10/02/2007 map)	70.9	29.1	13.6	7.0	1.7	0.0
One Year Ago (09/18/2007 map)	58.4	41.6	13.6	7.0	1.7	0.0



**Intensity:**

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

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

<http://drought.unl.edu/dm>



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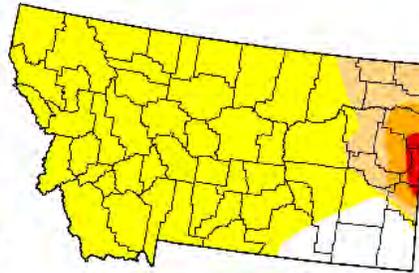
**Figure 10 – U.S Drought Monitor Nebraska – September 16, 2008**  
[http://www.drought.unl.edu/dm/DM\\_state.htm?NE,HP](http://www.drought.unl.edu/dm/DM_state.htm?NE,HP)

# U.S. Drought Monitor

## Montana

September 16, 2008  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	8.0	92.0	12.4	4.0	1.0	0.0
Last Week (09/09/2008 map)	7.9	92.1	12.2	4.0	1.0	0.0
3 Months Ago (06/24/2008 map)	79.9	20.1	3.0	0.0	0.0	0.0
Start of Calendar Year (01/01/2008 map)	0.8	99.2	61.2	26.4	0.0	0.0
Start of Water Year (10/02/2007 map)	3.9	96.1	88.3	46.2	9.5	0.0
One Year Ago (09/18/2007 map)	4.8	95.2	87.9	50.8	14.0	0.0



**Intensity:**



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

<http://drought.unl.edu/dm>



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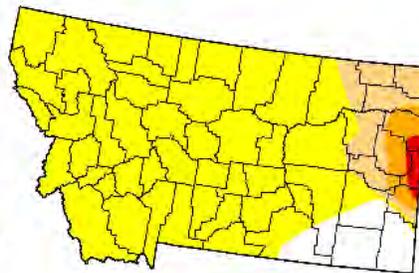
Figure 11 – U.S. Drought Monitor West Region – September 16, 2008  
[Regional Drought Monitor: West](#)

# U.S. Drought Monitor

## Montana

September 16, 2008  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	8.0	92.0	12.4	4.0	1.0	0.0
Last Week (09/09/2008 map)	7.9	92.1	12.2	4.0	1.0	0.0
3 Months Ago (06/24/2008 map)	79.9	20.1	3.0	0.0	0.0	0.0
Start of Calendar Year (01/01/2008 map)	0.8	99.2	61.2	26.4	0.0	0.0
Start of Water Year (10/02/2007 map)	3.9	96.1	88.3	46.2	9.5	0.0
One Year Ago (09/18/2007 map)	4.8	95.2	87.9	50.8	14.0	0.0



**Intensity:**



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

<http://drought.unl.edu/dm>



Released Thursday, September 18, 2008  
Author: Laura Edwards, WRCC, and Brian Fuchs, NDMC

Figure 12 – U.S. Drought Monitor Montana – September 16, 2008  
[http://www.drought.unl.edu/dm/DM\\_state.htm?MT,W](http://www.drought.unl.edu/dm/DM_state.htm?MT,W)

## DROUGHT OUTLOOK

The basin drought outlook uses several expert products that indicate precipitation needs necessary to reduce the Palmer Drought to normal conditions, a one- and three-month climate outlook, and the impacts that future climate predictions could have on the current drought situation. As is evident from Figure 13, the majority of the Missouri River basin is no longer in a drought and the remaining areas in western North Dakota and eastern Montana are predicted to improve through December.

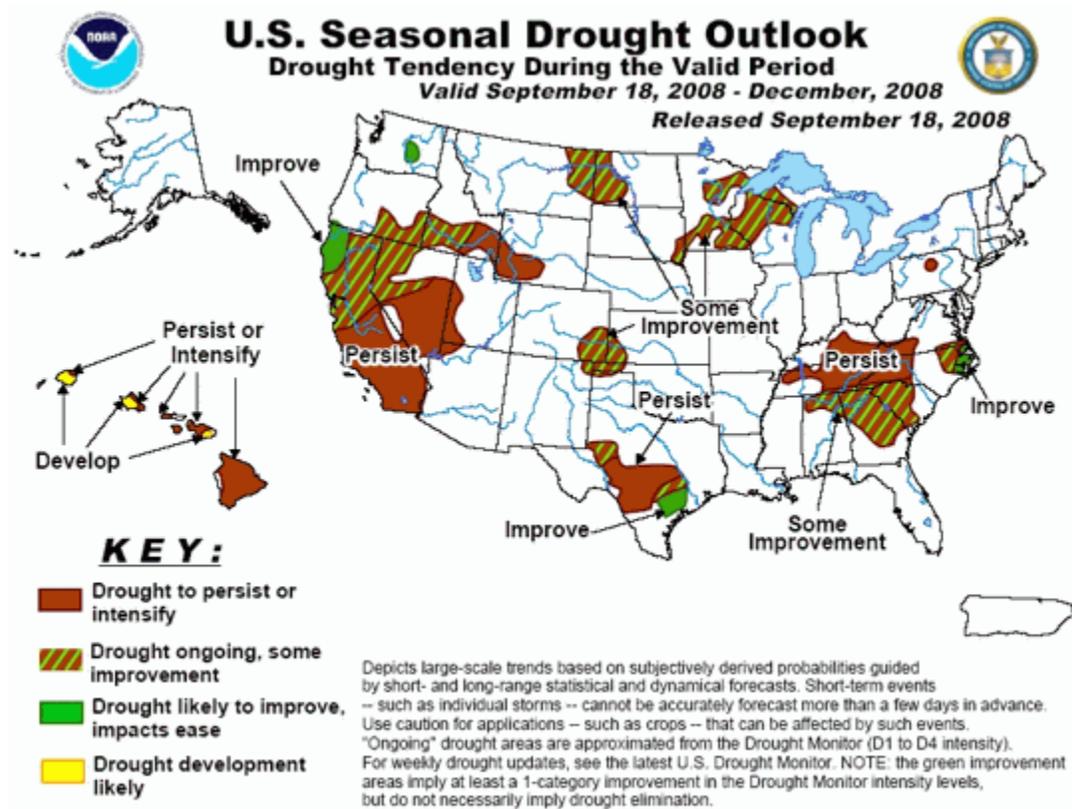
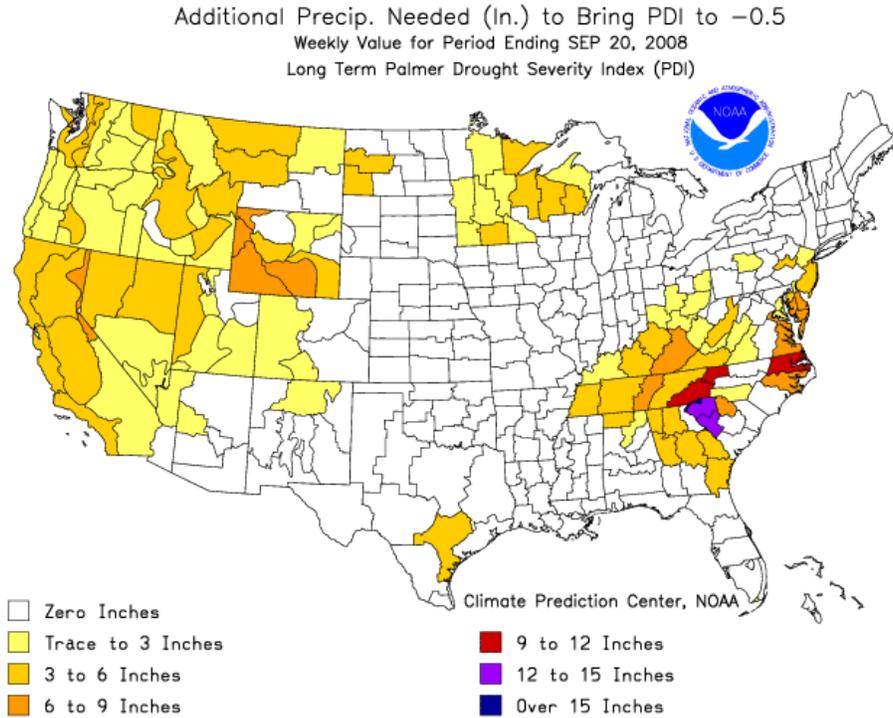


Figure 13 – Three-Month Seasonal Drought Outlook through December 2008  
[http://www.cpc.ncep.noaa.gov/products/expert\\_assessment/seasonal\\_drought.html](http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html)

## Weekly Precipitation Need

Figure 14 is the weekly precipitation needed to reduce the current Palmer Drought Severity Index value to -0.5 or near normal conditions. The current chart indicates that the vast majority of the basin is very near normal with respect to the PDI.



**Figure 14 – Weekly Precipitation Need to Bring PDI to -0.5**

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/regional\\_monitoring/addpcp.gif](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/addpcp.gif)

# Missouri River Region Mountain Snowpack Report

## 2007 - 2008 Mountain Snowpack Report for Missouri River Basin

**Summary of Winter 2007-2008.** The Missouri River runoff for 2007 was 21.5 MAF, 85% of normal. This marked the eighth consecutive year of less than normal runoff in the basin. The continued drought has taxed the System storage leaving upstream reservoir levels very low, much like what occurred in the drought of the mid 1980's and early 1990's. However, the forecasted runoff for 2008 is 25.0 MAF, 99% of normal. Mountain snowpack above Fort Peck appears to have peaked on April 27 at 111% of normal. As of July 1, 19% of this year's peak accumulation still remains. Mountain snowpack between Fort Peck and Garrison appears to have peaked on April 27 at 110% of normal. As of June 1, 26% of this year's peak accumulation still remains. Normally, the Missouri River basin mountain snowpack peaks near April 15 and 5% normally remains on July 1. Mountain snowpack in the North Platte and South Platte River basins is 6% and 1% of the normal peak, respectively.

**Summary of Winter 2006-2007.** Like the previous four winters, the winter of 2006 and 2007 was distinguished by the total lack of plains snowpack. The runoff in January, February, and March was 86%, 102% and 108% of normal, respectively. The runoff in April, May and June was only 74%, 108% and 83% of normal, respectively. This is significant because, historically, runoff during these three months accounts for nearly half the total yearly runoff. Except for a brief period in November 2006, the mountain snowpack was below normal levels during the entire 2006-2007 mountain snowpack reporting period. The snowpack in the reach above Fort Peck peaked at 76% of normal. In the reach between Fort Peck and Garrison, the snowpack peak was 81% of normal. The total runoff into the basin for 2007 was approximately 21.5 MAF, 85% of normal.

The following tabulation is a summary of this year's mountain snowpack accumulations and the CY 2008 runoff forecast for the first of each month. The three most upstream Missouri River main stem reservoirs, Fort Peck, Garrison and Oahe, are significantly below their base of the annual flood control zones due to eight consecutive years of drought and the System stands poised to handle significant runoff if that were to occur during 2008.

<b>CY 2008 Mountain Snowpack Accumulations in Percent of Normal Peak</b>							
<b>Drainage Basin</b>	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Fort Peck Dam	93%	104%	104%	102%	105%	69%	19%
Fort Peck to Garrison	93%	98%	100%	105%	105%	77%	26%
Percent of Normal Total Acc.	93%	100%	102%	104%	105%	73%	23%
North Platte River	91%	99%	103%	101%	103%	56%	6%
South Platte River	93%	97%	107%	108%	104%	49%	1%

<b>Forecasted CY 2008 Missouri River Basin Annual Runoff in MAF</b>							
<b>Location</b>	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Sioux City, Iowa.	19.5	19.5	20.0	20.0	20.0	21.2	25.0
Percent of Normal 25.2 MAF	78%	78%	79%	80%	79%	84%	99%

SNOTEL Mountain snowpack station data is provided by the National Resource Conservation Service. Normally by April 15, 100% of the peak accumulation has occurred. The January through June 2007 actual runoff above Sioux City was 15.1 MAF, 92% of normal. The 2007 Calendar Year runoff above Sioux City was 21.5 MAF, 85% of normal. The forecasted runoff for 2008 is 25.0 MAF, 99% of normal. As stated earlier, the Missouri River basin endured its eighth consecutive year of drought in 2007. The June 24, 2008 drought monitor map (<http://drought.unl.edu/dm/monitor.html>) indicates that the most of the Missouri River basin is not currently experiencing any drought conditions. Western North Dakota is the only area in the basin which is experiencing "severe" drought conditions. Portions of Wyoming and western Nebraska and Kansas are experiencing "abnormally dry" or "moderate" drought conditions.

The table above labeled CY 2008 Mountain Snowpack gives information in percent of average for the two significant snowpack accumulation reaches of Fort Peck and Fort Peck to Garrison. The snow melts during the May through July timeframe and provides significant main stem inflow which is stored to prevent downstream flooding and later used to meet main stem authorized project purposes. Even knowing the amount of snow at the first of each month for selected mountain snowpack areas results in considerable runoff variability because the weather conditions during the melt period greatly influences the runoff yield. The total percent of normal accumulation are shown for the first of each month through May. For the period of May through July the percentages shown are a percent of the peak accumulation for the year to indicate the remaining snow to melt in the mountains.

### **Mainstem Reservoir Information**

As mentioned at the beginning of this report, the upper three reservoirs continue to operate well below the preferred level, which is the base of the flood control pool. Furthermore, the current reservoir and runoff predictions indicate that significant improvement is not expected during the remainder of water year 2008.

## **Fort Peck, Montana**

### **Reservoir Elevation Overview**

Year Ago Lake Elevation (2/15/2007) (ft. msl)	Current Lake Elevation (9/15/2008) (ft. msl)	30-Day Projected Elevation (9/30/2008) (ft. msl)	120-Day Projected Elevation (12/31/2008) (ft. msl)
2200.5	2209.2	2208.8	2208.2

### **Comments:**

1. Current reservoir elevation is 24.8-feet below the top of conservation pool (elevation 2234.0 ft. msl).
2. Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center. This is done solely for planning purposes.
3. Current elevation is 8.7-feet higher than the same date last year.
4. The elevation of 2196.2 is the current record low.

### Water Intake Overview

Intake	Comments
Hell Creek State Park	No issues. Well completed 22 NOV 2004

### Access Overview

1. 16 ramps usable; 2 ramps unusable. No permanent ramps operational.
2. \$250,000 programmed for boat ramp extensions/maintenance in FY 2007.
3. Once the reservoir is free of ice, the boat ramps will be extended to provide the most optimum access possible given the current reservoir conditions.

Boat Ramp	Status	Bottom Elevation	Top Elevation	Managing Agency
Fort Peck Marina	USABLE	2197	2250	COE/Concessionaire
Duck Creek	USABLE	2197	2250	COE/MTFW&P
Flat Lake	USABLE	2197	2250	COE
Rock Creek (North Fork)	USABLE	2197	2250	COE/MTFW&P
Rock Creek Marina	USABLE	2197	2250	Concessionaire
Nelson Creek	UNUSABLE	2220 (Cannot Be Extended)	2250	COE
Hell Creek	USABLE	2197	2250	COE/MTFW&P
Devils Creek	USABLE	2197	2250	COE
Crooked Creek	UNUSABLE	2223 (Cannot Be Extended)	2250	Concessionaire
Fourchette	USABLE	2204 (Cannot Be Extended)	2250	COE
Bone Trail	USABLE	2197	2250	COE
Pines	USABLE	2197	2250	COE
James Kipp	USABLE	Missouri River, Upstream of Dam		BLM
Floodplain	USABLE	Missouri River, Below Dam		COE
Roundhouse Point	USABLE	Missouri River, Below Dam		COE
Nelson Dredge	USABLE	Missouri River, Below Dam		COE
Trout Pond	USABLE	Missouri River, Below Dam		MTFW&P
Rock Creek West	USABLE	Missouri River, Upstream of Dam		USFWS

### Noxious Weeds Overview

1. As the reservoir elevation dropped, the noxious weeds spread along the shoreline.
2. Main concern is Saltcedar, which thrives along the shoreline as the reservoir elevation declines.
3. \$200,000 programmed for noxious weed control in FY 2008.

### Cultural Resources Overview

1. No issues to date.

## Garrison, North Dakota

### Reservoir Elevation Overview

Year Ago Lake Elevation 9/15/2007 (ft. msl)	Current Lake Elevation 9/15/2008 (ft. msl)	30-Day Projected Elevation (9/31/2008) (ft. msl)	120-Day Projected Elevation (12/31/2008) (ft. msl)
1814.1	1825.3	1825.2	1823.3

### Comments:

1. Current reservoir elevation is 12.2-feet below the top of conservation pool (elevation 1837.5 ft. msl).
2. Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center. This is done solely for planning purposes.
3. Current reservoir elevation is 11.2-feet higher than elevation on the same date last year.
4. Record low for the reservoir is 1805.76 on May 12, 2005.

## Water Intake Overview

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Whiteshield	Operational	1825.3	1763	1766	1766	1768	720	N	TAT/BOR

**Comments:**

1. The intake was extended with a new 24” casing to a length of approximately 960 feet from shore. Work is essentially completed and closeout will be done prior to end of this year.
2. Work on contingency plan in progress.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Twin Buttes	Operational	1825.3	1741	1744	1744	1746	425	N	TAT/BOR

**Comments:**

1. The intake was extended with a new 24” casing to a length of approximately 800 feet from shore. Work is essentially completed and closeout will be done prior to end of this year.
2. Work on contingency plan in progress.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Mandaree	Operational	1825.3	1786	1789.0	1789	1794	780	N	TAT/BOR

**Comments:**

1. The new intake screen is at elevation 1786.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Four Bears	Operational	1825.3	1785	1790	1788	1790	900	N	TAT/BOR

Comments:

1. The intake was extended with a new 24" casing to a length of approximately 1,160 feet from shore.
2. Work on contingency plan in progress.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Parshall	Operable	1825.3	1800*	1805	1805	1805	1000	N	Parshall

Comments:

1. The City had a telescoping riser attached to the intake by 30 July 2005. The riser extended the intake to within 3- to 4-feet of the water's surface.
2. Require at least 3 feet of water over the intake for proper operation.
3. Water quality at current level is good following water treatment.
4. Technical Assistance Report was completed by the Corps of Engineers for Parshall in December 2006.
5. A backup well is available for use should the intake fail. The well has been used successfully in the past.
6. The City of Parshall is pursuing a new water treatment facility and intake structure approximately 16 miles south of Parshall. On site meetings have been held and they plan on doing some soil borings later this fall. They are attempting to get some funding through Section 594 of WRDA.

Future Plans:

1. Discussions have been held between Parshall and New Town regarding future water supply. No formal decisions have been reached. Parshall is a proposed supplier for the Rural Water System.

\*Screen is raised or lowered according to reservoir elevations.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Pick City	Operational	1825.3	1795	1800	1798	1800	200		Pick City

Comments:

1. System has been removed.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Garrison	Operational	1825.3	1780	1785	1780	1783	1830	N	Garrison

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. A regulatory permit was currently issued for the reinstallation of existing 950-foot of 8" poly pipe and installation of new 250-foot of 8" poly pipe to extend the intake system.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
SW Pipeline	Operational	1825.3	1778.5	1782	1776		34,000	N	SW Pipeline

Comments:

1. The intake consists of a vertical screen approximately 5 feet high.
2. This system provides water for the City of Dickinson, Antelope Valley Power Plant, Coal Gasification Plant, and the Southwest Water Authority.

**Access Overview**

1. Ft. Stevenson State Park Marina bids were opened and the contract was awarded. Work hauling rock and constructing the coffer dam was begun during the Fall of 2007. The project is scheduled to be completed in FY 2009.
2. Congressional Adds of \$935,000 for improving lake access in FY08.

The following table provides the updated boat ramp status on Lake Sakakawea.

Updated 9/30/2008

Reservoir Elevation 9/15/08 – 1825.3

Location	Type	Top Elevation	Bottom Elevation	Comments	Managing Agency	Contact Person	Phone
Beaver Bay (low-water-COE)	poured concrete	1829	1808	Usable	Corps of Engineers	Linda Phelps	654-7411
Beulah Bay	poured concrete	1852.4	1799	Usable	Beulah Park Board	Bev Sullivan	873-5852
Camp of the Cross	Slide-in metal sections	1819	1806	Unusable	Lutheran Bible Camp	Larry Crowder	337-2246
Charging Eagle Bay (1st low water)	poured concrete	1829.2	1810.6	Unusable (Can be extended)	Three Affiliated Tribes	Jim Mossett	880-1203
Dakota Waters Resort (low-water)	poured concrete, planks	1853.4	1802.6	Usable	Beulah Park Board	Kelvin Heinsen	873-5800
Deepwater Creek (2nd low water)	concrete planks & metal	1820	1805.5	Usable	Corps of Engineers	Linda Phelps	654-7411
Deepwater Creek (1st low water)	poured concrete	1838.5	1809	Usable	Corps of Engineers	Linda Phelps	654-7411
Douglas Creek (low water)	poured concrete, planks	1831	1790	Usable	Corps of Engineers	Linda Phelps	654-7411
Fort Stevenson State Park (low water)	poured concrete	1821.8	1790	Usable	ND Parks & Rec	Dick Messerly	337-5576
Four Bears Park (south low water)	concrete planks	1820.7	1805.5	Usable	Three Affiliated Tribes	Alan Chase	627-4018
Garrison Creek Cabin Site	poured concrete	1857	1802	Usable	Garrison Cabin Assc.	Percy Radke	337-2247
Government Bay (low water)	slide-in metal sections	1815	1803	Usable	Corps of Engineers	Linda Phelps	654-7411
Government Bay (main ramp)	poured concrete	1857	1810	Usable	Corps of Engineers	Linda Phelps	654-7411
Hazen Bay (2nd low water)	poured concrete	1830.6	1808	Usable	Hazen Park Board	Mannie Hendrickson	748-5958
Indian Hills (2nd low water)	concrete planks	1817.6	1807	Unusable	Parks & Rec/Tribes	Kelly Sorge	743-4122
Indian Hills (3rd low water)	Will need to reinstall	1810	1795	Unusable			
McKenzie Bay (east ramp)	poured concrete	1850.9	1796	Usable	McKenzie Marine Club	Rhonda Logan	579-3366

Location	Type	Top Elevation	Bottom Elevation	Comments	Managing Agency	Contact Person	Phone
<b>New Town (proposed ramp)</b>	slide-in metal sections	1819.0	1806.0	<b>Unusable</b>	New Town Park Board	Dusty Rhodes	627-3900
<b>Parshall Bay (2nd low-water)</b>	slide-in metal sections	1817.8	1808.5	<b>Unusable</b>	Mountrail County Park Board	Clarence Weltz	627-3377
<b>Pouch Point (3rd low-water)</b>	slide-in metal sections	1819	1807	<b>Unusable</b>	Three Affiliated Tribes	Paul Danks	627-3627
<b>Pouch Point (2nd low-water)</b>	poured concrete	1834.8	1813	<b>Usable</b>	Three Affiliated Tribes	Paul Danks	627-3627
<b>Reunion Bay (2nd low water)</b>	concrete planks	1826.6	1808	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411
<b>Sakakawea State Park (main)</b>	poured concrete	1850	1800	<b>Usable</b>	ND Parks & Rec	John Tunge	487-3315
<b>Sakakawea State Park (low water)</b>	will need to finish ramp	1807	1790				
<b>Sanish Bay (Aftem) (low water)</b>	poured concrete	1830.8	1807.4	<b>Usable</b>	Aftem Lake Development	Gerald Aftem	852-2779
<b>Skunk Creek Recreation Area (main)</b>	poured concrete	1840	1806.5	<b>Usable</b>	Three Affiliated Tribes	Ken Danks	290-2841
<b>Sportsmen's Centennial Park</b>	poured concrete	1831.6	1808.5	<b>Usable</b>	McLean County	Les Korgel	462-8541
<b>Sportsmen's Centennial Park (2<sup>nd</sup> low water)</b>	slide-in metal sections	1810	1795	<b>Usable</b>			
<b>Steinke Bay</b>	poured concrete	1833.1	1813.4	<b>Usable</b>	North Dakota Game & Fish	Bob Frohlich	328-6346
<b>Van Hook (Gull Island south low-water)</b>	metal bridge deck sections	1817.8	1805	<b>Usable</b>	Mountrail County Park Board	Clarence Weltz	627-3377
<b>Van Hook (west low water ramps)</b>	poured concrete	1821.2	1808	<b>Unusable</b>	Mountrail County Park Board	Clarence Weltz	627-3377
<b>White Earth Bay (main)</b>	poured concrete	1850.9	1801	<b>Usable</b>	Mountrail County Park Board	Greg Gunderson	755-3277
<b>Wolf Creek Recreation Area (1st low water)</b>	poured concrete	1833.8	1802.5	<b>Usable</b>	Corps of Engineers	Linda Phelps	654-7411

### **Noxious Weeds Overview**

1. Project personnel are continuing efforts to combat noxious weeds.
2. \$123,000 programmed for noxious weed control in FY 2008.

### **Cultural Resources Overview**

1. Corps and Tribal personnel continue to monitor the shoreline for exposure of cultural site and opportunities for protection of sites.

### **Other Areas of Interest/Concern**

1. Garrison National Fish Hatchery – Three issues exist and are of concern to the State of North Dakota and the U.S. Fish and Wildlife Service.
  - a. Addition of a fifth boiler and necessary power for operation.
  - b. Ability to fill 40 rearing ponds.
  - c. Adequacy of the existing 20-inch water supply line from the penstocks.
2. Fact sheets for the hatchery issues exist. OP-TM is investigating a design for additional power requirements to the hatchery. An MOU may need to be set up to address future operating needs and requirements.

## Oahe, South Dakota

### Reservoir Elevation Overview

Year Ago Lake Elevation 9/15/2007 (ft. msl)	Current Lake Elevation 2/15/2008 (ft. msl)	30-Day Projected Elevation (2/29/2008) (ft. msl)	120-Day Projected Elevation (6/30/2008) (ft. msl)
1580.5	1592.6	1591.2	1589.3

### Comments:

1. Current reservoir elevation is 14.9-feet below the top of conservation pool (elevation 1607.5 ft. msl).
2. Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center. This is done solely for planning purposes.
3. Current reservoir elevation is 12.1-feet higher than the same date a year ago.
4. Record low for the reservoir is 1570.17 on August 31, 2006.

## Water Intake Overview

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Ft. Yates	Operational	1592.6	1571.2	1573	1572.2*	1575.2*	3,400	Y	SRST/BOR

### Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. A backup well has been drilled and tested.
3. New well and plumbing is installed at Fort Yates and can be used as a backup water source.

\*Intake is in riverine conditions and flow to the intake may be influenced by releases from Garrison reservoir.

### Future Plans:

1. The intake at Fort Yates remains in a river condition and may continue to have sedimentation problems as long as Oahe remains below elevation 1580. Sediment levels in the sump are measured weekly and the river channel is monitored.
2. Contingency plans are in place and have been exercised.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Wakpala	Operational	1592.6	1563	1563	1566	1569	>500	N	SRST/BOR

### Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005, a new low profile screen was installed lowering the top of the screen elevation to 1563, this elevation was confirmed in February 2007.
2. Contingency plans are being drafted to respond to an intake failure. Initial response to an intake failure at Wakpala would be hauling water from the city of Mobridge to the treatment plant to be distributed using the existing transmission lines.

## Access Overview

1. The State of South Dakota is responsible for maintaining recreational areas and access to the reservoir in South Dakota. The Oahe Project maintains the access in North Dakota. To view ramp status on Oahe in South Dakota, click on the following link:

Ramp Name	Ramp Bottom Elevation	Status
Bob's Landing	<u>1566.7</u>	Open
Bush's Landing	<u>1565.7</u>	Open
Chantier Creek	<u>1573.9</u>	Open
Cow Creek	<u>1567.5</u>	Open
Dodge Draw	1581.0	Open
East Shore	<u>1572.7</u>	Open
East Whitlock	1577.0	Open
Forest City		Open
Foster Bay		Closed
Indian Creek East	<u>1563.4</u>	Open
Indian Creek West	<u>1563.4</u>	Open
Indian Memorial	1570.0	Open
Lighthouse Point	<u>1575.0</u>	Closed
Little Bend	1565.4	Open
Minneconjou	<u>1568.7</u>	Open
Okobojo Point	1607.0	Closed
Peoria Flats	1590.0	Closed
Pike Haven	<u>1569.7</u>	Open
Rousseau		Open
Shaw Creek	<u>1567.0</u>	Closed
South Whitlock	1583	Open
Spring Creek	1562.43	Open
Sutton Bay	1573.0	Open
Swan Creek	<u>1566.2</u>	Open

Ramp Name	Ramp Bottom Elevation	Status
Thomas Bay	1590.0	Closed
Walth Bay	1564.16	Open
West Pollock	<u>1573.0</u>	Open
West Shore	<u>1567.1</u>	Open
West Whitlock	<u>1567.3</u>	Open

[Oahe Boat Ramp Status in South Dakota](#)

2. Ramps on Oahe Project in North Dakota:

Area	Status
Sibley Park	Unusable
Little Heart Bottoms	Usable
Kimball (Desert)	Usable
Graner's Bottoms	Usable
Maclean Bottoms	Usable
Hazelton	Usable
Ft. Rice	Usable
North Beaver Bay	Usable
Walker Bottoms	Usable
Jennerville (Rivery)	Usable
Fort Yates	Unusable
Cattail Bay	Marginal
Langeliers Bay	Usable
Beaver Creek	Usable
State Line	Unusable

<http://www.gf.nd.gov/boating/mo-riv-system-boatramps-status.html>

**Noxious Weeds Overview**

1. \$225,000 programmed for noxious weed control in FY 2008.

**Cultural Resources Overview**

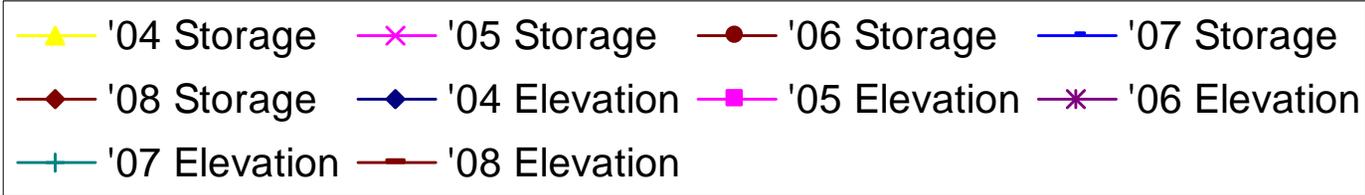
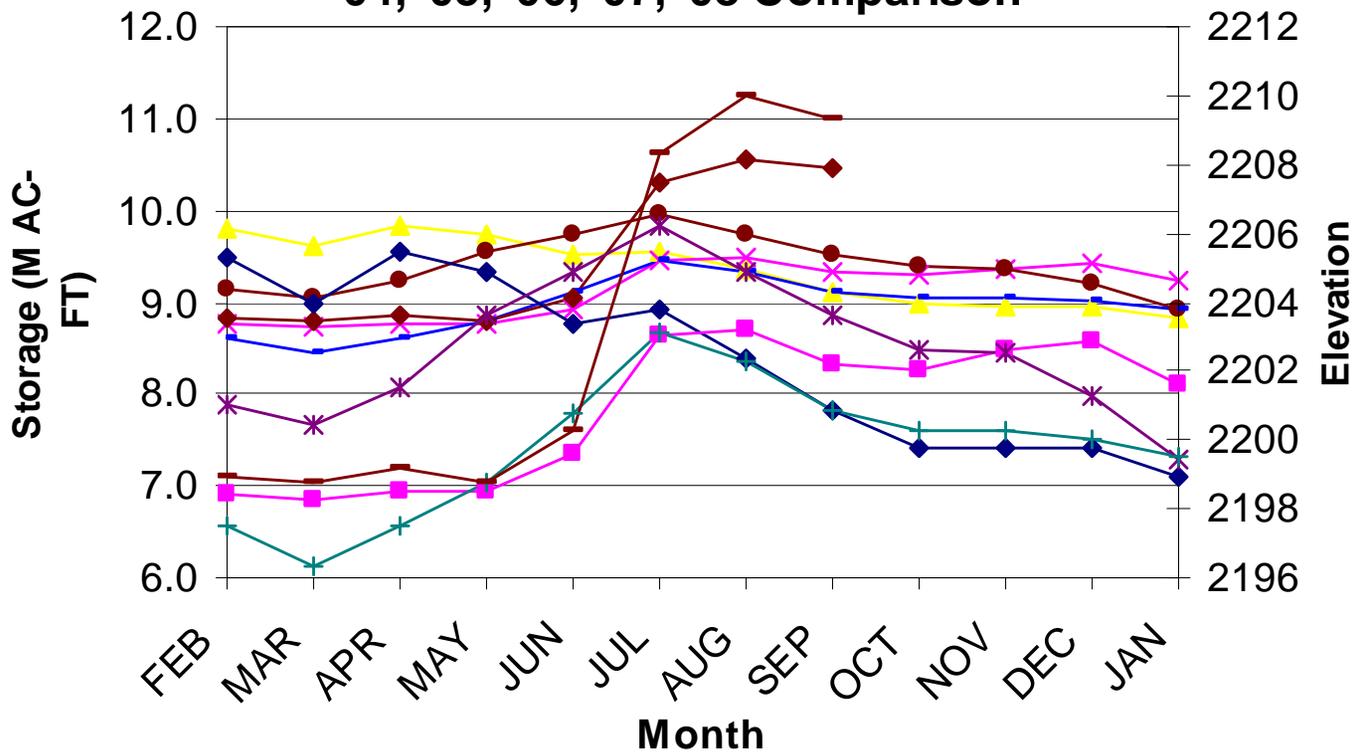
1. Corps and Tribal personnel continue to monitor the shoreline for exposure of cultural site and opportunities for protection of sites.

**Mainstem Reservoir Storage Comparison – Water Years 2004, 2005, 2006, 2007,2008**

**Fort Peck, Montana**

Water Year 2004 (FEB 2004 - JAN 2005)		Water Year 2005 (FEB 2005 - JAN 2006)		Water Year 2006 (FEB 2006 - JAN 2007)		Water Year 2007 (FEB 2007 - JAN 2008)		Water Year 2008 (FEB 2008 - JAN 2009)	
Elevation	Storage (MAC-Ft.)								
2204	9.603	2198.3	8.732	2200.4	9.048	2197.5	8.618	2198.9	8.826
2205.5	9.837	2198.6	8.773	2201.5	9.222	2196.3	8.44	2198.8	8.803
2204.9	9.74	2198.6	8.773	2203.5	9.54	2197.5	8.619	2199.2	8.865
2203.4	9.507	2199.6	8.935	2205.5	9.741	2198.8	8.804	2198.8	8.795
2203.8	9.565	2203	9.448	2206.3	9.962	2200.8	9.103	2200.3	9.042
2202.4	9.357	2203.2	9.472	2206.2	9.958	2203.1	9.465	2208.3	10.289
2200.9	9.121	2202.2	9.325	2204.9	9.75	2202.3	9.342	2210	10.568
2199.8	8.969	2202	9.286	2203.6	9.525	2200.9	9.122	2209.3	10.464
2199.8	8.963	2202.6	9.371	2202.5	9.359	2200.3	9.04		
2199.8	8.961	2202.9	9.432	2202.6	9.383	2200.3	9.034		
2198.9	8.829	2201.6	9.223	2199.4	8.913	2199.5	8.914		
2198.5	8.749	2201	9.134	2199.4	8.907	2198.9	8.828		

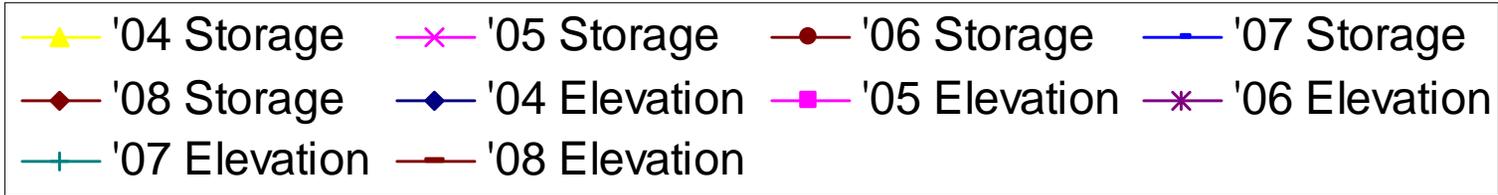
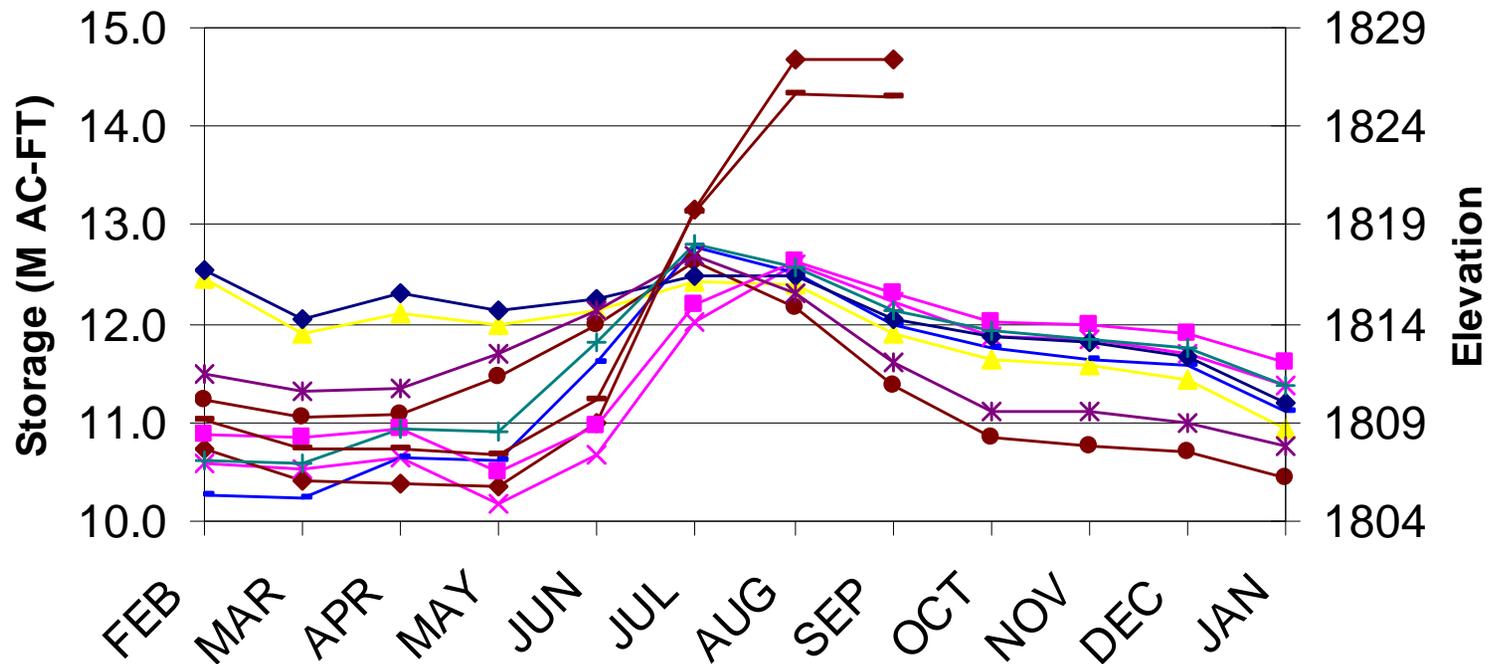
### Ft. Peck, Montana '04, '05, '06, '07, '08 Comparison



**Garrison, ND**

Water Year 2004 (FEB 2004 - JAN 2005)		Water Year 2005 (FEB 2005 - JAN 2006)		Water Year 2006 (FEB 2006 - JAN 2007)		Water Year 2007 (FEB 2007 - JAN 2008)		Water Year 2008 (FEB 2008 - JAN 2009)	
Elevation	Storage (MAC-Ft.)								
1814.3	11.891	1808.2	10.538	1811.4	11.04	1807	10.277	1809.1	10.719
1815.6	12.197	1808.7	10.632	1810.6	11.076	1806.9	10.241	1807.6	10.401
1814.7	11.989	1806.6	10.189	1810.7	11.46	1808.7	10.631	1807.6	10.388
1815.3	12.121	1808.8	10.665	1812.5	11.992	1808.6	10.612	1807.3	10.340
1816.5	12.426	1814.9	12.026	1817.3	12.628	1813.1	11.612	1810.2	10.986
1816.5	12.401	1817.2	12.591	1817.4	12.629	1818.1	12.774	1819.6	13.154
1814.3	11.914	1815.8	12.216	1815.5	12.172	1816.9	12.514	1825.6	14.677
1813.3	11.645	1814.1	11.861	1812.1	11.372	1814.6	11.999	1825.5	14.673
1813.1	11.589	1814	11.837	1809.5	10.838	1813.7	11.766		
1812.3	11.422	1813.5	11.707	1809.6	10.822	1813.2	11.636		
1810	10.936	1812	11.368	1807.8	10.441	1813.2	11.636		
1808.4	10.574	1811.4	11.222	1807.8	10.439	1812.7	11.589		

## Garrison, North Dakota '04, '05, '06, '07, '08 Comparison



**Oahe, SD**

Water Year 2004 (FEB 2004 - JAN 2005)		Water Year 2005 (FEB 2005 - JAN 2006)		Water Year 2006 (FEB 2006 - JAN 2007)		Water Year 2007 (FEB 2007 - JAN 2008)		Water Year 2008 (FEB 2008 - JAN 2009)	
Elevation	Storage (MAC-Ft.)								
1577.6	11.204	1575.2	10.715	1576.8	11.037	1572.9	10.287	1582.2	12.217
1579.2	11.504	1576.2	10.924	1577.6	11.209	1572.3	10.151	1581.8	12.108
1582.1	12.11	1574.29	10.568	1576.7	11.024	1575.8	10.839	1583.2	12.383
1581.6	12.056	1574.82	10.608	1577.4	11.15	1577.7	11.221	1582.8	12.311
1578.4	11.338	1576.47	10.98	1577	11.088	1580.5	11.826	1584.7	12.768
1576.8	11.045	1577.6	11.214	1575.8	10.881	1582.8	12.346	1592.6	14.615
1574.3	10.54	1576.38	10.958	1573.4	10.378	1581.4	12.045	1593.9	15.006
1572.1	10.112	1572.6	10.363	1570.3	9.807	1580.1	11.752	1592.4	14.630
1573.2	10.316	1572.63	10.267	1571.4	9.998	1580.9	11.927		
1574.8	10.608	1573.9	10.501	1572.6	10.214	1580.8	11.898		
1576	10.866	1575.6	10.814	1572.9	10.263	1582.2	12.148		
1575.8	10.824	1575.3	10.75	1572.8	10.26	1582.2	12.217		

## Oahe, South Dakota '04, '05, '06, '08 Comparison

