2007

U.S. Army Corps of Engineers Omaha District Monthly Drought Report, March 2007

U.S. Army Corps of Engineers

Omaha District

Monthly Drought Report

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Cover Photo: Construction crews work on the Mni Waste intake from a barge on Lake Oahe in early February 2007. Photo courtesy of the Oahe Project Office.

CURRENT CONDITIONS

The drought in the upper Midwest saw signs of improvement during the month of February. According to the current U.S. Drought Monitor, the lower basin is generally free from drought with the exception of western Nebraska and Wyoming. The majority of the upper basin, however, is still showing signs of the lingering drought. The mountain snowpack on March 1 was 85 percent of normal above Ft. Peck and 83 percent of normal between Ft. Peck and Garrison. Runoff for the month of February was 1.2 million acre-feet. Runoff above Ft. Peck, Garrison and Oahe was 106 percent, 68 percent, and 38 percent of normal, respectively. The runoff above Ft. Randall, Gavins and Sioux City was 238 percent, 186 percent, and 216 percent of normal, respectively.

There are two intakes on the Oahe reservoir that are in jeopardy of experiencing significant operational concerns or failure. The Mní Wasté and Wakpala intakes both appear poised for trouble when compared with the Lower Basic reservoir elevation simulation prepared by the Northwest Division Water Management office. However, work on the Mní Wasté intake is ongoing and is scheduled to be completed in August of 2007. Also, the Bureau of Reclamation has indicated that they have a plan to haul water to the Wakpala water treatment facility should the Wakpala intake lose its ability to supply water.

Finally, based on the system storage check on March 1, there will be no release to simulate a Spring Rise in March. Furthermore, based on the current reservoir simulations, the system storage will not be adequate to perform a Spring Rise in May under any of the simulations.

Precipitation Departures

Precipitation departures from normal during the last 72 months for the United States are shown in Figure 1. As is evident from the figure, the western portion of the upper basin still is experiencing some long-term precipitation deficit.

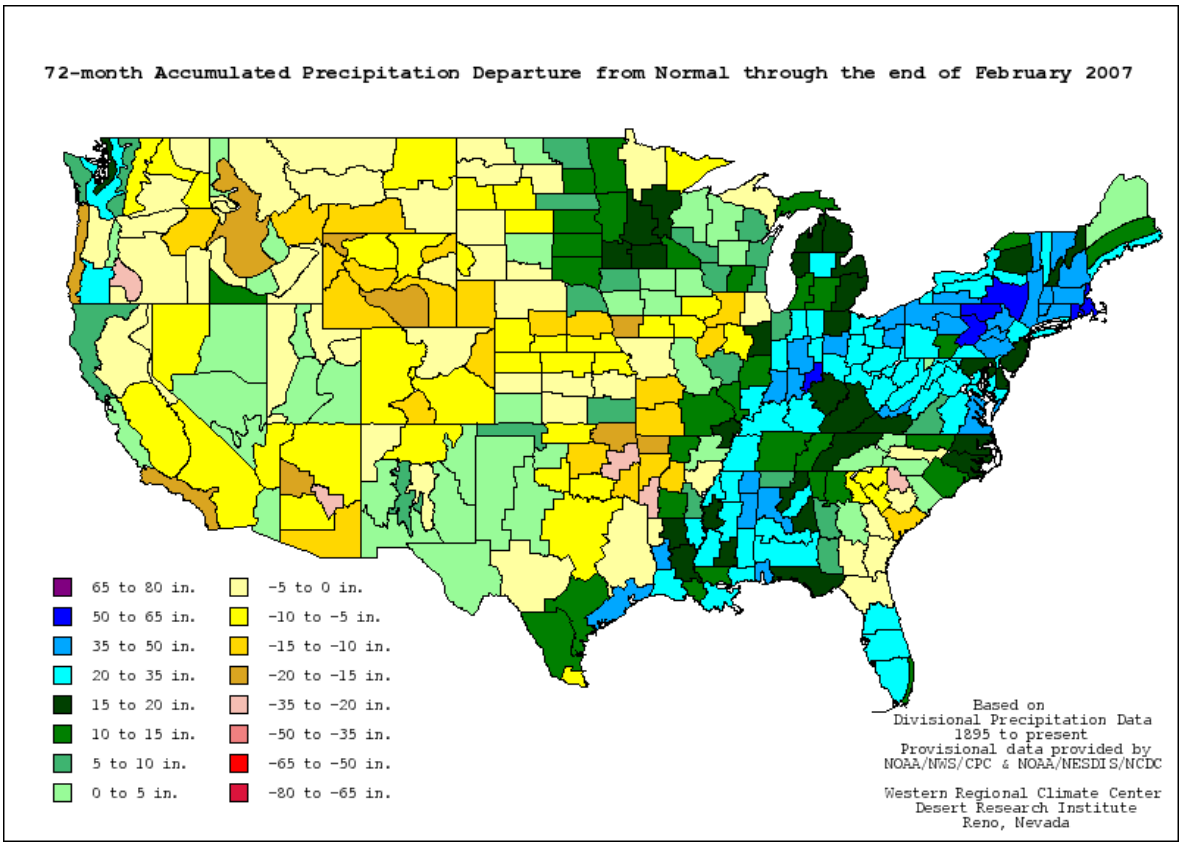


Figure 1 – 72 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep72

The 12-month precipitation accumulation in Figure 2 indicates that precipitation much of the basin has improved some in comparison to one month ago.

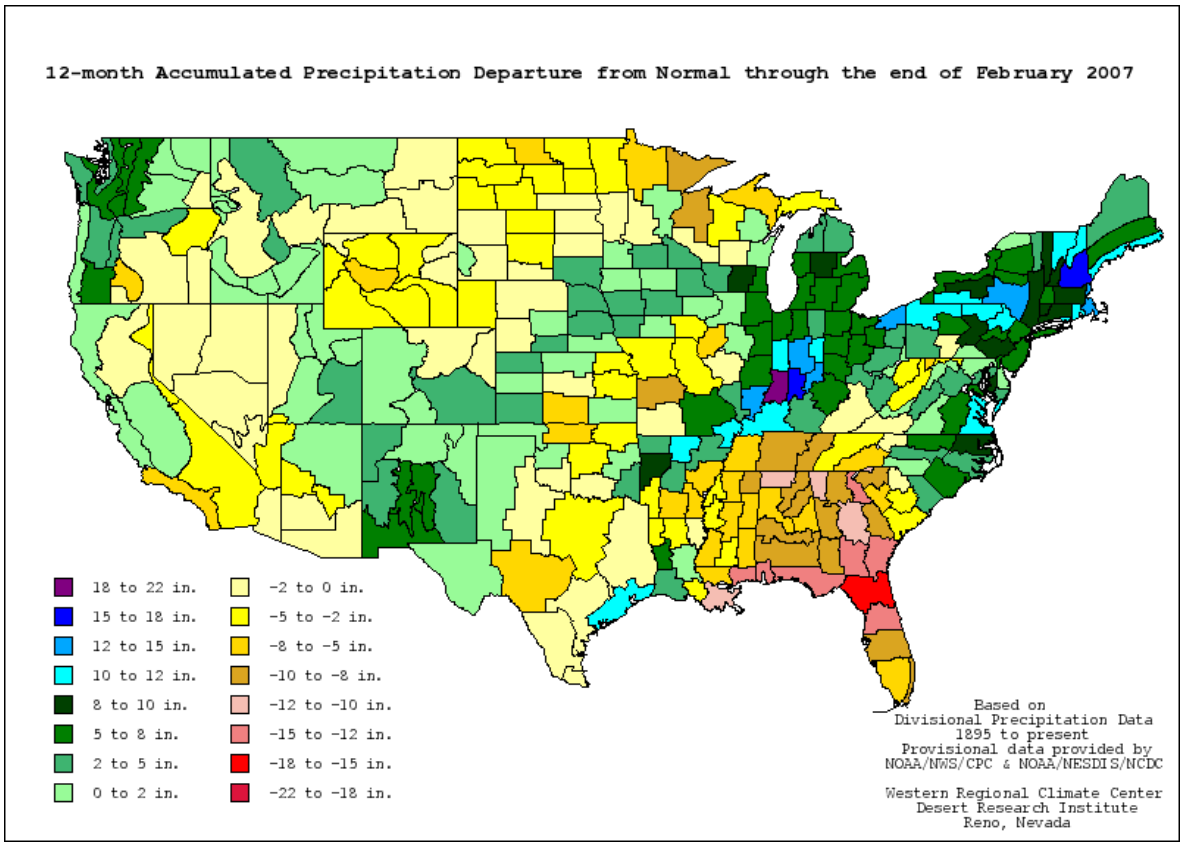


Figure 2 – 12 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep12

The three-month period (Figure 3) shows that much of the basin is receiving near normal short-term moisture or even a slight surplus.

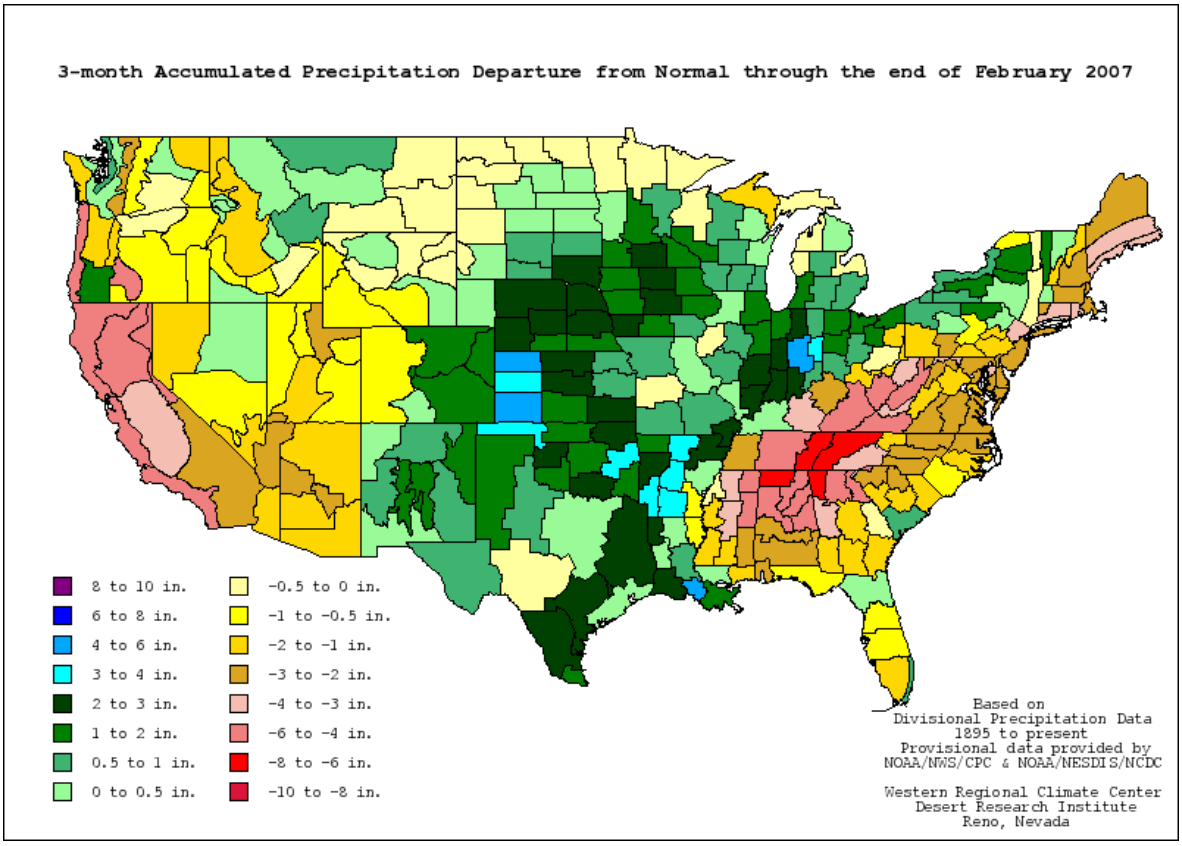


Figure 3 – 3 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep03

For the month of February, the majority of the basin received very near normal precipitation (Figure 4).

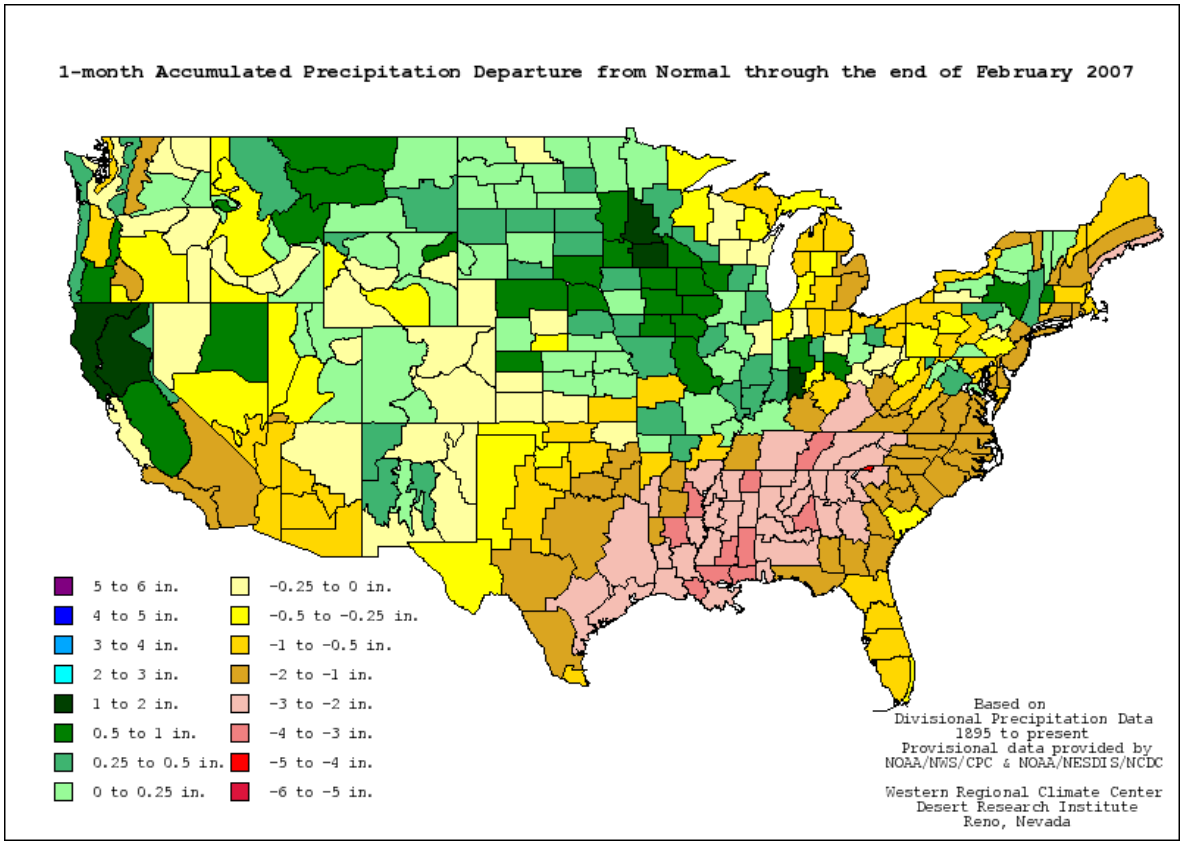


Figure 4 – 1 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep01

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 in Nebraska, South Dakota, Wyoming, and Montana, which have been suffering from drought since 2000.

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 receiving adequate short-term moisture.

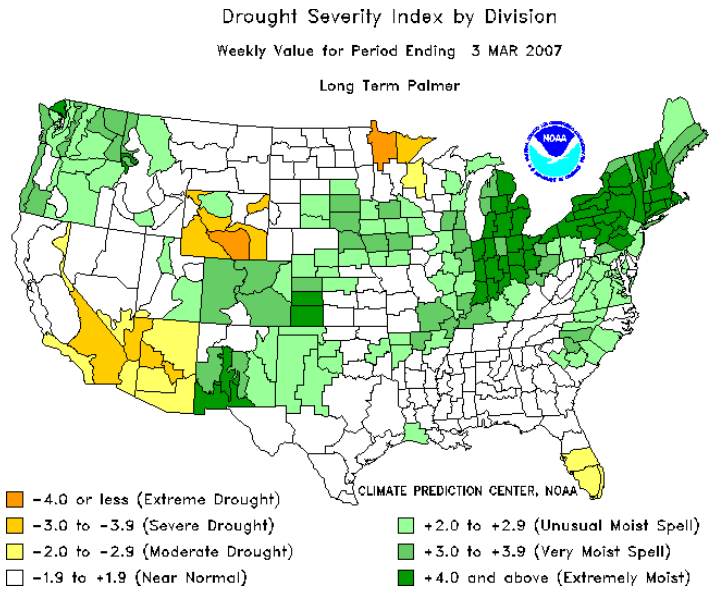


Figure 5 – Long-Term Palmer Drought Indicator Ending 3 MAR 2007
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif

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).

As is indicative of the figures below, large portions of the upper basin are still experiencing the effects of the drought.

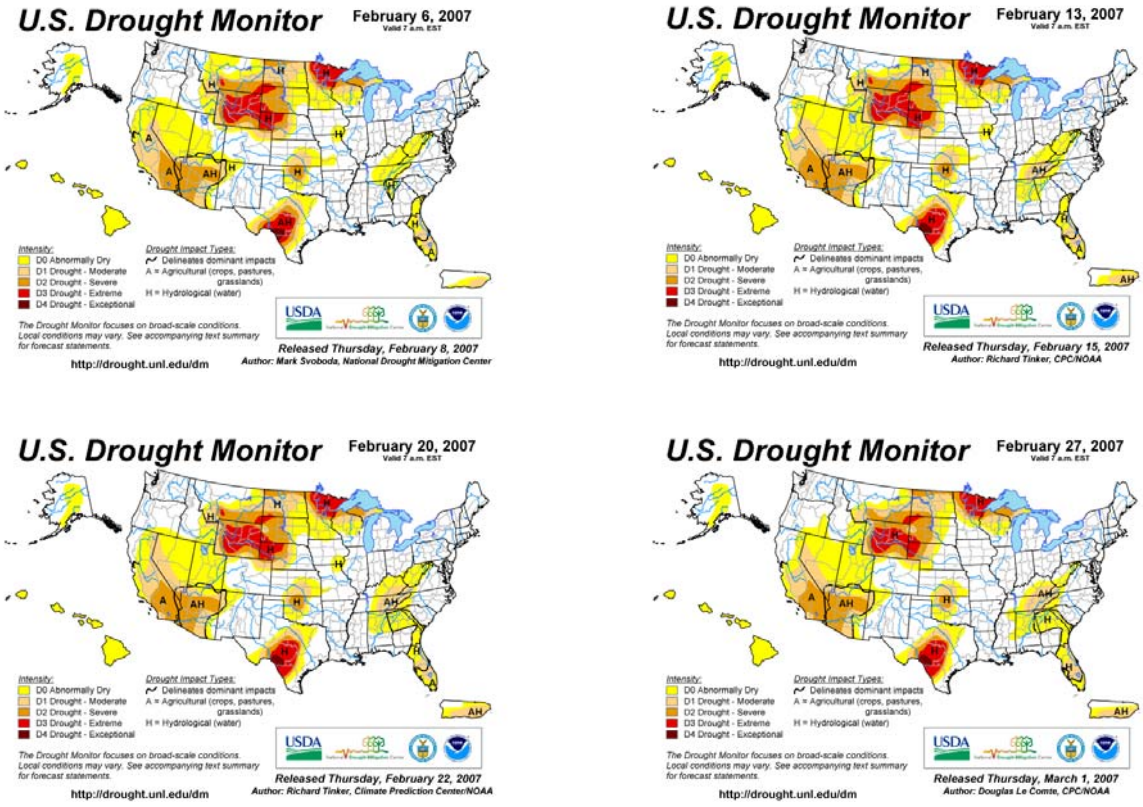


Figure 6 – U.S. Drought Monitor – February 6, 2007 through February 27, 2007
http://www.drought.unl.edu/dm/monitor.html

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. The three-month Drought Outlook (Figure 7) indicates that most of the basin will experience some improvements with respect to the drought.

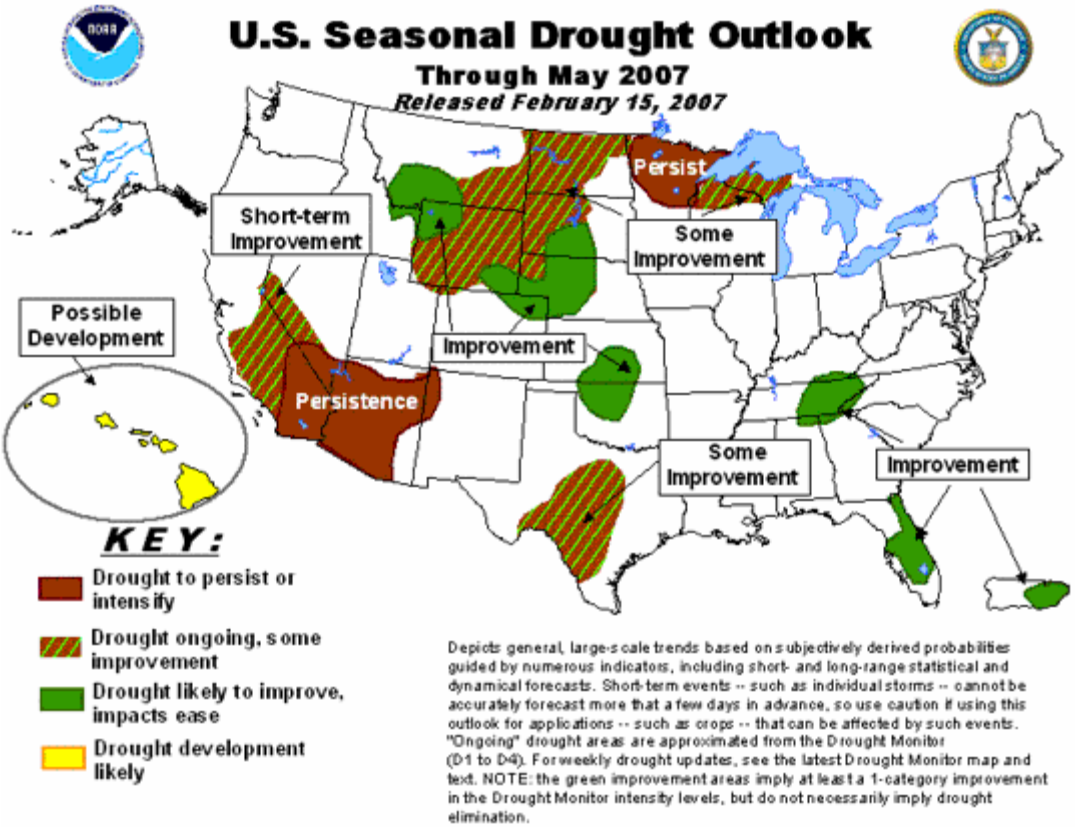


Figure 7 – Three-Month Seasonal Drought Outlook through May 2007
http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html

Weekly Precipitation Need

Figure 8 is the weekly precipitation needed to reduce the current Palmer Drought Severity Index value to -0.5 or near normal conditions.

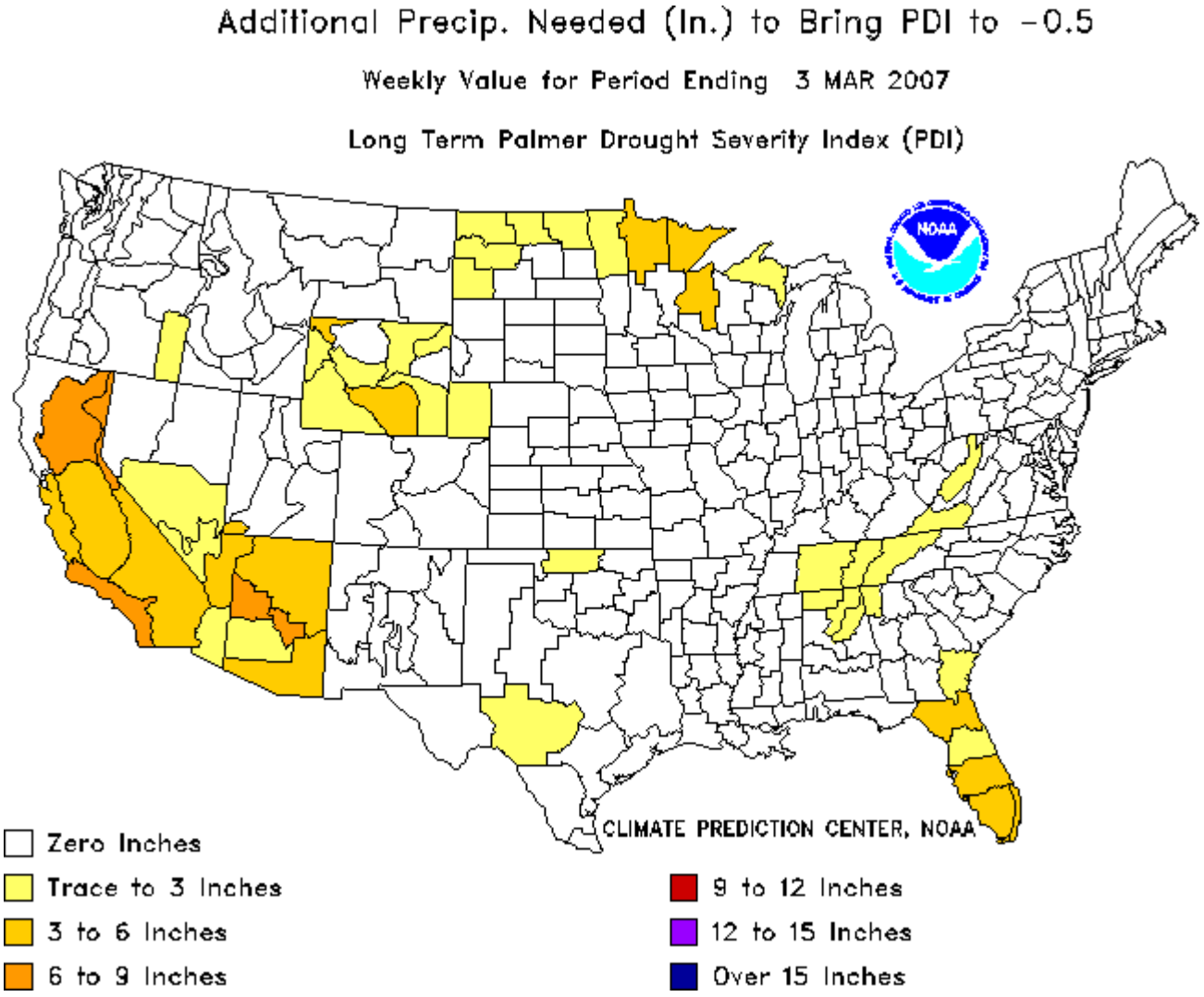


Figure 8 – Weekly Precipitation Need to Bring PDI to -0.5
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/addpcp.gif

The above figure is indicative of the recent moisture that the basin has been receiving. Most of the basin would require only a trace of moisture to reduce the PDI to a near normal condition.

The following Missouri River Region Mountain Snowpack Report for the 2006-2007 winter is taken from the U.S. Army Corps of Engineers, Northwestern Division, Missouri River Basin, Water Management Division.

Missouri River Region Mountain Snowpack Report

2006 - 2007 Mountain Snowpack Report for Missouri River Basin

Summary of Winter 2006-2007. The Missouri River runoff for 2006 was19.0 MAF, 75% of normal. This marked the seventh 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. The forecasted runoff for 2008 is 20.1 MAF, 80% of normal. As of March 1, the mountain snowpack above Fort Peck is at 85% of normal and the mountain snowpack between Fort Peck and Garrison is 83% of normal. The mountain snowpack in the North Platte River and South Platte River basins are 86% and 111% of normal, respectively. Normally, 79% of the peak accumulation has occurred by February 15.

Summary of Winter 2005-2006. Like the previous four winters, the winter of 2005 and 2006 was distinguished by the total lack of plains snowpack. The runoff in January, February, and March was 187%, 125% and 80% of normal, respectively. While the percentages seem high, the actual runoff for those three historically dry months was 4.7 MAF. The runoff in April and May was only 85% and 83% of normal, respectively. This is significant because, historically, runoff during the two months of April and May account for almost a quarter of the total yearly runoff. In 2006, the mountain snowpack was near normal levels from November 2005 to April 2006. The snowpack in the reach above Fort Peck peaked at 108% of normal. In the reach between Fort Peck and Garrison, the snowpack peak was 88% of normal. The total runoff into the basin is forcasted to be 18.2 MAF, 72% of normal.

The following tabulation is a summary of this year's mountain snowpack accumulations and the CY 2007 runoff forecast for the first of each month. The main stem reservoirs are significantly below their base of the annual flood control zones due to seven consecutive years of drought and the system stands poised to handle significant runoff if that were to occur during 2007.

CY 2007 Mountain Snowpack Accumulations in Percent of Normal Peak

Drainage Basin	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Fort Peck Dam	80%	74%	85%	%	%	%	%
Fort Peck to Garrison	77%	74%	83%	%	%	%	%
Percent of Normal Total Acc.	79%	74%	84%	%	%	%	%
South Platte River	87%	78%	86%	%	%	%	%
North Platte River	130%	113%	111%	%.	%	%	%

Forecasted CY 2007 Missouri River Basin Annual Runoff in MAF							
Location	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Sioux City, Iowa.	20.0	19.3	20.1	.	.	.	.
Percent of Normal 25.2 MAF	79%	77%	80%	%	%	%	%

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 2006 actual runoff above Sioux City was 13.2 MAF, 81% of normal. The 2006 Calendar Year runoff above Sioux City was 19.0 MAF, 75% of normal. The forecasted runoff for 2007 is 20.1 MAF, 80% of normal. As stated earlier, the Missouri River basin endured its sixth consecutive year of drought in 2006. The February 27, 2007 drought monitor map (http://drought.unl.edu/dm/monitor.html) indicates that about half of the upper Missorui River basin (above Gavins Point Dam) is currently in a moderate to extreme intensity. The other half is considered abnormally dry. Some portions of the upper basin are considered normal. The most western quarter of Nebraska as well as most of Wyoming are in extreme drought intensity conditions.

The table above labeled CY 2007 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

February was another poor month for the Upper Missouri River Basin with respect to the drought. The elevation of Ft. Peck, the upper-most reservoir, continues to decline and sets a new record low almost on a daily basis. The reservoirs behind the Garrison and Oahe dams are also approaching new record lows; they are 1.04-feet and 2.03-feet above their historic lows, respectively.

The current conditions have raised concerns on the reservoirs concerning water supply intakes, among other things. The Omaha District completed a Technical Assistance Report in December 2006 to outline the temporary assistance that may be available for the City of Parshall from the Corps of Engineers under the authority of PL 84-99. The Omaha District is also closely monitoring the condition of the Standing Rock Sioux Tribe's intake at Wakpala, South Dakota. According to the latest "Lower Basic Simulation" reservoir elevation forecast completed by the Northwest Division Water Management Office, the Oahe reservoir elevation (1563.1) will come precariously close to the top of the intake screen (1563) in late August 2007. The Corps has been in contact with the Bureau of Reclamation, who has primary responsibility for the intake. The Bureau indicated that, in the event of an outage, there is a plan in place to haul water from a nearby community to the Wakpala treatment facility for distribution through the existing infrastructure.

Finally, the issues of access and noxious weed control that the Corps has been facing for the past six years will continue to be addressed to extent possible given the authorities and funding available.

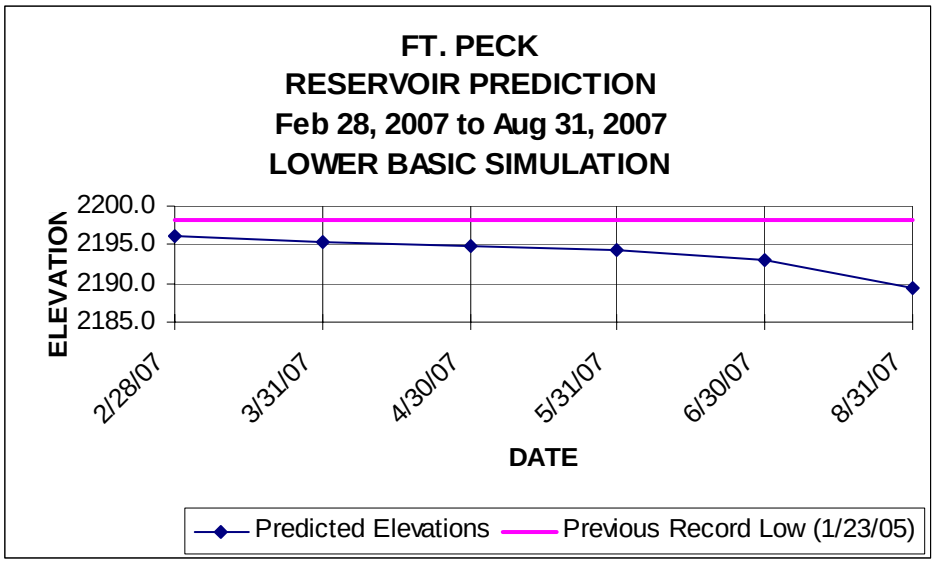
Fort Peck, Montana

Reservoir Elevation Overview

Lake Elevation 02/28/2006 (ft. msl)	Current Lake Elevation 02/28/2007 (ft. msl)	30-Day Projected Elevation (03/31/2007) (ft. msl)	180-Day Projected Elevation (08/31/2007) (ft. msl)
2200.4	2196.2	2195.4	2189.4

Comments:

1. Current reservoir elevation is 37.8-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.
3. Current elevation 4.2-feet lower than 02/28/06 (2200.4) and trending downward.
4. The reservoir is setting a new record low elevation almost daily. The previous low was 2198.25 on January 23, 2005. 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. 15 ramps usable; 3 ramps unusable. No permanent ramps operational.
2. $250,000 programmed for boat ramp extensions/maintenance in FY 2007.

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	UNUSABLE	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 2007.

Cultural Resources Overview

1. No issues to date.

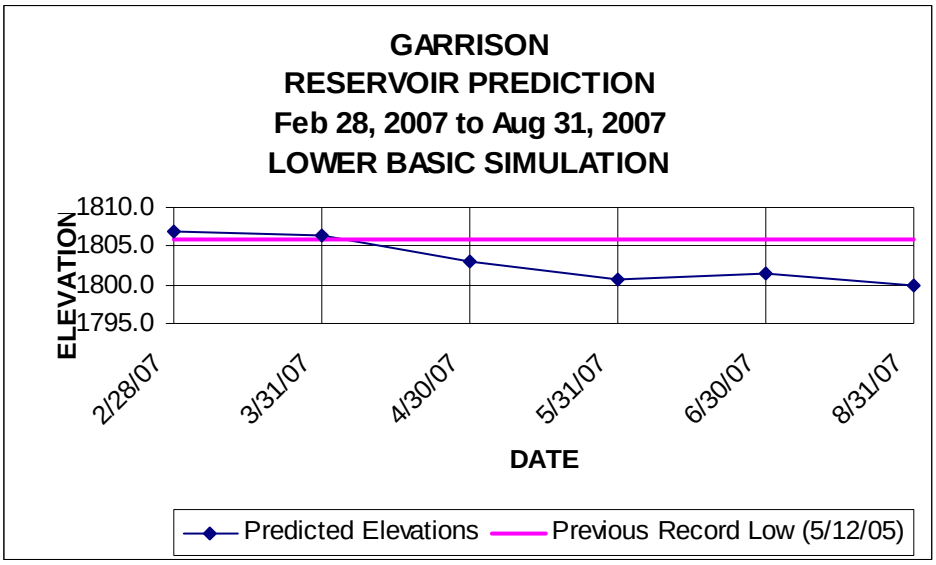
Garrison, North Dakota

Reservoir Elevation Overview

Lake Elevation 02/28/2006 (ft. msl)	Current Lake Elevation 02/28/2007 (ft. msl)	30-Day Projected Elevation (03/31/2007) (ft. msl)	180-Day Projected Elevation (08/31/2007) (ft. msl)
1810.6	1806.8	1806.3	1800.0

Comments:

1. Current reservoir elevation is 30.7-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.
3. Current reservoir elevation is 3.8-feet lower than elevation on 02/28/06 (1810.6).
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	1806.8	1787	1805	1794	1796	720	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005. The intake was extended and lowered 2-feet since the Corps' survey in 2005.
2. Operation concern level corresponds to previous record lows where erosion of newly exposed shoreline may cause problems with erosion at the intake.

Future Plans:

1. Contract awarded to Northern Improvement to install a new intake. The new intake will be installed at elevation 1763.0±, lowering the intake 24-feet below its current elevation. The project is scheduled to be completed by July of 2007.
2. Project design includes a 950-feet bored pipeline into the lake at elevation 1763. The line will be 24" polyethylene pipe. New SCADA control and pumps are included in the project design. The Title of the project is: "FBRW 2006A; East Segment Intake Replacement".
3. FBRW has the option of discontinuing existing system or keeping the system in operation as a backup.

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	1806.8	1784.4	1805	1788	1790	425	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Erosion due to low reservoir levels have caused increased sediment in the intake piping. This has increased maintenance cost to remove the sediment and increased the cost of treating the water.

Future Plans:

1. A contract to install a new intake at elevation 1741.0, 41 feet below the current screen elevation was awarded to Northern Improvement. Work was started in October 2006 and will be completed by July 2007.
2. Project design includes an 800-feet bored pipeline into the lake at elevation 1741. The line will be a 24" polyethylene pipe. New SCADA control and pumps are included in the design. The title of the project is: "FBRW 2006 C; South Segment Intake Replacement".
3. FBRW has the option of discontinuing existing system or keeping the system in operation as a backup.

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	1806.8	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	1806.8	1789.9	1800.0	1792	1794	900	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Erosion due to low reservoir levels have caused increased sediment in the intake piping. This has increased maintenance cost to remove the sediment and increased the cost of treating the water.

Future Plans:

1. A contract to install a new intake at elevation 1785.0 was awarded to Northern Improvement. Work was stated in October 2006 and will be completed by July 2007.
2. The project design includes 1,160-feet of 24-inch polyethylene pipe bored into the reservoir. The design includes SCADA control and new pumps.
3. FBRW has the option of discontinuing existing system or keeping the system in operation as a backup.

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	1806.8	1803.6*	1806.6	1797.5	1801.5	1000	N	Parshall

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. 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.
3. Require at least 3 feet of water over the intake for proper operation.
4. Water quality at current level is good following water treatment.
5. Technical Assistance Report was completed by the Corps of Engineers for Parshall in December 2006.
6. A backup well is available for use should the intake fail. The well has been used successfully in the past.

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	1806.8	1795	1800	1798	1800	200		Pick City

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. At least 5-feet of water is necessary to operate this intake. If continued usage is planned, the intake will have to be lowered.

Future Plans:

1. Rural water is available to the City, however, they have chosen to continue using their intake until the water no longer meets State Health Standards or work is required on their intake.

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	1806.8	1787.2	1805	1792	1792	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-feet of 8" poly pipe and installation of new 250-feet 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	1806.8	1779.0	1782	1776		34,000	N	SW Pipeline

Comments:

1. 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 design is completed. However, no federal funding is available for construction.
2. $250,000 programmed for boat ramp extensions/maintenance.

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

Updated 3/5/2007

Reservoir Elevation 02/28/07 – 1806.8

Location	Type	Top Elevation	Bottom Elevation	Comments	Managing Agency	Contact Person	Phone
Beaver Bay (low-water-COE)	poured concrete	1829	1808	**Unusable**	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	1805	**Unusable (Need to dredge channel)**	Beulah Park Board	Kelvin Heinsen	873-5800
Deepwater Creek (2nd low water)	concrete planks & metal	1820	1805.5	**Unusable (Can be extended to 1796)**	Corps of Engineers	Linda Phelps	654-7411
Deepwater Creek (1st low water)	poured concrete	1838.5	1809	**Unusable**	Corps of Engineers	Linda Phelps	654-7411
Douglas Creek (low water)	poured concrete, planks	1831	1801	**Usable (Can be extended to 1790)**	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	**Unusable (Can be extended)**	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 (Can be extended to 1793)**	Corps of Engineers	Linda Phelps	654-7411
Government Bay (main ramp)	poured concrete	1857	1810	**Unusable**	Corps of Engineers	Linda Phelps	654-7411
Hazen Bay (2nd low water)	poured concrete	1830.6	1808	**Unusable (Can be extended to 1790)**	Hazen Park Board	Mannie Hendrickson	748-5958
Indian Hills (2nd low water)	concrete planks	1817.6	1807	**Marginal**	Parks & Rec/Tribes	Kelly Sorge	743-4122
Indian Hills (3rd low water)	Will need to reinstall	1810	1795				
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
New Town (low water ramp)	slide-in metal sections	1819.0	1807.5	**Unusable**	New Town Park Board	Dusty Rhodes	627-3900
Parshall Bay (2nd low-water)	slide-in metal sections	1817.8	1808.5	**Unusable**	Mountrail County Park Board	Clarence Weltz	627-3377
Pouch Point (3rd low-water)	slide-in metal sections	1819	1807	**Unusable (can be extended to 1798)**	Three Affiliated Tribes	Paul Danks	627-3627
Pouch Point (2nd low-water)	poured concrete	1834.8	1813	**Unusable**	Three Affiliated Tribes	Paul Danks	627-3627
Reunion Bay (2nd low water)	concrete planks	1826.6	1808	**Unusable (can be extended to 1799)**	Corps of Engineers	Linda Phelps	654-7411
Sakakawea State Park (main)	poured concrete	1850	1800	**Usable**	ND Parks & Rec	John Tunge	487-3315
Sakakawea State Park (low water)	will need to finish ramp	1807	1790				
Sanish Bay (Aftem) (low water)	poured concrete	1830.8	1807.4	**Unusable (can be extended to 1798)**	Aftem Lake Development	Gerald Aftem	852-2779
Skunk Creek Recreation Area (main)	poured concrete	1840	1806.5	**Unusable (can be extended to 1797)**	Three Affiliated Tribes	Ken Danks	290-2841
Sportsmen's Centennial Park	poured concrete	1831.6	1808.5	**Unusable**	McLean County	Les Korgel	462-8541
Sportsmen’s Centennial Park (Proposed)	slide-in metal sections	1810	1795				
Steinke Bay	poured concrete	1833.1	1813.4	**Unusable**	North Dakota Game & Fish	Bob Frohlich	328-6346
Van Hook (Gull Island south low-water)	metal bridge deck sections	1817.8	1805	**Unusable (can be extended to 1795)**	Mountrail County Park Board	Clarence Weltz	627-3377
Van Hook (west low water ramps)	poured concrete	1821.2	1808	**Unusable**	Mountrail County Park Board	Clarence Weltz	627-3377
White Earth Bay (main)	poured concrete	1850.9	1801	**Usable**	Mountrail County Park Board	Greg Gunderson	755-3277
Wolf Creek Recreation Area (1st low water)	poured concrete	1833.8	1802.5	**Usable**	Corps of Engineers	Linda Phelps	654-7411

Noxious Weeds Overview

1. Project personnel are continuing efforts to combat noxious weeds.
2. $440,000 programmed for noxious weed control in FY 2007.

Cultural Resources Overview

1. Project personnel continue to monitor the shoreline for the protection of cultural resources.

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.
3. Garrison Cold Water Fishery – Based on data collected in the summer of 2006, the effort to block the lower portions of the trash racks on the intakes for Units 2 & 3 at the Garrison Power Plant, as well as revisions implemented to the peaking patterns, proved beneficial in prolonging the preservation of cold water habitat in the reservoir (Sakakawea). There is now a current proposal from the project to continue a similar effort throughout the summer of 2007. Additionally, it is proposed that the Corps pursue blocking the lower portion of the intake for Unit 1. The intent would be to perform an underwater inspection of the existing plywood barriers, utilizing a remote operated camera, then pulling one of the trash racks up to perform a physical inspection to ensure integrity of the plywood, j-bolts, etc. If these are still in good shape, we'd install the same type of barrier on Unit 1.
4. Due to the drought and resulting decline in the Garrison reservoir pool level, the elevation differences between Lake Audubon and Lake Sakakawea have created loading conditions on the Snake Creek embankment that, although considered in the original design, had not previously been encountered. In response to this, the Omaha District installed additional instrumentation and conducted other inspections to more fully define foundation conditions. Instrumentation installed in September 2006, along newly-exposed shoreline along the Snake Creek embankment, indicated higher than anticipated foundation pressures.

    This data indicates the potential for adverse foundation underseepage conditions to develop during large differences in pool levels between Lake Audubon and Garrison Reservoir. To reduce the potential that adverse conditions may develop at the Snake Creek embankment, while additional investigation and evaluation is conducted, the Corps of Engineers, in consultation with stakeholders, has limited

the difference in pool elevations between Lake Audubon and Garrison Reservoir to 36.5 feet. Under this restriction, the Snake Creek embankment is stable and there are no indications of distress.

To implement this pool difference restriction, a 2-foot drawdown of Lake Audubon was completed on December 1, 2006 to elevation 1843.0 feet above mean sea level (msl). To maintain the 36.5 foot maximum difference restriction, Garrison Reservoir will be held above 1806.5 until ice fishing ends on Lake Audubon. Then, based on the results of data collected from the additional instruments being installed, a future operating plan for Lake Audubon will be developed in coordination with the Bureau of Reclamation, U.S. Fish and Wildlife Service, the North Dakota Game and Fish Department, the North Dakota State Water Commission, and the Garrison Diversion Conservancy District.

In January 2007, the Corps of Engineers awarded a contract to install pressure monitoring instruments through the ice on Garrison Reservoir into the critical area near the downstream toe of the Snake Creek Embankment. These instruments will provide additional data on foundation underseepage conditions that will be used to determine if continued pool restrictions are required and/or if other mitigation measures are necessary. In February 2007, the contract was modified to include the installation of 4 pressure relief wells as a precautionary measure to reduce uplift pressures in the critical area downstream of the embankment. Work is expected to be completed in the near future.

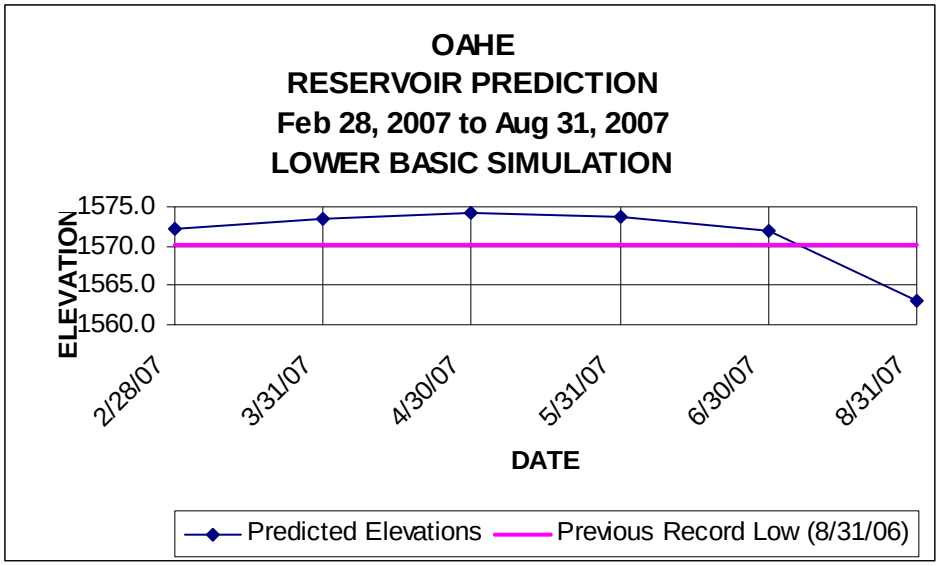
Oahe, South Dakota

Reservoir Elevation Overview

Lake Elevation 02/28/2006 (ft. msl)	Current Lake Elevation 02/28/2007 (ft. msl)	30-Day Projected Elevation (03/31/2007) (ft. msl)	180-Day Projected Elevation (08/31/2007) (ft. msl)
1577.5	1572.2	1573.6	1563.1

Comments:

1. Current reservoir elevation is 35.3-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.
3. Current reservoir elevation is 5.3-feet lower than 02/28/06 (1577.5).
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	1572.2	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	1572.2	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.
3. Recent forecasts indicate that the reservoir could reach elevation 1563.1 in August 2007. In response to this, additional options are being considered to supply water to the Wakpala Treatment Plant. At this time, alternative surface water, groundwater, and water hauling options are all being investigated. Also, the costs associated with each of these options is also being estimated.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Mní Wasté	Operational	1572.2	1555.7	1580	1561.9	1560.4	14,000	Y(DRAFT)	CRST

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Construction of a temporary intake approximately 16 miles from the existing intake is underway and is proceeding well. The construction project is a collaborative effort between the Tribe, the State, the Corps and many other entities.

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.
2. Ramps on Oahe Project in North Dakota:

AREA	Status
Sibley Park	Usable
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	Unusable
Langeliers Bay	Unusable
Beaver Creek	Unusable
State Line	Unusable

http://gf.nd.gov/fishing/mo-riv-system-boatramps-status.html.

Noxious Weeds Overview

1. $400,000 programmed for noxious weed control in FY 2007.

Cultural Resources Overview

1. Project personnel continue to monitor the shoreline for the protection of cultural resources. As the reservoir elevation falls, more opportunities are uncovered for looters, which collect artifacts and sell them on the open market.
2. $400,000 is programmed for erosion protection of one of the 1900+ cultural resource sites.

Mainstem Reservoir Information, Weekly Elevation Comparison

5 Feb 2007	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (1/1/07)	Previous Elevation (12/25/06)	Change	Current Storage (MAC-FT) (1/1/07)	Previous Storage (MAC-FT) (12/25/06)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2199.4	2199.8	-0.4	8.907	8.961	-0.054
Garrison, ND	1775 – 1850	1850 – 1854	1807.8	1807.9	-0.1	10.439	10.460	-0.021
Oahe, SD	1540 - 1617	1617 – 1620	1572.8	1573.1	-0.3	10.260	10.310	-0.050
Big Bend, SD	1415 – 1422	1422 – 1423	1420.8	1420.7	0.1	1.676	1.657	0.019
Ft. Randall, SD	1320 – 1365	1365 – 1375	1343.8	1341.1	2.7	2.688	2.506	0.182
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1207.9	1208.1	-0.2	0.408	0.412	-0.004

12 Feb 2007	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (1/8/07)	Previous Elevation (1/1/07)	Change	Current Storage (MAC-FT) (1/8/07)	Previous Storage (MAC-FT) (1/1/07)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2199.0	2199.4	-0.4	8.842	8.907	-0.065
Garrison, ND	1775 – 1850	1850 – 1854	1807.7	1807.8	-0.1	10.425	10.439	-0.014
Oahe, SD	1540 - 1617	1617 – 1620	1573.0	1572.8	0.2	10.294	10.260	0.034
Big Bend, SD	1415 – 1422	1422 – 1423	1420.8	1420.8	0.0	1.667	1.676	-0.009
Ft. Randall, SD	1320 – 1365	1365 – 1375	1345.0	1343.8	1.2	2.761	2.688	0.073
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1207.6	1207.9	-0.3	0.400	0.408	-0.008

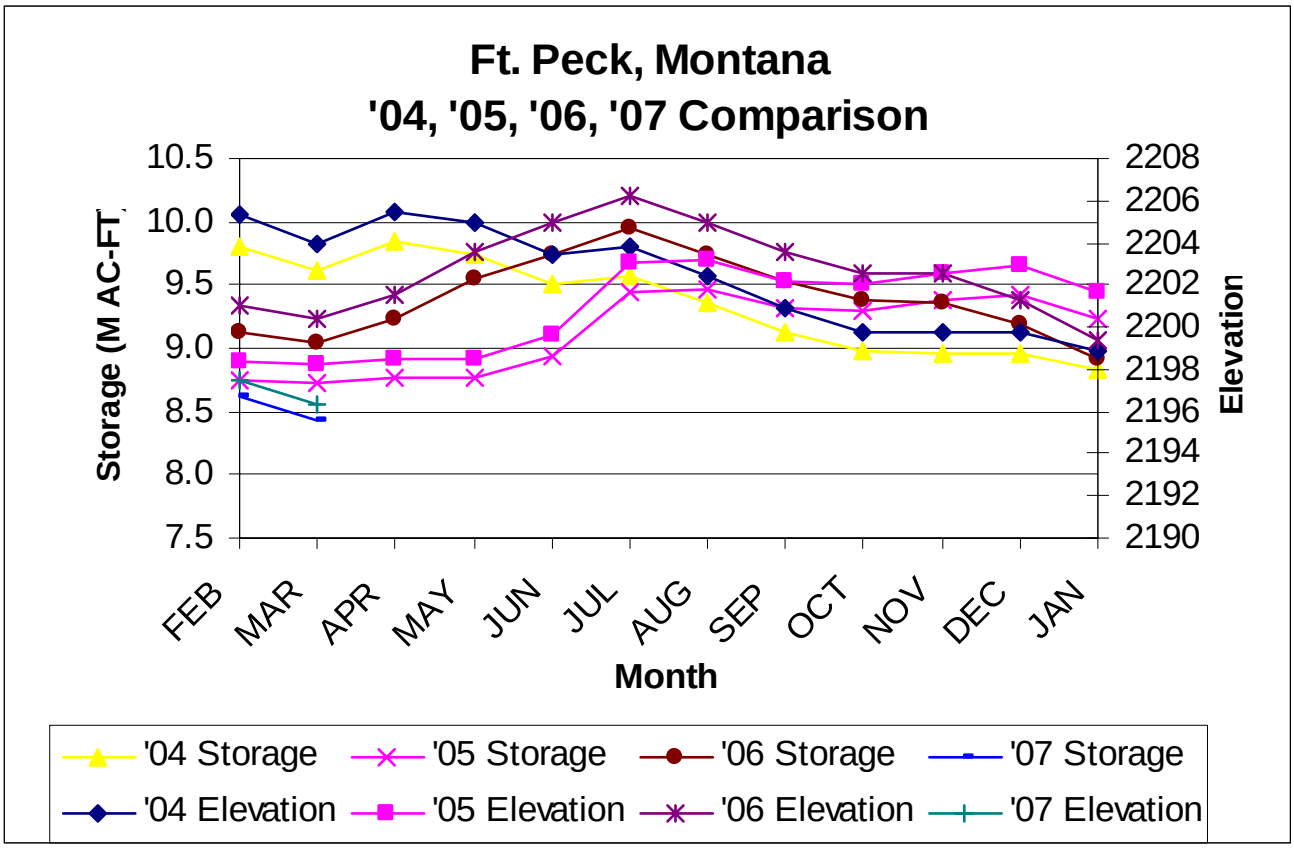
19 Feb 2007	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (1/15/07)	Previous Elevation (1/8/07)	Change	Current Storage (MAC-FT) (1/15/07)	Previous Storage (MAC-FT) (1/8/07)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2198.6	2199.0	-0.4	8.775	8.842	-0.067
Garrison, ND	1775 – 1850	1850 – 1854	1807.6	1807.7	-0.1	10.369	10.425	-0.029
Oahe, SD	1540 - 1617	1617 – 1620	1573.2	1573.0	0.2	10.343	10.294	0.049
Big Bend, SD	1415 – 1422	1422 – 1423	1420.8	1420.8	0.0	1.665	1.667	-0.002
Ft. Randall, SD	1320 – 1365	1365 – 1375	1343.9	1345.0	-1.1	2.691	2.761	-0.070
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1206.2	1207.6	-1.4	0.363	0.400	-0.037

26 Feb 2007	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (1/22/07)	Previous Elevation (1/15/07)	Change	Current Storage (MAC-FT) (1/22/07)	Previous Storage (MAC-FT) (1/15/07)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2198.1	2198.6	-0.5	8.700	8.775	-0.075
Garrison, ND	1775 – 1850	1850 – 1854	1807.2	1807.6	-0.4	10.328	10.369	-0.068
Oahe, SD	1540 - 1617	1617 – 1620	1573.0	1573.2	-0.2	10.281	10.343	-0.062
Big Bend, SD	1415 – 1422	1422 – 1423	1420.8	1420.8	0.0	1.673	1.665	0.008
Ft. Randall, SD	1320 – 1365	1365 – 1375	1344.3	1343.9	0.4	2.712	2.691	0.021
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1206.9	1206.2	0.7	0.379	0.363	0.016

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

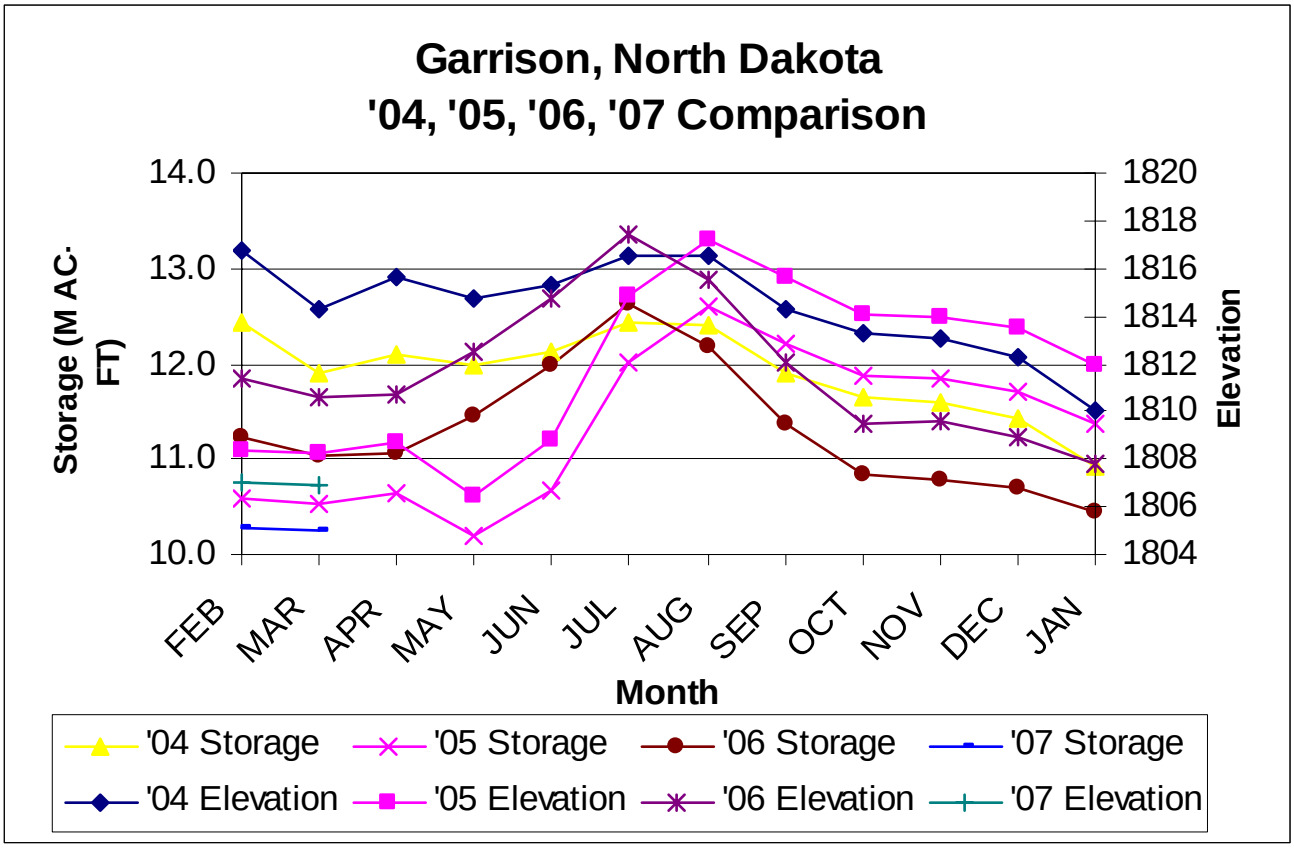
Fort Peck, Montana

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)	
Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)
2204	9.603	2198.3	8.732	2200.4	9.048	2197.5	8.618
2205.5	9.837	2198.6	8.773	2201.5	9.222	2196.3	8.440
2204.9	9.740	2198.6	8.773	2203.5	9.540		
2203.4	9.507	2199.6	8.935	2205.5	9.741		
2203.8	9.565	2203.0	9.448	2206.3	9.962		
2202.4	9.357	2203.2	9.472	2206.2	9.958		
2200.9	9.121	2202.2	9.325	2204.9	9.750		
2199.8	8.969	2202.0	9.286	2203.6	9.525		
2199.8	8.963	2202.6	9.371	2202.5	9.359		
2199.8	8.961	2202.9	9.432	2202.6	9.383		
2198.9	8.829	2201.6	9.223	2199.4	8.913		
2198.5	8.749	2201.0	9.134	2199.4	8.907		


Ft. Peck, Montana
'04, '05, '06, '07 Comparison
Storage (M AC-FT)
Elevation
10.5
10.0
9.5
9.0
8.5
8.0
7.5
2208
2206
2204
2202
2200
2198
2196
2194
2192
2190
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
JAN
Month
'04 Storage
'05 Storage
'06 Storage
'07 Storage
'04 Elevation
'05 Elevation
'06 Elevation
'07 Elevation

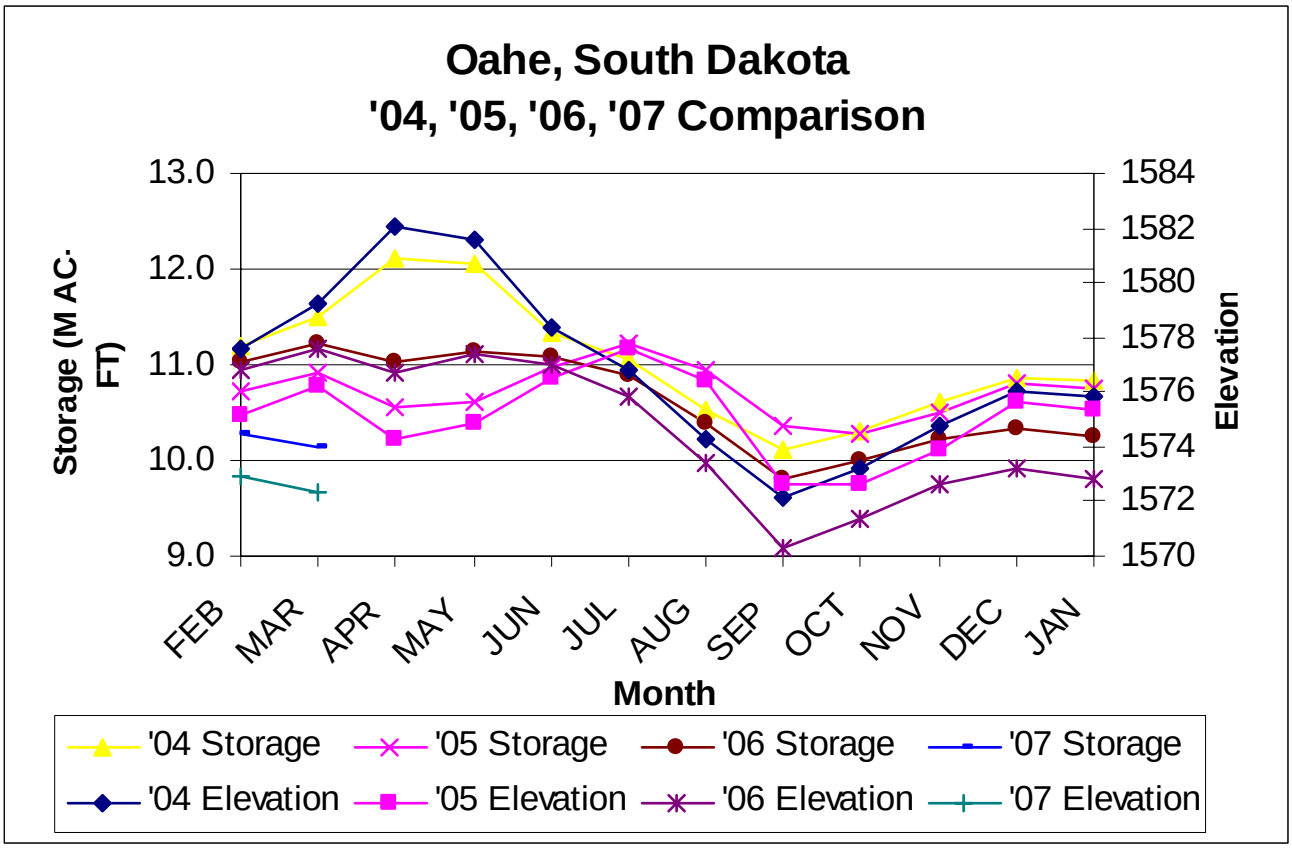
Garrison, ND

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)	
Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)
1814.3	11.891	1808.2	10.538	1811.4	11.040	1807.0	10.277
1815.6	12.197	1808.7	10.632	1810.6	11.076	1806.9	10.241
1814.7	11.989	1806.6	10.189	1810.7	11.460		
1815.3	12.121	1808.8	10.665	1812.5	11.992		
1816.5	12.426	1814.9	12.026	1817.3	12.628		
1816.5	12.401	1817.2	12.591	1817.4	12.629		
1814.3	11.914	1815.8	12.216	1815.5	12.172		
1813.3	11.645	1814.1	11.861	1812.1	11.372		
1813.1	11.589	1814.0	11.837	1809.5	10.838		
1812.3	11.422	1813.5	11.707	1809.6	10.822		
1810.0	10.936	1812.0	11.368	1807.8	10.441		
1808.4	10.574	1811.4	11.222	1807.8	10.439		


Garrison, North Dakota
'04, '05, '06, '07 Comparison
Storage (M AC-FT)
Elevation
14.0
13.0
12.0
11.0
10.0
1820
1818
1816
1814
1812
1810
1808
1806
1804
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
JAN
Month
'04 Storage
'05 Storage
'06 Storage
'07 Storage
'04 Elevation
'05 Elevation
'06 Elevation
'07 Elevation

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)	
Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)
1577.6	11.204	1575.2	10.715	1576.8	11.037	1572.9	10.287
1579.2	11.504	1576.2	10.924	1577.6	11.209	1572.3	10.151
1582.1	12.110	1574.29	10.568	1576.7	11.024		
1581.6	12.056	1574.82	10.608	1577.4	11.150		
1578.4	11.338	1576.47	10.980	1577.0	11.088		
1576.8	11.045	1577.6	11.214	1575.8	10.881		
1574.3	10.540	1576.38	10.958	1573.4	10.378		
1572.1	10.112	1572.6	10.363	1570.3	9.807		
1573.2	10.316	1572.63	10.267	1571.4	9.998		
1574.8	10.608	1573.9	10.501	1572.6	10.214		
1576	10.866	1575.6	10.814	1572.9	10.263		
1575.8	10.824	1575.3	10.75	1572.8	10.260		


Oahe, South Dakota
'04, '05, '06, '07 Comparison
Storage (M AC-FT)
13.0
12.0
11.0
10.0
9.0
1584
1582
1580
1578
1576
1574
1572
1570
Elevation
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
JAN
Month
'04 Storage
'05 Storage
'06 Storage
'07 Storage
'04 Elevation
'05 Elevation
'06 Elevation
'07 Elevation