US Army Corps
of Engineers

Northwestern Division
Missouri River Basin
Water Management Division

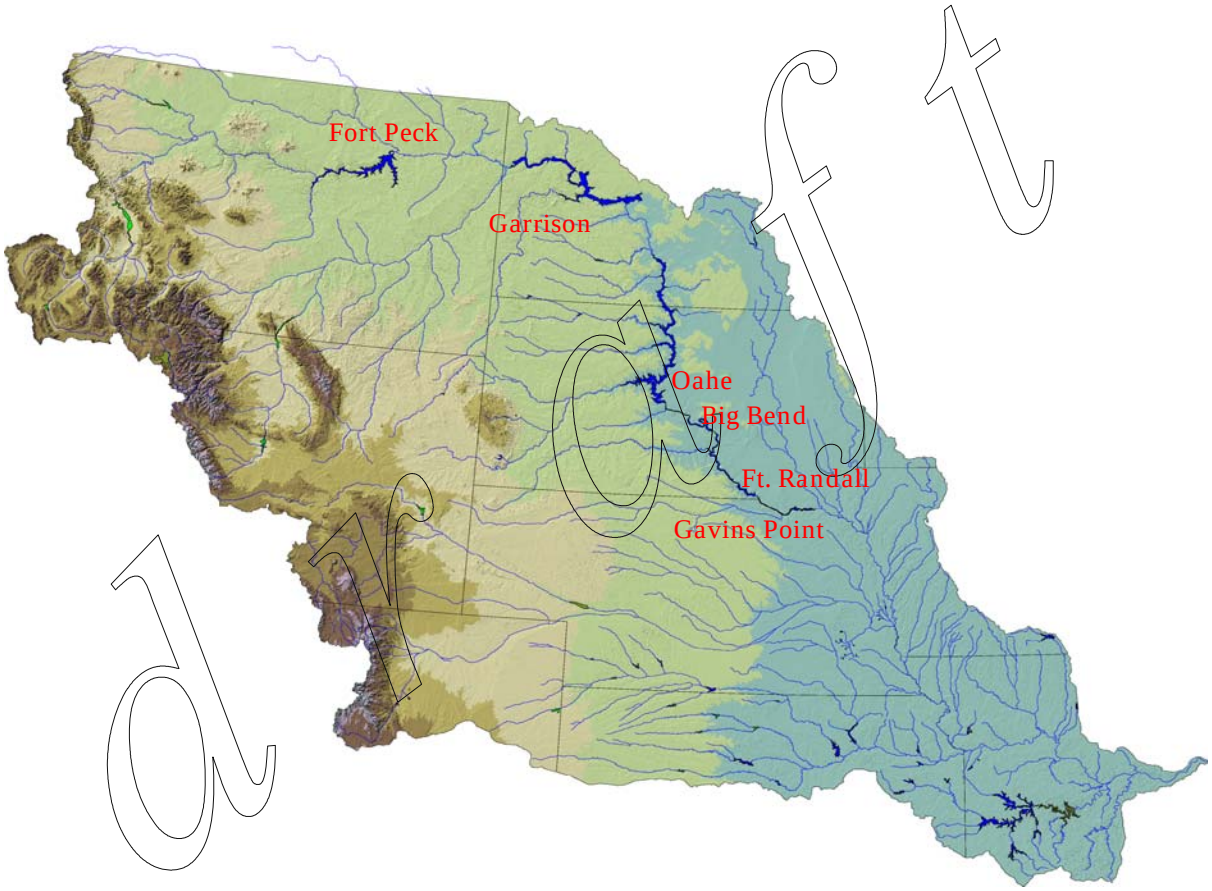
Draft

AOP

2010-2011

Missouri River Mainstem System

2010-2011 Annual Operating Plan



draft

Annual Operating Plan Process
58 Years Serving the Missouri River Basin

September 2010

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
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September 2010

This Draft Annual Operating Plan (AOP) presents pertinent information regarding water management in the Missouri River Mainstem Reservoir System (System) through December 2011. The information provided in this Draft AOP is based upon water management guidelines designed to meet the reservoir regulation objectives of the 2006 Missouri River Master Water Control Manual (Master Manual).

The guidelines included in the Master Manual are applied to computer simulations of System regulation assuming five statistically derived inflow scenarios based on an analysis of water supply records from 1898 to 2006. This approach provides a good range of water management simulations for dry, average, and wet conditions. The AOP information provides a framework for the development of detailed monthly, weekly, and daily regulation schedules for the System's six individual dams during the upcoming year to serve its Congressionally-authorized project purposes. System water management is provided by my staff at the Missouri River Basin Water Management Division, Northwestern Division, U.S. Army Corps of Engineers, located in Omaha, Nebraska.

In addition to the AOP, two separate documents are also available entitled: "System Description and Operation" and "Summary of Actual 2009 Regulation." To receive copies of those documents, you may contact the Missouri River Basin Water Management Division at 1616 Capitol Avenue, Suite 365, Omaha, Nebraska 68102-4909, phone (402) 996-3841. Both reports will also be available at the "Reports and Publications" link on our web site at: **www.nwd-mr.usace.army.mil/rcc/**

Six public meetings to discuss this Draft AOP are scheduled as follows: October 19 in Fort Peck, Montana, and Bismarck, North Dakota; October 20 in Pierre, South Dakota and South Sioux City, Nebraska; and October 21 in St. Joseph, Missouri and Jefferson City, Missouri. We ask that any comments be provided by November 15, 2010. The Final AOP is scheduled for publication in December 2010.

We thank you for your interest in the regulation of the System and look forward to your participation in this process.

John R. McMahon
Brigadier General, US Army
Division Commander

MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM

Draft Annual Operating Plan
2010 - 2011

TABLES

PLATES

ABBREVIATIONS

AOP	-	annual operating plan
ACHP	-	Advisory Council on Historic Preservation
AF	-	acre-feet
B	-	Billion
BiOp	-	Biological Opinion
BOR	-	Bureau of Reclamation
cfs	-	cubic feet per second
Corps	-	Corps of Engineers
CY	-	calendar year (January 1 to December 31)
elev	-	elevation
ESA	-	Endangered Species Act
ft	-	feet
FTT	-	Flow-to-Target
FY	-	fiscal year (October 1 to September 30)
GWh	-	gigawatt hour
KAF	-	1,000 acre-feet
kcfs	-	1,000 cubic feet per second
kW	-	kilowatt
kWh	-	kilowatt hour
MAF	-	million acre-feet
MRNRC	-	Missouri River Natural Resources Committee
msl	-	mean sea level
MW	-	megawatt
MWh	-	megawatt hour
NEPA	-	National Environmental Policy Act
plover	-	piping plover
PA	-	Programmatic Agreement
P-S MBP	-	Pick-Sloan Missouri Basin Program
RCC	-	Reservoir Control Center
RM	-	river mile
RPA	-	Reasonable and Prudent Alternative
SHPO	-	State Historic Preservation Officers
SR	-	Steady Release
System	-	Missouri River Mainstem System
tern	-	interior least tern
T&E	-	Threatened and Endangered
THPO	-	Tribal Historic Preservation Officers
USFWS	-	United States Fish and Wildlife Service
WY	-	water year
yr	-	year

DEFINITION OF TERMS

Acre-foot (AF, ac-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or 325,850 gallons.

Cubic foot per second (cfs) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute. The volume of water represented by a flow of 1 cubic foot per second for 24 hours is equivalent to 86,400 cubic feet, approximately 1.983 acre-feet, or 646,272 gallons.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by drainage system, which consists of a surface stream or body of impounded surface water together with all tributary surface streams and bodies of impounded water.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Runoff in inches shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM

Draft Annual Operating Plan
2010 – 2011

I. FOREWORD

This Draft Annual Operating Plan (AOP) presents pertinent information and plans for regulating the Missouri River Mainstem Reservoir System (System) through December 2011 under widely varying water supply conditions. It provides a framework for the development of detailed monthly, weekly, and daily regulation schedules for the System's six individual dams during the coming year to serve the Congressionally authorized project purposes; to fulfill the Corps' responsibilities to Native American Tribes; and to comply with environmental laws, including the Endangered Species Act (ESA). Regulation is directed by the Missouri River Basin Water Management Division, Northwestern Division, U. S. Army Corps of Engineers (Corps) located in Omaha, Nebraska. A map of the Missouri River basin is shown on ***Plate 1*** and the summary of engineering data for the six individual mainstem projects and System is shown on ***Plate 2***.

This plan may require adjustments such as when substantial departures from expected runoff occur; to meet emergencies including short-term intrasystem adjustments to protect human health and safety during periods of extended drought to maintain minimum river or reservoir levels to keep intakes operational, and adjustments in reservoir releases or reservoir levels to prevent loss of historic and cultural properties; or to meet the provisions of applicable laws, including the ESA. These adjustments would be made to the extent possible after evaluating impacts to all System uses, would generally be short term in nature and would continue only until the issue is resolved.

This document provides the plan for future regulation of the System. Other documents that may be of interest include the "System Description and Regulation" report dated November 2007 or the "Summary of Actual Calendar Year 2009 Regulation," dated September 2010. Both reports are currently available at the "Reports and Publications" link on our web site at: **www.nwd-mr.usace.army.mil/rcc,** or you may contact the Missouri River Basin Water Management Division at 1616 Capitol Avenue, Suite 365, Omaha, Nebraska 68102-4909, phone (402) 996-3841 for copies. The "Summary of Actual Calendar Year 2010 Regulation" will be available at the same site in April of 2011.

II. PURPOSE AND SCOPE

Beginning in 1953, projected System reservoir regulation for the year ahead was developed annually as a basis for advance coordination with the various interested Federal, State, and local agencies and private citizens. Also beginning in 1953, a coordinating committee was organized to make recommendations on each upcoming year's System regulation. The Coordinating Committee on Missouri River Mainstem Reservoir Operations held meetings semiannually until 1981 and provided recommendations to the Corps. In 1982, the Committee was dissolved because it did not conform to the provisions of the Federal Advisory Committee Act. Since 1982, to continue providing a forum for public participation, one or more open public meetings are held semiannually in the spring and fall. The fall public meeting is conducted to take public input on the Draft AOP, which typically is published in mid-September each year. The spring meetings are conducted to update the public on the current hydrologic conditions and projected System regulation for the remainder of the year as it relates to implementing the Final AOP.

Under the terms of Stipulation 18 of the March 2004 "Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System for Compliance with the National Historic Preservation Act, as amended" (PA) the Corps has agreed to consult/meet with the affected Tribes and Tribal Historic Preservation Officers (THPO's), State Historic Preservation Officers (SHPO's), the Advisory Council on Historic Preservation (ACHP) and other parties on the Draft AOP. The purpose of this consultation/meeting is to determine whether operational changes are likely to cause changes to the nature, location or severity of adverse effects to historic properties or to the types of historic properties affected and whether amendments to the Corps Cultural Resources Management Plans and Five-Year Plan are warranted in order to better address such effects to historic properties. During 2006 the Corps worked with the affected Tribes to establish processes for consultation on AOP's under 36 CFR Part 800, the PA, and Executive Order 13175. The process consists of a series of informational meetings with the Tribes and/or government-to-government consultation with Tribes, as requested. A letter, dated September 10, 2010, was sent to the Tribes offering consultation on the 2010-2011 AOP. Meeting times and locations of the six fall public meetings were also provided. Separate meetings will be scheduled for all Tribes requesting government-to-government consultation. All tribes, whether signatory to the PA or not, may request government-to-government consultation on this and all future AOP's. In addition, the Tribes have reserved water rights to the Missouri River and its major tributaries. In no way does this AOP attempt to define, regulate or quantify water rights or any other rights that the Tribes are entitled to by law or treaty.

The 2010 spring public meetings were held at the following locations and dates: April 13 at South Sioux City, NE, and Fort Peck, Montana; April 14 at Bismarck, North Dakota and Mobridge, South Dakota; April 15 at Jefferson City, Missouri and St. Joseph,

Missouri. The attendees were given an update regarding the outlook for 2010 runoff and projected System regulation for the remainder of 2010. Six fall public meetings on the Draft 2010-2011 AOP are planned: October 19 in Fort Peck, Montana, and Bismarck, North Dakota; October 20 in Pierre, South Dakota and South Sioux City, Nebraska; and October 21 in St. Joseph, Missouri and Jefferson City, Missouri.

In the spring of 2011, public meetings will be held to discuss the basin's hydrologic conditions and the effects those conditions are expected to have on the implementation of the Final 2010-2011 AOP.

III. MAINSTEM MASTER MANUAL AND ESA CONSULTATIONS

The Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual) presents the water control plan and operational objectives for the integrated regulation of the System. First published in 1960 and subsequently revised during the 1970's, the Master Manual was revised in March 2004 to include more stringent drought conservation measures. The 2003 Amendment to the 2000 Biological Opinion (2003 Amended BiOp) presented the USFWS' opinion that the regulation of the System would jeopardize the continued existence of the endangered pallid sturgeon. The USFWS provided a Reasonable and Prudent Alternative (RPA) to avoid jeopardy to the pallid sturgeon that included a provision for the Corps to develop a plan to implement a bimodal 'spring pulse' from Gavins Point Dam. Working with the USFWS, Tribes, states and basin stakeholders, the Corps developed technical criteria for the bimodal spring pulse releases. In March 2006 the Master Manual was revised to include technical criteria for a spring pulse.

Current regulation of the System in accordance with the Master Manual to serve authorized project purposes is dependent on successful implementation of the 2003 Amended BiOp. Implementation of the RPA elements is accomplished through the Missouri River Recovery Program (MRRP) which includes the following elements: habitat construction including emergent sandbar habitat and shallow water habitat, flow modifications, propagation/hatchery support, research, monitoring and evaluation, and adaptive management. This AOP identifies flow modifications at Garrison, Fort Randall and Gavins Point for the benefit of the interior least tern and the piping plover, and the Gavins Point spring pulse for the benefit of the endangered pallid sturgeon. In addition, the ongoing construction and rehabilitation of emergent sandbar habitat construction is key to the continued operational flexibility of the System, especially in light of the return to more normal reservoirs levels and releases which has greatly reduced the amount of available emergent sandbar habitat for the terns and plovers. In the fall of 2010 and spring of 2011 up to 100 acres of emergent sandbar habitat may be constructed in the headwaters of the Gavins Point reservoir and in the river reach below the dam. The habitat will be constructed by traditional means

as well as through the use of sand-filled geotextile tubes below Gavins Point Dam. The tubes are used to slow down the water causing sand to deposit and form sandbars downstream of the structures. This habitat construction in combination with other ongoing efforts to minimize incidental take, including but not limited to improving public awareness, better predation control plans, and not meeting flow targets in reaches without commercial navigation, is expected to result in a greater likelihood of bird productivity. Additional information on other efforts undertaken through the Missouri River Recovery Program to meet the requirements of the 2003 Amended BiOp can be found in the Annual Report on the Biological Opinion which can be found on the "MRRP Documents" page of the Recovery Program website at: www.moriverrecovery.org.

IV. FUTURE RUNOFF: AUGUST 2010 - DECEMBER 2011

Runoff into the six System reservoirs is typically low and relatively stable during the August-to-February period. The August 1 calendar year runoff forecast is used as input to the Basic reservoir regulation simulation in the AOP studies for the period August 2010 to February 2011. The August 1 runoff forecast for 2010 was 37.9 million acre-feet (MAF). Two other runoff scenarios based on the August 1 runoff forecast were developed for the same period. These are the Upper Basic and Lower Basic simulations, which are based on 120 percent and 80 percent of the August 1 runoff forecast, respectively.

Simulations for the March 1, 2011 to February 29, 2012 time period use five statistically derived inflow scenarios based on an analysis of historic water supply. The report detailing the development of these inflow scenarios was updated in July 2008 to include 9 additional years of inflow data that now extends from 1898 to 2006. Using statistically derived inflow scenarios provides a good range of simulation for dry, average, and wet conditions, and eliminates the need to forecast future precipitation, which is very difficult.

The five statistically derived inflows are identified as the Upper Decile, Upper Quartile, Median, Lower Quartile and Lower Decile runoff conditions. Upper Decile runoff (34.3 MAF) has a 1 in 10 chance of being exceeded, Upper Quartile (30.3 MAF) has a 1 in 4 chance of being exceeded, and Median (24.4 MAF) has a 1 in 2 chance of being exceeded. Lower Quartile runoff (19.3 MAF) has a 1 in 4 chance of the occurrence of less runoff, and Lower Decile (16.2 MAF) has a 1 in 10 chance of the occurrence of less runoff. There is still a 20 percent chance that a runoff condition may occur that has not been simulated; i.e., a 10 percent chance runoff could be lower than Lower Decile and a 10 percent chance runoff could be greater than Upper Decile.

The Upper Decile and Upper Quartile simulations extend from the end of the Upper Basic simulation through February 2012. Likewise, the Median simulation extends from the end of the Basic simulation, and the Lower Quartile and Lower Decile simulations extend from the end of the Lower Basic simulation through February 2012.

The estimated natural flow at Sioux City, the corresponding post-1949 water use effects, and the net flow available above Sioux City are shown in ***Table I,*** where water supply conditions are quantified for the period August 2010 through February 2012. The natural water supply for calendar year (CY) 2009 totaled 33.5 MAF.

TABLE I
NATURAL AND NET RUNOFF AT SIOUX CITY
(Volumes in 1,000 Acre-Feet)

	Natural 1/	Post-1949 Depletions	Net 2/
August 2010 through February 2011 (Basic Runoff Scenario)			
Basic	9,100	600	9,700
120% Basic	10,900	600	11,500
80% Basic	7,300	500	7,800
Runoff Year March 2011 through February 2012 (Statistical Analysis of Past Records)			
Upper Decile	34,300	-2,300	32,000
Upper Quartile	30,300	-2,300	28,000
Median	24,400	-2,500	21,900
Lower Quartile	19,300	-2,500	16,800
Lower Decile	16,200	-2,400	13,800

1/ The word "Natural" is used to designate runoff adjusted to the 1949 level of basin development, except that regulation and evaporation effects of the Fort Peck reservoir have also been eliminated during its period of regulation prior to 1949.

2/ The word "Net" represents the total runoff after deduction of the post-1949 irrigation, upstream storage, and other use effects.

V. ANNUAL OPERATING PLAN FOR 2010-2011

A. General. The anticipated regulation described in this AOP is designed to meet the regulation objectives presented in the current Master Manual. While some aspects of System and individual project regulation are clearly defined by technical criteria in the Master Manual, for example navigation service level and season length, others such as minimum releases for irrigation and water supply in the reaches between the reservoirs are based on regulation experience and will be adjusted as needed to respond to changing conditions. Consideration has been given to all of the authorized project purposes, to historic and cultural resources and to the needs of threatened and endangered (T&E) species. The "System Description and Regulation" report provides a concise summary of the primary aspects of System regulation and should be referred to for further information. For ease of use, a summary of the frequently used technical criteria included in the Master Manual is presented on ***Plate 3.***

The plan relies on a wealth of regulation experience. Reservoir regulation experience available for preparation of the 2010-2011 AOP includes 13 years of regulation at Fort Peck (1940) as the sole Mainstem project, plus 57 years of System experience as Fort Randall (1953), Garrison (1955), Gavins Point (1955), Oahe (1962), and Big Bend (1964) were brought progressively into System regulation. This regulation experience includes lessons learned during two major droughts of six and eight years (1987-1992 and 2000–2007) that have occurred since the System filled in 1967 and the high runoff period from 1993 – 1999 during which five of the seven years experienced runoff greater than Upper Quartile including the record runoff of 49.0 MAF in 1997. In addition to the long period of actual System reservoir regulation experience, many background regulation studies for the completed System are available for reference.

B. 2010-2011 AOP Simulations. AOP simulations for the five runoff scenarios are shown in the final section of this AOP as studies 4 through 8. The return of System storage to normal levels during 2010 allowed the System to provide improved service to all authorized purposes. In summary, the studies provide the following: full service flow support throughout a full length navigation season under all runoff scenarios; lower than normal winter releases for Lower Quartile and Lower Decile runoff, normal winter releases under Median runoff, and above normal winter releases for Upper Decile and Upper Quartile runoff; March and May spring pulses from Gavins Point dam; a steady release-flow to target regulation during the tern and plover nesting season for Median and below runoff and nearly steady releases for Upper Quartile and Upper Decile runoff though flood water evacuation is required; emphasis on Garrison for a steady to rising reservoir level during the forage fish spawn; and reservoir releases and pool levels sufficient to keep all intakes operational under all runoff scenarios. While likely not the case for the 2010-2011 runoff year, water conservation measures will be implemented if runoff conditions indicate that it would be appropriate including

cycling releases from Gavins Point during the early part of the nesting season, only supporting flow targets in reaches being used by commercial navigation, reducing flows to minimum levels to support various authorized purposes, and utilization of the Kansas River projects authorized for Missouri River navigation flow support. Additional details about the studies are provided in the following paragraphs. Results of the simulations are shown in ***Plate 4*** and ***Plate 5*** for the System storage and the Fort Peck, Garrison and Oahe pool elevations.

Under all runoff scenarios modeled for the AOP, the March 1 and May 1 System storage is above the Gavins Point spring pulse precludes of 40.0 MAF. The peak magnitude of the March pulse is 5,000 cfs over navigation flows. Based on the technical criteria, the peak magnitude of the May pulse would be 20,000 cfs under the Upper Decile and Upper Quartile runoff scenarios, 16,000 for Median runoff and 12,000 cfs for Lower Quartile and Lower Decile runoff. The actual peak magnitude of the May pulse will be determined based on the actual System storage and the May 1 runoff forecast. The Master Manual technical criteria include safeguards to minimize the risk of flooding associated with the spring pulses. Both spring pulses may be reduced or eliminated due to the downstream flow limits, shown on ***Plate 3***, which are well below the channel capacity of the Missouri River. These flow limits are identical to the most restrictive flood control constraints presented in the previous Master Manual and provide a similar level of flood protection. An additional safeguard is the incorporation of observed and anticipated precipitation into the daily river forecast to provide greater assurance that flows will remain below the downstream flow limits during the duration of the spring pulses. For simulation purposes, the magnitude of the May pulse for Median and above runoff was limited to 10,000 cfs due to the downstream flow limits. Water for the spring pulses will be withdrawn from one or more of the upper three reservoirs and/or Fort Randall depending on releases required to maintain steady to rising pools during the forage fish spawn and other considerations including impacts to historical and cultural sites and the need to evacuate stored flood waters. Prior to implementing the May pulse, the Corps will coordinate with the affected stakeholders. The Corps will also work closely with the USFWS to insure the planned implementation of the spring pulses meet the intent of the 2003 Amended BiOp.

The reach of the Missouri River downstream of the Platte River experiences a more normalized hydrograph than the reach between Gavins Point and the Platte. As a result, the USFWS has indicated that reducing the spring pulses downstream of the Platte River through reductions in Corps tributary reservoir projects still meets the intent of the 2003 Amended BiOp. If the releases at these downstream Corps tributary reservoirs can be reduced without undue increased risk to other areas, it may be possible to reduce the potential negative impacts on the lower Missouri River. This type of regulation was implemented in conjunction with the March 2008 and May 2009 spring pulses. However, this type of regulation is only feasible when releases are scheduled from certain downstream Corps' tributary reservoirs, most likely due to

recently captured runoff. Because of its higher magnitude, it is unlikely that the May pulse can be completely eliminated

The March 15 and July 1 System storage checks were used to determine the level of flow support for navigation and other downstream purposes as well as the navigation season length in 2011. Full service navigation flows or more are provided all runoff conditions throughout the navigation season. Application of the July 1 System storage check (see ***Plate 3***) indicate that a full length navigation season would be provided for all five runoff conditions. Upper Quartile and Upper Decile simulations reach the desired 56.8 MAF System storage level on March 1, 2012.

For modeling purposes in this AOP, the Steady Release – Flow to Target (SR-FTT) regulation scenario for Gavins Point dam is shown during the 2011 tern and plover nesting season for Median and lower runoff conditions. For these simulations, the monthly average May release used in the simulations was determined by adding the May spring pulse hydrograph to the long-term average release (see ***Plate 3***) based on the service level, followed by cycling between the May and July table values for the remainder of the month to reflect an every third day peaking cycle from Gavins Point. The modeled June release was set equal to long-term average release for July (see ***Plate 3***) based on the service level for the first half of the navigation season. The long-term average releases (see ***Plate 3***) were used for July and August to indicate flowing to target. The Upper Quartile and Upper Decile runoff simulations follow the Master Manual, with much above normal runoff requiring release increases early in the year to evacuate floodwater from the reservoirs. Although these modeled Gavins Point releases represent our best estimate of required releases during 2011, actual releases will be based on hydrologic conditions and the availability of habitat at that time. To the extent reasonably possible, measures to minimize incidental take of the protected species will be utilized. These may include not meeting flow targets in reaches without commercial navigation and utilizing the Kansas River tributary reservoirs for navigation flow support when appropriate. It may also be necessary to cycle releases for flood control regulation during the T&E species' nesting season.

The long-term average Gavins Point releases to meet target flows were used in the AOP studies for navigation support during the spring and fall months with the exception of Upper Quartile and Upper Decile. Under those two runoff scenarios, releases were based on flood water evacuation. Based on the September 1 storage checks, Gavins Point winter modeled releases were 20,000 cfs during the 2010-2011 winter season for all runoff scenarios, and from 12,000 cfs to 20,000 cfs during the 2011-2012 winter season depending on the runoff scenario. Gavins Point releases will be increased to meet downstream water supply requirements in critical reaches, to the extent reasonably possible, if downstream incremental runoff is low.

The Gavins Point releases shown in this and previous AOPs are estimates based on historic averages and experience. Adjustments are made as necessary in real-time based on hydrologic conditions.

Intrasystem releases are adjusted to best serve the multiple purposes of the projects with special emphasis placed on regulation for non-listed fisheries starting in early April and for T&E bird species beginning in early May and continuing through August. As part of the overall plan to rotate emphasis among the upper three reservoirs during low runoff years, Garrison is scheduled to be favored during the 2011 forage fish spawn while also attempting to maintain rising water levels at Fort Peck and Oahe. The Median, Upper Quartile, and Upper Decile simulations show that it is possible to provide steady-to-rising pool levels in each of the three large upper reservoirs during the spring forage fish spawn period. Releases in the Lower Quartile and Lower Decile simulations are adjusted to maintain steady-to-rising pool levels at Garrison. The Lower Quartile and Lower Decile simulations show the Oahe pool dropping during April, May and June. Fort Peck rises under Lower Quartile conditions and stays nearly steady under Lower Decile.

Two additional modified reservoir regulation plans, the Fort Peck "mini-test" and unbalancing the upper three reservoirs, have been shown in previous AOPs, but have not been implemented due to low reservoir levels. Due to the large variability of reservoir levels in recent years, the unbalancing of the three reservoirs to benefit reservoir fisheries and the endangered interior least tern and threatened piping plover will not be implemented 2011. Additionally, experience has shown that storing water in the annual flood control zone in order to implement unbalancing is undesirable due to flood control impacts. As the reservoir fisheries and endangered and threatened species habit is re-evaluated in coming years, a modified version of the unbalancing may be implemented that does not require water to be stored in the annual flood control zone. For the purposes of this AOP, the upper three reservoirs are shown in a balanced condition for all runoff scenarios. This balancing is computed based on the percent of the carryover multiple-use pool. With regard to the Fort Peck mini-test, a priority for pallid sturgeon recovery has been placed on the Lower Yellowstone Project at Intake, Montana. The Fort Peck mini-test and full test flows will be deferred until the efficacy of the Lower Yellowstone Project has been assessed. The groundbreaking for this project took place in August 2010.

Actual System regulation from January 1 through July 31, 2010 and the simulated regulating plans for each project through CY 2011 using the five runoff scenarios described on Page 4 are presented on ***Plate 6*** through ***Plate 11***, inclusive. Big Bend regulation is omitted since storage at that project is relatively constant and average monthly releases are essentially the same as those at Oahe. These plates also show, on a condensed scale, actual regulation since 1953.

Plate 12 illustrates for Fort Peck, Garrison, Oahe, and Gavins Point the actual releases (Regulated Flow) as well as the Missouri River flows that would have resulted if the reservoirs were not in place (Unregulated Flow) during the period January 2009 through July 2010. ***Plate 13*** presents past and simulated gross average monthly power generation and gross peaking capability for the System.

C. Regulation Plan for the Balance of the 2010 Navigation Season and Fall of 2010. The regulation of the System for the period of August though November 2010 is presented in the following paragraphs.

Fort Peck Dam. Releases will average 6,500 cfs during August and the first half of September. When irrigation ceases in mid-September they will be reduced to 5,500 cfs. The releases will be held near that level through November. The Fort Peck pool will remain essentially steady through the period and end November near 2235.1 ft msl. The record low pool elevation of 2196.2 feet msl was set in March 2007. The previous record low pool elevation was 2208.7 feet msl set in April 1991.

Garrison Dam. Releases will be maintained at 16,000 cfs until late August or early September when the remaining threatened least terns and endangered piping plovers have fledged in the reach downstream of Garrison Dam. Flows will then increase to 27,000 cfs and be maintained until the end of November to evacuate water from the exclusive and annual flood control pool zones. The Garrison pool will steadily drop through the fall and will be at 1843.1 feet msl at the end of November. The record low pool elevation of 1805.8 feet msl was set in May 2005. The previous record low pool elevation was 1815.0 feet msl set in May 1991.

Oahe Dam. Releases will average 33,400 cfs in August and 39,000 cfs in September to evacuate water from the annual flood control pool. Releases will be reduced in October and November to accommodate the fall drawdown of the Fort Randall pool. The Oahe pool will end November at elevation 1606.8 feet msl. The record low Oahe pool elevation of 1570.2 feet msl was set in August 2006. The previous record low pool elevation was 1580.7 feet msl set in November 1989.

Big Bend Dam. Releases will parallel those from Oahe. Big Bend will generally fluctuate between 1420.0 feet msl and 1421.0 feet msl for weekly cycling during high power load periods.

Fort Randall Dam. Releases will average 41,400 cfs in August and around 45,300 cfs in September through the end of November to back up the releases from Gavins Point Dam. The fall pool draw down of Fort Randall will start after Labor Day in early September and will carry over into early December due to the 10-day extension of the

navigation season. Releases will be reduced after the navigation season ends in early December to the level required to back up Gavins Point winter releases.

Gavins Point Dam. Releases will be scheduled above full service navigation levels to evacuate water from the reservoir system through early December. A full length navigation season, plus a 10-day extension, will be provided in accordance with the technical criteria for the July 1 System storage check presented in the Master Manual. In accordance with the Missouri River Master Manual, during years of greater than normal water supply, the navigation season is extended as both an additional evacuation measure and to provide an increased benefit to navigation while striving to reach the base of the annual flood control zone by March 1 the following season. The last day of flow support for the commercial navigation season will range from December 1 at Sioux City to December 10 at the mouth near St. Louis. Releases will be reduced by approximately 3,000 cfs per day in late November until they reach 20,000 cfs. If conditions allow, a more gradual release reduction schedule may be implemented for the benefit of various environmental resources in the river reaches. The Gavins Point pool level will be raised 1.5 feet to elevation 1207.5 feet msl in September. The pool level will remain near that elevation during the fall and winter months.

D. Regulation Plan for Winter 2010-2011. The September 1 System storage check is used to determine the winter release rate from Gavins Point dam. A winter release of 12,000 cfs is scheduled if System storage is less than 55 MAF on September 1; 17,000 cfs is scheduled when System storage is above 58 MAF; and the release is prorated for System storages between 55 and 58 MAF. A modification to the winter release rate from Gavins Point dam may occur when the evacuation of System flood control storage cannot be accomplished by providing a full-service navigation season with a 10-day extension of the navigation season. With an excess annual water supply, the winter season Gavins Point release may be scheduled at a rate of up to 25,000 cfs to continue to evacuate the remaining excess water in System flood control storage. The scheduled winter System release for 2010-2011 is 20,000 cfs. It is anticipated that this year's winter release will be adequate to complete evacuation of stored flood waters and serve all downstream water intakes.

Fort Peck Dam. Releases are expected to average 8,500 cfs in December and 9,000 cfs in January and February to serve winter power loads and to drawdown the lake to the base of the annual flood control pool. The Fort Peck pool level is expected to decline about 1.1 feet from near elevation 1835.1 feet msl at the end of November to near elevation 2234.0 feet msl by March 1. The pool is expected to rise to elevation 2234.4 feet msl by March 31.

Garrison Dam. Releases are scheduled to be 22,000 cfs in December increasing to 26,000 cfs for January and February to serve winter power loads and to drawdown the reservoir to the base of the annual flood control pool. The December release rate will likely be reduced at the time of freeze-in to prevent ice induced flooding at the time of freeze-in. These temporary reductions in the releases may be scheduled to prevent exceedence of a 13-foot stage at the Bismarck gage. Flood stage is 16 feet. Average winter release rates for Garrison are 20,300 cfs in December, 22,800 cfs in January and 24,000 cfs in February. The Garrison pool level is expected to decline about 5.6 feet from near elevation 1843.1 feet msl at the end of November to near elevation 1837.5 feet msl by March 1, at the base of the annual flood control storage zone. The pool is expected to rise to elevation 1838.1 feet msl by March 31.

Oahe Dam. Releases for the winter season will provide backup for the Fort Randall and Gavins Point releases plus fill the recapture space available in the Fort Randall reservoir consistent with anticipated winter power loads. Monthly average releases may vary substantially with fluctuations in power loads occasioned by weather conditions but, in general, are expected to average about 23,500 cfs. Daily releases will vary widely to best meet power loads. Peak hourly releases, as well as daily energy generation, will be constrained to prevent urban flooding in the Pierre and Fort Pierre areas if severe ice problems develop downstream of Oahe Dam. This potential reduction has been coordinated with the Western Area Power Administration. The Oahe pool level is expected to slowly decline from 1606.8 feet msl at the end of November to 1606.3 feet msl at the end of December before starting to rise to elevation 1607.5 feet msl by the beginning of March, the base of the annual flood control storage zone. The pool is expected to rise to elevation 1607.7 feet msl by the end of March.

Big Bend Dam. The Big Bend pool level will be maintained in the normal 1420.0 to 1421.0 feet msl range during the winter.

Fort Randall Dam. Releases will average about 18,000 cfs during the winter season to support Gavins Point winter releases. The Fort Randall pool level is expected to rise from its fall drawdown elevation of 1337.5 feet msl to near elevation 1350.0 feet msl, the seasonal base of flood control, by March 1. However, if the plains snowpack flood potential downstream of Oahe Dam is quite low, the Fort Randall pool level will be raised to near 1353.0 feet msl by March 1. It is likely that a pool level as high as 1355.0 feet msl could be reached by the end of the winter period on March 31 if runoff conditions permit. The Fort Randall pool level above the White River delta near Chamberlain, South Dakota will remain at a higher elevation than the pool level below the delta from early October through December, due to the damming effect of this delta area.

Gavins Point Dam. Gavins Point winter releases are discussed in the first paragraph of this section. The Gavins Point pool level will be near elevation 1207.5 feet msl until late February when it will be lowered to elevation 1206.0 feet msl to create additional capacity to store spring runoff.

System storage for all runoff conditions will be at the base of the annual flood control zone of 56.8 million acre-feet by March 1, 2011, the beginning of next year's runoff season.

E. Regulation During the 2011 Navigation Season. All five runoff scenarios modeled for this year's AOP follow the technical criteria presented in the current Master Manual for downstream flow support. Beginning in mid-March, Gavins Point releases will be gradually increased to provide navigation flow support at the mouth of the Missouri near St. Louis by April 1, 2011, the normal navigation season opening date. The corresponding dates at upstream locations are Sioux City, March 23; Omaha, March 25; Nebraska City, March 26; and Kansas City, March 28. However, if during the 2011 navigation season there is no commercial navigation scheduled to use the upper reaches of the navigation channel, we will consider eliminating navigation flow support for targets in those reaches to conserve water in the System, provide additional flood control, and/or minimize incidental take of the protected species during the nesting season.

Navigation flow support for the 2011 season will be determined by actual System storage on March 15 and July 1. Runoff scenarios modeled indicate full service flow support at the start of the 2011 navigation season for all runoff scenarios. Following the July 1 System storage check, full service would continue to be provided for all runoff scenarios. The normal 8-month navigation season is provided for all runoff scenarios as shown in ***Table II***.

TABLE II
NAVIGATION SERVICE SUPPORT
FOR THE 2011 SEASON

	Runoff Scenario (MAF)	System Storage March 15 (MAF)	System Storage July 1 (MAF)	Flow Level Above or Below Full Service (cfs) Spring	Flow Level Above or Below Full Service (cfs) Summer/Fall	Season Shortening (Days)
U.D.*	34.3	56.8	65.0	0	0	0
U.Q.*	30.3	56.8	63.8	0	0	0
Med *	24.4	56.8	61.4	0	0	0
L.Q.*	19.3	56.8	58.4	0	0	0
L.D.*	16.2	56.8	57.3	0	0	0

*Includes both March and May Spring Pulses

As previously stated, the planned regulation for the 2011 nesting season below Gavins Point dam will be Steady Release – Flow to Target (SR-FTT) for median runoff or below. The initial steady release, which has ranged from 18,000 cfs to 27,000 cfs over the last five years, will be based on hydrologic conditions and the availability of habitat at that time. Model runs included in this AOP have a Gavins Point release peaking cycle of 2 days down and 1 day up following the May pulse to keep birds from nesting at low elevations. Gavins Point releases will be adjusted to meet downstream targets as tributary flows recede, but ideally the initial steady release will be sufficient to meet downstream targets until the majority of the birds have nested. The purpose of this regulation is to continue to meet the project purposes while minimizing the loss of nesting T&E species and conserving water in the upper three reservoirs, if required. Gavins Point releases for the Upper Quartile and Upper Decile runoff simulations are much above normal to evacuate flood water from the reservoirs. Releases from Garrison and Fort Randall will follow repetitive daily patterns from early May, at the beginning of the T&E species' nesting season, to the end of the nesting in late August. In addition to the intra-day pattern, Fort Randall releases may also be cycled with 2 days of low releases and 1 day of higher releases during the early part of the nesting season to maintain release flexibility in that reach while minimizing the potential for take.

As discussed previously, System storage will be above the storage precludes for both spring pulses under all runoff scenarios modeled.

Gavins Point releases may be quite variable during the 2011 navigation season but are expected to range from 22,000 to 52,000 cfs. Release reductions necessary to minimize downstream flooding are not reflected in the monthly averages shown in the simulations but will be implemented as conditions warrant. Reductions in System

releases to integrate the use of downstream Missouri River flow support from the Kansas Reservoir System have not been included since they are based on downstream hydrologic conditions. However, this storage will be utilized to the extent possible as a water conservation measure or to minimize incidental take of protected species during the nesting season if conditions indicate it is prudent to do so. Simulated storages and releases for the System and individual reservoirs within the System are shown on ***Plate 6*** through ***Plate 11.*** Sufficient storage space exists in the System to control flood inflows under all scenarios simulated for this AOP.

F. <u>Regulation Activities for T&E Species and Fish Propagation Enhancement.</u> The ability to provide steady to rising pool levels in the upper three reservoirs in low runoff years is very dependent on the volume, timing, and distribution of runoff. The reservoir regulation simulations presented in this AOP for the Upper Decile, Upper Quartile, and Median runoff scenarios show that steady to rising pool levels would occur during the spring fish spawn period for the upper three System reservoirs. As part of the overall plan to rotate emphasis among the upper three reservoirs during low runoff years, Garrison is scheduled to be favored during the 2011 forage fish spawn if runoff is below median. The studies show that inflows are sufficient to maintain steady to rising pools at Garrison and Fort Peck from April through June for the Lower Quartile runoff scenario. Oahe pool levels may fall during both lower runoff scenarios. This will be accomplished by setting releases at Fort Peck and Garrison at a level that would maintain a rising Garrison pool, but no less than the minimum required for downstream water supply requirements including irrigation. These adjustments may be restricted when the terns and plovers begin nesting in May. If the drought re-emerges, emphasis during the fish spawn will be rotated among the upper three reservoirs and may also be adjusted to be opportunistic in regard to runoff potential. The upper three reservoirs will be managed to benefit forage fish to the extent reasonably possible, while continuing to serve the other Congressionally authorized project purposes.

As per the reasons discussed in the previous section, the 2010-2011 AOP will not include provisions for unbalancing the Fort Peck, Garrison, and Oahe reservoirs to benefit the reservoir fishery and endangered species, but will be considered within the carryover multiple use zone in future years.

<u>Fort Peck Dam</u>. The repetitive daily pattern of releases from Fort Peck Dam has not been implemented since the 2004 tern and plover nesting season. This adaptive management decision was made based on data collected during previous nesting seasons. In recent years, birds in this reach have nested on available high elevation habitat, and thus were not expected to be impacted by the potential range of releases from Fort Peck during the summer. Releases during the 2011 nesting season will not be restricted by the repetitive daily pattern unless habitat conditions or nesting patterns

warrant a change. Overall habitat should be less than in 2010 as flows during the nesting season will be higher.

If flood flows enter the Missouri River below the project during the nesting season, hourly releases will generally be lowered to no less than 3,000 cfs in order to keep traditional riverine fish rearing areas continuously inundated, while helping to lower river stages at downstream nesting sites. In rare instances releases below 3,000 cfs may be scheduled for flood damage reduction. April releases should be adequate for trout spawning below the project.

Maintaining a rising Fort Peck pool level will be dependent upon the daily inflow pattern to the reservoir, but appears possible under all the runoff scenarios except the Lower Decile where a slight decline in the reservoir level is indicated during April. The Fort Peck "mini-test" will not be run pending an evaluation of the results of the Yellowstone River Intake Diversion fish passage structure.

Garrison Dam. Daily average releases from Garrison will be much higher in 2011 than what was experienced in 2010 during the tern and plover nesting season under all runoff scenarios. As in previous years, releases from Garrison will follow a repetitive daily pattern during the T&E nesting season to limit peak stages below the project for nesting birds. Releases during the 2011 nesting season will be higher than was experienced during the last eleven years and will result in less available habitat. Releases are scheduled to be 1,000 cfs lower in July and early August than the June releases to enhance conditions for the fledging of chicks.

With the higher Garrison reservoir levels in 2009 and 2010, the volume of cold water habitat showed good improvement. As a result, the plywood that was installed in 2005 on the intake trash racks was removed in October 2009. During 2011, cold-water habitat in Garrison should be adequate for all runoff scenarios.

If runoff is not sufficient to keep all the pool levels rising during the fish spawn in 2011, the Corps will, to the extent reasonably possible while serving other Congressionally authorized project purposes, set releases to result in a steady to rising pool at Garrison from April 20 to May 20. Adjustments to Garrison's releases, however, may be restricted when the terns and plovers begin nesting in May. A rising pool at Garrison during the fish spawn in April and May will be dependent upon the daily inflow pattern to the reservoir but appears possible for all runoff simulations.

Oahe Dam. Releases in the spring and summer will back up those from Gavins Point Dam. The pool level should be steady to rising in the spring during the fish spawn under median and above runoff scenarios. Depending on the timing and distribution of runoff, a level or rising pool at Oahe is not likely under the two lower runoff scenarios.

Fort Randall Dam. To the extent reasonably possible, Fort Randall will be regulated to provide for a pool elevation near 1355 feet msl during the fish spawn period, provided water can be supplied from other reservoirs for downstream uses. The pool will not be drawn down below elevation 1337.5 feet msl in the fall to ensure adequate supply for water intakes. As a measure to minimize take while maintaining the flexibility to increase releases during the nesting season, hourly releases from Fort Randall during the 2011 nesting season will follow a repetitive daily pattern to limit peak stages below the project for nesting birds. Daily average flows may be increased every third day to preserve the capability of increasing releases later in the summer with little or no incidental take if drier downstream conditions occur. If higher daily releases are required later in the nesting season, the daily peaking pattern may be adjusted, reduced or eliminated resulting in a steady release to avoid increased stages at downstream nesting sites. Fort Randall zero releases will be minimized to the extent reasonably possible during the nesting season given daily average releases, real-time hydrologic conditions, and System generating constraints as defined in coordination with Western Area Power Administration.

Gavins Point Dam. March and May spring pulses from Gavins Point Dam for the benefit of the endangered pallid sturgeon will be implemented under all runoff scenarios in 2011. The Master Manual technical criteria for the pulses are presented in Plate 3. Details of the spring pulses included in the AOP simulations are provided in Chapter V, Section B, entitled "**2010-2011 AOP Simulations**".

Based on 2003 through 2009 nesting season results with the SR-FTT regulation and planned habitat development activities, it is anticipated that sufficient habitat will be available above the planned release rates for Median or below runoff to provide for successful nesting. All reasonable measures to minimize the loss of nesting T&E bird species will be used. These measures include, but are not limited to, such things as a relatively high initial steady release during the peak of nest initiation, the use of the Kansas River basin reservoirs, moving nests to higher ground when possible, and monitoring nest fledge dates to determine if delaying an increase a few days might allow threatened chicks to fledge. The location of navigation tows and river conditions at intakes would also be monitored to determine if an increase could be temporarily delayed without impact. Cycling releases every third day may be used to conserve water early in the nesting season if extremely dry conditions develop. In addition, cycling may be used during downstream flood control regulation. It is anticipated that for Upper Decile and Upper Quartile runoff scenarios a SR scenario will be implemented due to the need to evacuate flood water. A SR-FTT release scenario will be implemented for Median and below runoff scenarios. A full description of these two release scenarios can be found in the Master Manual.

The Gavins Point pool will be regulated near 1206.0 feet msl in the spring and early summer, with minor day-to-day variations due to inflows resulting from rainfall runoff. Several factors can limit the ability to protect nests from inundation in the upper end of the Gavins Point pool. First, because there are greater numbers of T&E bird species nesting below the Gavins Point project, regulation to minimize incidental take usually involves restricting Gavins Point releases, which means that the Gavins Point pool can fluctuate significantly due to increased runoff from rainfall events. Second, rainfall runoff between Fort Randall Dam and Gavins Point Dam can result in relatively rapid pool rises because the Gavins Point project has a smaller storage capacity than the other System reservoirs. And third, the regulation of Gavins Point for downstream flood control may necessitate immediate release reductions to reduce downstream damage. When combined, all these factors make it difficult and sometimes impossible to prevent inundation of nests in the upper end of the Gavins Point reservoir. The pool will be increased to elevation 1207.5 feet msl when it is determined that there are no terns or plovers nesting along the reservoir.

G. Regulation Activities for Historic and Cultural Properties. As acknowledged in the 2004 Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System (PA), wave action and fluctuation in the level of the reservoirs results in erosion along the banks of the reservoirs. The Corps will work with the Tribes utilizing 36 CFR Part 800 and the PA to address the exposure of historic and cultural sites. The objective of a programmatic agreement is to deal "…with the potential adverse effects of complex projects or multiple undertakings…" The PA objective was to collaboratively develop a preservation program that would avoid, minimize and/or mitigate adverse effects along the System reservoirs. All tribes, whether signatory to the PA or not, may request government-to-government consultation on the regulation of the System and the resulting effect on historic and cultural properties and other resources. Pool levels at the upper three reservoirs improved significantly in 2010 and are currently 3 to 15 feet higher than one year ago, but continuing exposure of cultural sites along the shorelines is still possible. Actions to avoid, minimize or mitigate adverse impacts and expected results of the actions are covered under Chapter VI of this AOP. ***Plate 14*** shows the locations of the Tribal Reservations.

Fort Peck Dam. Depending on runoff in the Missouri River basin, System regulation during 2011 could result in a Fort Peck pool elevation variation from a high of 2245 feet msl to a low of 2222 feet msl. This is based on the Upper and Lower Decile runoff scenarios (see ***Plate 8*** and the studies included at the end of this report). Based on a review of existing information, approximately 13 known sites could be affected during this period.

Garrison Dam. Based on the Upper and Lower Decile runoff scenarios (see ***Plate 9*** and the studies included at the end of this report), Garrison pool elevations could range

between 1848 and 1828 feet msl during 2011. Based on a review of existing information, approximately 111 known sites could be affected during this period.

Oahe Dam. At the Oahe reservoir, the System regulation under the Upper and Lower Decile runoff scenarios could result in pool elevations ranging from 1615 to 1593 feet msl (see ***Plate 10*** and the studies included at the end of this report). Based on a review of existing information, approximately 217 known sites could be affected during this period.

Big Bend Dam. System regulation will be adjusted to maintain the Big Bend pool level in the normal 1420 to 1421 feet msl range during 2011. Short-term increases above 1421 due to local rainfall may also occur. Based on a review of existing information, approximately 4 known sites could be affected during this period.

Fort Randall Dam. As part of the normal System regulation, the Fort Randall pool elevations will vary between 1350 and 1355 feet msl during the spring and summer of 2011. Short-term increases above 1355 feet msl due to local rainfall may occur. The annual fall drawdown of the reservoir to elevation 1337.5 feet msl will begin prior to the close of the navigation season and will be accomplished by early December. The reservoir will then be refilled during the winter to elevation 1350 feet msl. Based on a review of existing information, approximately 32 known sites could be affected during this period.

Gavins Point Dam. System regulation will be adjusted to maintain the Gavins Point pool level in the normal 1206 to 1207.5 feet msl range during 2010. Short-term increases above 1207.5 feet msl may occur due to local rainfall. Based on a review of existing information, no known sites could be affected during this period.

VI. SUMMARY OF RESULTS EXPECTED IN 2011

With regulation of the System in accordance with the 2010-2011 AOP outlined in the preceding pages, the following results can be expected. Table III summarizes the critical decision points throughout the year for all runoff conditions.

Table III
Summary of 2010-2011 AOP Studies

Decision Points	2010-2011 Runoff Condition				
	Upper Decile	**Upper Quartile**	**Median**	**Lower Quartile**	**Lower Decile**
March 1 System Storage	56.8 MAF	56.8 MAF	56.8 MAF	56.8 MAF	56.8 MAF
March Spring Pulse?	Yes	Yes	Yes	Yes	Yes
Pulse Magnitude	5 kcfs	5 kcfs	5 kcfs	5 kcfs	5 kcfs
March 23-31 GP Release	28.9 kcfs	28.9 kcfs	28.9 kcfs	32.0 kcfs	32.0 kcfs
March 15 System Storage	57.8 MAF	57.6 MAF	57.4 MAF	57.3 MAF	57.2 MAF
Spring Service Level	full service	full service	full service	full service	full service
May 1 System Storage	60.0 MAF	59.5 MAF	58.3 MAF	57.2 MAF	56.8 MAF
May Spring Pulse?	Yes	Yes	Yes	Yes	Yes
Pulse Magnitude*	20.0 (10) kcfs	20.0 (10) kcfs	16.0 (10.0) kcfs	12.0 (9.7) kcfs	12.0 (9.7) kcfs
May Cycling	36.5/36.5 kcfs	28.0/31.6 kcfs	28.0/31.6 kcfs	31.3/34.3 kcfs	31.3/34.3 kcfs
May GP Release	36.5 kcfs	30.7 kcfs	30.7kcfs	33.9 kcfs	33.9 kcfs
Fish Spawn Rise (Apr-Jun)					
FTPK Pool Elev Change	+9.1 feet	+7.5 feet	+4.6 feet	+2.8 feet	+0.2 feet
GARR Pool Elev Change	+6.1 feet	+5.5 feet	+5.1 feet	+4.2 feet	+3.7 feet
OAHE Pool Elev Change	+6.9 feet	+6.3 feet	+3.0 feet	-3.5 feet	-4.1 feet
July 1 System Storage	65.0 MAF	63.8 MAF	61.4 MAF	58.4 MAF	57.4 MAF
Sum-Fall Service Level (kcfs)	Full Service	Full Service	Full Service	Full Service	Full Service
Nav Season Shortening	0 Days	0 Days	0 Days	0 Days	0 Days
September 1 System Storage	63.1 MAF	62.4 MAF	59.8 MAF	55.8 MAF	54.1 MAF
Winter 2011-12 GP Release	20.0 kcfs	20.0 kcfs	17.0 kcfs	13.3 kcfs	12.5 kcfs
February 28 System Storage	56.8 MAF	56.8 MAF	56.1 MAF	51.2 MAF	48.8 MAF
End-Year Pool Balance	Balanced	Balanced	Balanced	Balanced	Balanced
Percent Pool	100%	100%	98%	85%	79%

* Pulse magnitudes are the calculated magnitude per technical criteria (Plate 3) and simulated magnitude due to the downstream flow limits.

A. Flood Control. All runoff scenarios studied will begin the March 1, 2011 runoff season at the desired 56.8 MAF base of the annual flood control and multiple use zone. Therefore, the entire System flood control zone will be available to store surplus runoff. The System will be available to significantly reduce peak discharges and store a significant volume of water for all floods that may originate above the System.

Being at the base of the annual flood control and multiple use zone will also provide full support for all of the other multiple purposes of the System.

B. Water Supply and Water Quality Control. Problems at intakes located in the river reaches and Mainstem reservoirs are related primarily to intake elevations or river access rather than inadequate water supply. In emergency situations, short-term adjustments to protect human health and safety would be considered to keep intakes operational.

Low reservoir levels during the 2000-2007 drought contributed to both intake access and water quality problems for intakes on Garrison and Oahe reservoirs, including several Tribal intakes; however above normal runoff in 2008 through 2010 has eliminated concern over many of these intakes. Gains in the Oahe pool level required modification of the Standing Rock Sioux Tribe's temporary intake at Fort Yates to protect it from the rising water levels. The Bureau of Reclamation (BOR) installed the temporary intake after the primary intake failed in November 2003 leaving the community without water for several days. If the drought re-emerges, reservoir pool levels and releases may decline renewing the potential for intake access and water quality problems at both river and reservoir intakes. Under the Lower Decile runoff scenario, minimum reservoir levels in 2011 would be at least 20 feet higher than the record lows set in the current drought. Although not below the critical shut-down elevations for any intake, return to lower levels would require extra monitoring to ensure the continued operation of the intakes.

Above normal Gavins Point releases are being scheduled in the winter of 2010-2011. Under the 2010-2011 runoff scenarios, all water supply and water quality requirements on the Missouri River both below Gavins Point Dam and between System reservoirs should be met for all flow conditions studied. Winter releases for 2011-2012 will be determined based on the September 1, 2011 System storage check. As shown in Table III, 2011-2012 winter releases of 20,000 cfs would be made for a Upper Decile and Upper Quartile runoff scenarios; 17,000 cfs under a Median runoff scenario; and 13,300 cfs and 12,500 cfs under Lower Quartile and Lower Decile runoff scenarios, respectively. Should the 2010-2011 runoff be in the Lower Quartile or Lower Decile range, planned winter release rates may be less than required for downstream water supply intakes without sufficient incremental tributary flows below the System. Should that occur, releases may need to be set higher to ensure that downstream water supply intakes are operable. However, we believe the minimum winter release of 12,000 cfs

presented in the Master manual represents a reasonable long-term goal for water intake operability and for owners to strive for as they make improvements to their facilities. It may be necessary at times to increase Gavins Point releases to provide adequate downstream flows due to the forecast of excessive river ice formation or if ice jams or blockages form with temporarily restrict flow. Based on past experiences, these events are expected occur infrequently and be of short durations.

During non-navigation periods in the spring and fall from 2004 through 2007, System releases were scheduled as low as 9,000 cfs provided that enough downstream tributary flow existed to allow for continued operation of downstream water intakes. If a non-navigation year would occur in the future, summer releases (May thru August) could average around 18,000 cfs from the System. However, it should be noted that System releases will be set at levels that meet the operational requirements of all water intakes to the extent reasonably possible. Problems have occurred at several downstream intakes in the past, however in all cases the problems have been associated with access to the river or reservoir rather than insufficient water supply. In addition, the low summer release rate would likely result in higher water temperatures in the river, which could impact a power plant's ability to meet their thermal discharge permits. Again, it should be noted that System releases will be set at levels that allow the downstream power plant to meet their thermal discharge permit requirements to the extent reasonably possible. This may mean that actual System releases in the hottest part of the summer period may be set well above the 18,000 cfs level. The Corps continues to encourage intake operators throughout the System and along the lower river reach to make necessary modifications to their intakes to allow efficient operation over the widest possible range of hydrologic conditions. While the current level of System storage should allow adequate access for all intakes for those intake operators whom had issues or difficulty with access during the past drought years, adjustments should continue to be made during this more normal release period to improve access and flexibility when drought returns to the basin.

C. Irrigation. Scheduled releases from the System reservoirs will be sufficient to meet the volumes of flow required for irrigation diversions from the Missouri River. Some access problems may be experienced, however, if Lower Quartile or Lower Decile runoff conditions return. Below Fort Peck, localized dredging may once again be required in the vicinity of irrigation intakes in order to maintain access to the water if releases are low next summer. Tributary irrigation water usage is fully accounted for in the estimates of water supply.

D. Navigation. Service to navigation in 2011 will be at full service flow support from the beginning of the navigation season through the July 1 storage check for all runoff scenarios. In addition, all runoff scenarios indicate full service and a full navigation season based on the July 1 storage check. Although the AOP simulations provide a comparison of typical flow support under varying runoff conditions, the

actual rate of flow support for the 2011 navigation season will be based on actual System storage on March 15 and July 1, 2011.

All runoff simulations show no reduction in the normal 8-month navigation season length during 2011. The anticipated service level and season length for all runoff conditions simulated are shown in ***Table II***.

E. Power. ***Table IV and Table V*** give the estimated monthly System load requirements and hydropower supply of the Eastern Division, Pick-Sloan Missouri Basin Program (P-S MBP), from August 2010 through December 2011. Estimates of monthly peak demands and energy include customer requirements for firm, short-term firm, summer firm, peaking, and various other types of power sales, System losses, and the effects of diversity. Also included in the estimated requirements are deliveries of power to the Western Division, P-S MBP, to help meet its firm power commitments. Under median runoff, annual generation in 2011 is estimated to be 9.9 million MWh, 106 percent of normal.

F. Recreation, Fish and Wildlife. The regulation of the System will continue to provide recreation and fish and wildlife opportunities in the project areas and along the Missouri River as well as other benefits of a managed system. Improved runoff resulted in higher pool levels and better recreation access at the upper three reservoirs during 2010. Recreation access is expected to be at normal levels in 2011. The last two out-of-service boat ramps at Fort Peck became accessible during the summer of 2010. If Lower Quartile or Lower Decile runoff were to occur in 2011, boat ramps that were lowered and low water ramps that were constructed during the two recent drought periods will provide adequate reservoir access. Special regulation adjustments incorporating specific objectives for these purposes will be made to the extent reasonably possible. Overall conditions should be favorable for the many visitors who enjoy the camping, boating, fishing, hunting, swimming, picnicking, and other recreational activities associated with the System reservoirs.

The effects of the simulated System regulation during 2011 on fish and wildlife are included in Chapter V, Section F, entitled, "Regulation Activities for T&E Species and Fish Propagation Enhancement."

G. Historic and Cultural Properties. As mentioned in Chapter V of this AOP, the regulation of the System during 2010 and 2011 will expose cultural sites due to erosion from the normal fluctuation of pool elevations. The Corps will work with the Tribes utilizing 36 CFR Part 800 and the PA to address the exposure of these sites. The objective of a programmatic agreement is to deal "…with the potential adverse effects of complex projects or multiple undertakings…" The PA objective was to collaboratively develop a preservation program that would avoid, minimize and/or mitigate the adverse affects of the System operation. All tribes, whether signatory to the

PA or not, may request government-to-government consultation on the regulation of the System and the resulting effect on historic and cultural properties and other resources.

The planned preservation program for this AOP is outlined by multiple stipulations in the PA. One of the stipulations, or program components, is the Five-Year Plan. This plan outlines how the Corps will accomplish its responsibilities under the PA and the National Historic Preservation Act. The "Draft Five Year Plan, dated February 2005" (see https://www.nwo.usace.army.mil/CR/) is currently being implemented. The plan includes inventory, testing and evaluation, mitigation and other specific activities that will allow the Corps to avoid, minimize and/or mitigate the adverse effects to cultural sites on Corps lands within the System. Many of the actions listed in the plan are within the elevation ranges that will occur with the implementation of the Master Manual criteria in 2010 and 2011. Two critical components of the Five-Year plan that are applicable to this AOP are monitoring and mitigation, which will be briefly discussed in the following paragraphs.

First, a collaboratively developed plan, entitled "Draft Monitoring and Enforcement Plan, dated April 2005" (see https://www.nwo.usace.army.mil/CR/) is in place. This monitoring plan outlines the sites that require monitoring and specifies a frequency for monitoring. The Corps is strategically monitoring sites, including those sites within the potential operating pool elevations, to document the effects of the implementation of the 2010-2011 AOP. Specific sites are identified in the draft Monitoring and Enforcement Plan for the monitoring team, comprised of Corps rangers and tribal monitors, to visit and document impacts. This focused monitoring is resulting in more accurate data on the current impacts to sites along the river plus it is assisting with the identification of sites for mitigation. Training for the monitoring teams was held in June 2006, July 2007, March 2008, April 2008, July 2008, May 2009 and again in June 2010.

Second, mitigation or protection of sites that are being adversely impacted continues. During the reporting period for the 2009 Annual Report by the Corps on the implementation of the Programmatic Agreement eight sites were either completed, started, or in the design phase. The annual report is available at https://www.nwo.usace.army.mil/CR/. In addition the Corps has awarded a contract to develop an erosion model that will compare modeling data against actual erosion data, collected by the monitoring team, to assist in the prioritization of sites for protection. Work on the erosion model is continuing.

TABLE IV
PEAKING CAPABILITY AND SALES
(1,000 kW at plant)

2010	Estimated Committed Sales*	Expected C of E Capability 120%	Basic	80%	Expected Bureau Capability** 120%	Basic	80%	Expected Total System Capability 120%	Basic	80%
Aug	2152	2372	2370	2372	211	210	208	2583	2580	2580
Sep	2152	2373	2373	2376	210	209	205	2583	2582	2581
Oct	2152	2349	2352	2355	211	211	206	2560	2563	2561
Nov	2099	2286	2304	2308	209	210	206	2495	2514	2514
Dec	2099	2289	2295	2312	206	206	203	2495	2501	2515
2011										
Jan	2099	2311	2314	2318	202	201	201	2513	2515	2519
Feb	2099	2320	2320	2320	197	199	199	2517	2519	2519

		U.D.	U.Q.	Med	L.Q.	L.D.	U.D.	U.Q.	Med	L.Q.	L.D.	U.D.	U.Q.	Med	L.Q.	L.D.
Mar	2099	2333	2329	2324	2320	2318	194	194	195	199	195	2527	2523	2519	2519	2513
Apr	2124	2350	2344	2330	2313	2310	194	194	194	197	193	2544	2538	2524	2510	2503
May	2177	2365	2360	2334	2307	2303	200	200	203	201	194	2565	2560	2537	2508	2497
Jun	2177	2401	2392	2369	2325	2309	213	213	213	206	195	2614	2605	2582	2531	2504
Jul	2177	2390	2384	2365	2314	2292	213	213	213	206	204	2603	2597	2578	2520	2496
Aug	2177	2376	2371	2354	2289	2269	210	210	211	204	201	2586	2581	2565	2493	2470
Sep	2177	2364	2364	2336	2276	2251	210	209	211	205	202	2574	2573	2547	2481	2453
Oct	2177	2334	2336	2316	2254	2227	209	209	212	206	203	2543	2545	2528	2460	2430
Nov	2120	2280	2289	2278	2212	2184	207	207	209	205	203	2487	2496	2487	2417	2387
Dec	2120	2244	2251	2242	2178	2149	202	204	206	203	200	2446	2455	2448	2381	2349

* Estimated sales, including system reserves. Power in addition to hydro production needed for these load requirements will be obtained from other power systems by interchange or purchase.
** Total output of Canyon Ferry and 1/2 of the output of Yellowtail powerplant.

TABLE V
ENERGY GENERATION AND SALES
(Million kWh at plant)

2010	Estimated Committed Sales*	Expected C of E Generation 120%	Basic	80%	Expected Bureau Generation ** 120%	Basic	80%	Expected Total System Generation 120%	Basic	80%
Aug	844	1169	1038	955	83	66	60	1252	1104	1015
Sep	725	1279	1150	946	78	63	57	1357	1213	1003
Oct	725	1258	1118	904	77	64	56	1335	1182	960
Nov	791	1214	1086	891	80	78	59	1294	1164	950
Dec	899	866	786	743	82	80	60	948	866	803
2011										
Jan	912	829	802	781	82	78	60	911	880	841
Feb	883	731	709	692	73	69	54	804	778	746

		U.D.	U.Q.	Med	L.Q.	L.D.	U.D.	U.Q.	Med	L.Q.	L.D.	U.D.	U.Q.	Med	L.Q.	L.D.
Mar	815	682	679	682	687	692	80	80	75	58	58	762	759	757	745	750
Apr	753	785	737	748	784	812	79	79	72	55	55	864	816	820	839	867
May	699	1064	963	950	991	985	118	110	79	54	56	1182	1073	1029	1045	1041
Jun	759	1239	1163	946	1014	994	129	120	87	53	56	1368	1283	1033	1067	1050
Jul	839	1461	1305	1022	1089	1065	158	127	81	56	51	1619	1432	1103	1145	1116
Aug	843	1459	1303	1058	1086	1061	100	95	73	56	50	1559	1398	1131	1142	1111
Sep	725	1253	1205	915	947	923	93	87	70	54	48	1346	1292	985	1001	971
Oct	725	1230	1076	732	770	764	86	83	71	54	48	1316	1159	803	824	812
Nov	790	1191	1049	658	670	658	89	84	82	63	49	1280	1133	740	733	707
Dec	899	866	818	670	595	571	91	86	83	64	50	957	904	753	659	621
CY TOT		12790	11858	9892	10106	9998	1178	1106	920	681	635	13968	12964	10812	10787	10633

* Estimated sales including system reserves and losses. Power in addition to hydro production needed for these load requirements will be obtained from other systems by interchange or purchase.
** Total output Canyon Ferry and 1/2 output of Yellowtail powerplant.

Results expected from the proposed monitoring and mitigation actions include more accurate horizontal and vertical data on existing cultural sites, detailed impact data, proactive protection and preservation of sites. The effects of the simulated System regulation during 2010-2011 on cultural sites are included in the Chapter V, section G., entitled, "Regulation Activities for Historic and Cultural Properties."

H. System Storage. If August 1, 2010 Basic runoff forecast verifies, System storage will decline to 57.1 MAF by the close of CY 2010. This would be 23.7 MAF higher than the all-time record low storage of 33.9 MAF set on February 9, 2007 and nearly 2.9 MAF higher than last year's storage of 54.3 MAF. This end-of-year storage is 3.6 MAF more than the 1967 to 2009 average. The record low storage during the 1988-1992 drought was 40.8 MAF in January 1991. The end-of-year System storages have ranged from a maximum of 60.9 MAF, in 1975, to the 2006 minimum of 34.4 MAF. Forecasted System storage on December 31, 2011 is presented in ***Table VI*** for the runoff scenarios simulated.

I. Summary of Water Use by Functions. Anticipated water use in CY 2010, under the regulation plan with the Basic forecast of water supply is shown in ***Table VII***. Actual water use data for CY 2009 are included for information and comparison. Under the reservoir regulation simulations in this AOP, estimated water use in CY 2011 also is shown in ***Table VII.***

TABLE VI
ANTICIPATED DECEMBER 31, 2011 SYSTEM STORAGE

Water Supply Condition	Total (12/31/11)	Carryover Storage Remaining 1/	Unfilled Carryover Storage 2/	Total Change CY 2011
	(Volumes in 1,000 Acre-Feet)			
Upper Decile	56,900	38,900	0	100
Upper Quartile	57,200	38,900	0	300
Median	56,200	38,300	600	-900
Lower Quartile	51,300	33,400	5,500	-6,400
Lower Decile	49,100	31,200	7,700	-8,500

1/ Net usable storage above 17.9 MAF System minimum pool level established for power, recreation, irrigation diversions, and other purposes.

2/ System base of annual flood control zone containing 56.8 MAF.

TABLE VII
MISSOURI RIVER MAINSTEM SYSTEM
WATER USE FOR CALENDAR YEARS 2009, 2010, AND 2011 ABOVE SIOUX CITY, IOWA
in Million Acre-Feet (MAF)

		CY 2009 Actual	CY 2010 Basic Simulation	Simulations for Calendar Year 2011 Upper Decile	Upper Quartile	Median	Lower Quartile	Lower Decile
Upstream Depletions	(1)							
Irrigation, Tributary Reservoir Evaporation & Other Uses		2.4	1.9					
Tributary Reservoir Storage Change		0.0	0.1					
Total Upstream Depletions		2.4	2.0	2.4	2.4	2.6	2.6	2.4
System Reservoir Evaporation	(2)	3.0	2.6	1.2	1.2	1.8	2.1	2.0
Sioux City Flows								
Navigation Season								
Unregulated Flood Inflows Between Gavins Point & Sioux City	(3)	0.1	0.8					
Navigation Service Requirement	(4)	12.8	17.8	17.2	16.6	15.9	16.3	16.0
Supplementary Releases								
T&E Species	(5)	1.9	1.3	0.4	0.4	0.4	0.3	0.2
Flood Evacuation	(6)	0.0	5.9	8.4	4.8	0.0	0.0	0.0
Non-navigation Season								
Flows		3.0	3.5	4.2	4.2	4.6	4.2	4.2
Flood Evacuation Releases	(7)	0.0	0.5	0.5	0.4	0.0	0.0	0.0
System Storage Change		10.3	2.9	0.0	0.3	-0.9	-6.4	-8.5
Total		33.5	37.3	34.3	30.3	24.4	19.3	16.2
Project Releases								
Fort Peck		3.8	4.0	8.5	7.9	6.3	6.1	6.2
Garrison		10.1	13.4	21.1	19.5	16.0	16.0	15.3
Oahe		12.3	17.0	24.3	21.5	17.7	19.0	19.0
Big Bend		11.6	17.1	24.2	21.4	17.6	18.9	18.9
Fort Randall		13.0	19.2	25.6	22.5	18.3	19.1	19.0
Gavins Point		14.8	21.6	27.7	24.4	19.7	20.3	20.1

(1) Tributary uses above the 1949 level of development including agricultural depletions and tributary storage effects.
(2) Net evaporation is shown for 2011.
(3) Incremental inflows to reach which exceed those usable in support of navigation at the target level, even if Gavins Point releases were held to as low as 6,000 cfs.
(4) Estimated requirement for downstream water supply and water quality is approximately 6.0 MAF.
(5) Increased releases required for endangered species regulation.
(6) Includes flood control releases for flood control storage evacuation and releases used to extend the navigation season beyond the normal December 1 closing date at the mouth of the Missouri River.
(7) Releases for flood control storage evacuation in excess of a 17,000 cfs Gavins Point release.

VII. TENTATIVE PROJECTION OF REGULATION THROUGH MARCH 2017

(Not completed until final plan is adopted.)

MISSOURI RIVER BASIN

PLATE 1

Summary of Engineering Data -- Missouri River Mainstem System

Item No.	Subject	Fort Peck Dam - Fort Peck Lake	Garrison Dam - Lake Sakakawea	Oahe Dam - Lake Oahe
1	Location of Dam	Near Glasgow, Montana	Near Garrison, ND	Near Pierre, SD
2	River Mile - 1960 Mileage	Mile 1771.5	Mile 1389.9	Mile 1072.3
3	Total & incremental drainage areas in square miles	57,500	181,400 (2) 123,900	243,490 (1) 62,090
4	Approximate length of ful reservoir (in valley miles)	134, ending near Zortman, MT	178, ending near Trenton, ND	231, ending near Bismarck, ND
5	Shoreline in miles (3)	1520 (elevation 2234)	1340 (elevation 1837.5)	2250 (elevation 1607.5)
6	Average total & incrementa inflow in cfs	10,200	25,600 15,400	28,900 3,300
7	Max. discharge of record near damsite in cfs	137,000 (June 1953)	348,000 (April 1952)	440,000 (April 1952)
8	Construction started - calendar yr	1933	1946	1948
9	In operation (4) calendar yr.	1940	1955	1962
	Dam and Embankment			
10	Top of dam, elevation in feet ms	2280.5	1875	1660
11	Length of dam in feet	21,026 (excluding spillway	11,300 (including spillway	9,300 (excluding spillway
12	Damming height in feet (5)	220	180	200
13	Maximum height in feet (5)	250.5	210	245
14	Max. base width, total & w/o berms in feet	3500, 2700	3400, 2050	3500, 1500
15	Abutment formations (under dam & embankment)	Bearpaw shale and glacial fil	Fort Union clay shale	Pierre shale
16	Type of fill	Hydraulic & rolled earth fil	Rolled earth fillec	Rolled earth fill & shale berm
17	Fill quantity, cubic yards	125,628,000	66,500,000	55,000,000 & 37,000,000
18	Volume of concrete, cubic yards	1,200,000	1,500,000	1,045,000
19	Date of closure	24 June 1937	15 April 1953	3 August 1958
	Spillway Data			
20	Location	Right bank - remote	Left bank - adjacent	Right bank - remote
21	Crest elevation in feet ms	2225	1825	1596.5
22	Width (including piers) in fee	820 gated	1336 gated	456 gated
23	No., size and type of gates	16 - 40' x 25' vertical lift gate	28 - 40' x 29' Tainter	8 - 50' x 23.5' Tainter
24	Design discharge capacity, cf	275,000 at elev 2253.3	827,000 at elev 1858.5	304,000 at elev 1644.4
25	Discharge capacity at maximun operating pool in cfs	230,000	660,000	80,000
	Reservoir Data (6)			
26	Max. operating pool elev. & area	2250 msl 241,000 acres	1854 msl 380,000 acres	1620 msl 374,000 acres
27	Max. normal op. pool elev. & area	2246 msl 234,000 acres	1850 msl 364,000 acres	1617 msl 360,000 acres
28	Base flood control elev & area	2234 msl 210,000 acres	1837.5 msl 307,000 acres	1607.5 msl 312,000 acres
29	Min. operating pool elev. & area	2160 msl 89,000 acres	1775 msl 128,000 acres	1540 msl 117,000 acres
	Storage allocation & capacity			
30	Exclusive flood contro	2250-2246 971,000 a.f.	1854-1850 1,489,000 a.f.	1620-1617 1,102,000 a.f.
31	Flood control & multiple use	2246-2234 2,704,000 a.f.	1850-1837.5 4,222,000 a.f.	1617-1607.5 3,201,000 a.f.
32	Carryover multiple use	2234-2160 10,700,000 a.f.	1837.5-1775 13,130,000 a.f.	1607.5-1540 13,461,000 a.f.
33	Permanent	2160-2030 4,088,000 a.f.	1775-1673 4,980,000 a.f.	1540-1415 5,373,000 a.f.
34	Gross	2250-2030 18,463,000 a.f.	1854-1673 23,821,000 a.f.	1620-1415 23,137,000 a.f.
35	Reservoir filling initiate	November 1937	December 1953	August 1958
36	Initially reached min. operating poc	27 May 1942	7 August 1955	3 April 1962
37	Estimated annual sediment inflov	17,700 a.f. 1030 yrs.	25,900 a.f. 920 yrs.	19,800 a.f. 1170 yrs.
	Outlet Works Data			
38	Location	Right bank	Right Bank	Right Bank
39	Number and size of conduits	2 - 24' 8" diameter (nos. 3 & 4)	1 - 26' dia. and 2 - 22' dia.	6 - 19.75' dia. upstream, 18.25' dia. downstream
40	Length of conduits in feet (8)	No. 3 - 6,615, No. 4 - 7,240	1529	3496 to 3659
41	No., size, and type of service gates	1 - 28' dia. cylindrical gate 6 ports, 7.6' x 8.5' high (net opening) in each control shaft	1 - 18' x 24.5' Tainter gate per conduit for fine regulation	1 - 13' x 22' per conduit, vertical lift, 4 cable suspension and 2 hydraulic suspension (fine regulation)
42	Entrance invert elevation (msl	2095	1672	1425
43	Avg. discharge capacity per condui & total	Elev. 2250 22,500 cfs - 45,000 cfs	Elev. 1854 30,400 cfs - 98,000 cfs	Elev. 1620 18,500 cfs - 111,000 cfs
44	Present tailwater elevation (ft msl	2032-2036 5,000 - 35,000 cfs	1670-1680 15,000- 60,000 cfs	1423-1428 20,000-55,000 cfs
	Power Facilities and Data			
45	Avg. gross head available in feet (14	194	161	174
46	Number and size of conduits	No. 1-24'8" dia., No. 2-22'4" dia.	5 - 29' dia., 25' penstocks	7 - 24' dia., imbedded penstocks
47	Length of conduits in feet (8)	No. 1 - 5,653, No. 2 - 6,355	1829	From 3,280 to 4,005
48	Surge tanks	PH#1: 3-40' dia., PH#2: 2-65' dia.	65' dia. - 2 per penstock	70' dia., 2 per penstock
49	No., type and speed of turbines	5 Francis, PH#1-2: 128.5 rpm, 1-164 rpm , PH#2-2: 128.6 rpm	5 Francis, 90 rpm	7 Francis, 100 rpm
50	Discharge cap. at rated head in cfs	PH#1, units 1&3 170', 2-140' 8,800 cfs, PH#2-4&5 170'-7,200 cfs	150' 41,000 cfs	185' 54,000 cfs
51	Generator nameplate rating in kW	1&3: 43,500; 2: 18,250; 4&5: 40,000	3 - 121,600, 2 - 109,250	112,290
52	Plant capacity in kW	185,250	583,300	786,030
53	Dependable capacity in kW (9)	181,000	388,000	534,000
54	Avg. annual energy, million kWh (12	1,052	2,250	2,621
55	Initial generation, first and last uni	July 1943 - June 1961	January 1956 - October 1960	April 1962 - June 1963
56	Estimated cost September 199 completed project (13)	$158,428,000	$305,274,000	$346,521,000

Summary of Engineering Data -- Missouri River Mainstem System

Big Bend Dam - Lake Sharpe	Fort Randall Dam - Lake Francis Case	Gavins Point Dam - Lewis & Clark Lake	Total	Item No.	Remarks
21 miles upstream Chamberlain, SD	Near Lake Andes, SD	Near Yankton, SD		1	(1) Includes 4,280 square
Mile 987.4	Mile 880.0	Mile 811.1		2	miles of non-contributing
249,330 (1) 5,840	263,480 (1) 14,150	279,480 (1) 16,000		3	areas.
					(2) Includes 1,350 square
80, ending near Pierre, SD	107, ending at Big Bend Dam	25, ending near Niobrara, NE	755 miles	4	miles of non-contributing
					areas.
200 (elevation 1420)	540 (elevation 1350)	90 (elevation 1204.5)	5,940 miles	5	(3) With pool at base of flood
28,900	30,000 1,100	32,000 2,000		6	control.
					(4) Storage first available fo
440,000 (April 1952)	447,000 (April 1952)	480,000 (April 1952)		7	regulation of flows
					(5) Damming height is heigh
1959	1946	1952		8	from low water to maximum
1964	1953	1955		9	operating pool. Maximum
					height is from average
1440	1395	1234		10	streambed to top of dam.
10,570 (including spillway	10,700 (including spillway	8,700 (including spillway	71,596	11	(6) Based on latest available
78	140	45	863 feet	12	storage data.
95	165	74		13	(7) River regulation is attained
1200, 700	4300, 1250	850, 450		14	by flows over low-crested
					spillway and through
Pierre shale & Niobrara chalk	Niobrara chalk	Niobrara chalk & Carlile shale		15	turbines.
					(8) Length from upstream face
Rolled earth, shale, chalk fil	Rolled earth fill & chalk berms	Rolled earth & chalk fil		16	of outlet or to spiral case.
17,000,000	28,000,000 & 22,000,000	7,000,000	358,128,000 cu. yds	17	(9) Based on 8th year (1961)
540,000	961,000	308,000	5,554,000 cu. yds.	18	of drought drawdown
24 July 1963	20 July 1952	31 July 1955		19	(From study 8-83-1985).
					(10) Affected by level of Lake
Left bank - adjacent	Left bank - adjacent	Right bank - adjacent		20	Francis case. Applicable to
1385	1346	1180		21	pool at elevation 1350.
376 gated	1000 gated	664 gated		22	(11) Spillway crest
8 - 40' x 38' Tainter	21 - 40' x 29' Tainter	14 - 40' x 30' Tainter		23	(12) 1967-2009 Average
390,000 at elev 1433.6	620,000 at elev 1379.3	584,000 at elev 1221.4		24	(13) Source: Annual Report on
270,000	508,000	345,000		25	Civil Works Activities of th
					Corps of Engineers. Extract
					Report Fiscal Year 1999.
1423 msl 61,000 acres	1375 msl 102,000 acres	1210 msl 30,000 acres	1,188,000 acres	26	(14) Based on Study 8-83-1985
1422 msl 60,000 acres	1365 msl 95,000 acres	1208 msl 27,000 acres	1,140,000 acres	27	
1420 msl 57,000 acres	1350 msl 77,000 acres	1204.5 msl 23,000 acres	986,000 acres	28	
1415 msl 51,000 acres	1320 msl 38,000 acres	1204.5 msl 23,000 acres	446,000 acres	29	
1423-1422 60,000 a.f.	1375-1365 985,000 a.f.	1210-1208 57,000 a.f.	4,664,000 a.f.	30	
1422-1420 117,000 a.f.	1365-1350 1,309,000 a.f.	1208-1204.5 86,000 a.f.	11,639,000 a.f.	31	
	1350-1320 1,607,000 a.f.		38,898,000 a.f.	32	
1420-1345 1,621,000 a.f.	1320-1240 1,517,000 a.f.	1204.5-1160 307,000 a.f.	17,886,000 a.f.	33	
1423-1345 1,798,000 a.f.	1375-1240 5,418,000 a.f.	1210-1160 450,000 a.f.	73,087,000 a.f.	34	
November 1963	January 1953	August 1955		35	
25 March 1964	24 November 1953	22 December 1955		36	
5,300 a.f. 430 yrs.	18,400 a.f. 250 yrs.	2,600 a.f. 180 yrs.	89,700 a.f.	37	
	Left Bank			38	
None (7)	4 - 22' diameter	None (7)		39	
	1013			40	
	2 - 11' x 23' per conduit, vertical lift, cable suspension			41	
1385 (11)	1229	1180 (11)		42	
	Elev 1375			43	
	32,000 cfs - 128,000 cfs				
1351-1355(10) 25,000-100,000 cfs	1228-1239 5,000-60,000 cfs	1155-1163 15,000-60,000 cfs		44	
70	117	48	764 feet	45	
None: direct intake	8 - 28' dia., 22' penstocks	None: direct intake		46	
	1,074		55,083	47	
None	59' dia, 2 per alternate penstock	None		48	
8 Fixed blade, 81.8 rpm	8 Francis, 85.7 rpm	3 Kaplan, 75 rpm	36 units	49	
67' 103,000 cfs	112' 44,500 cfs	48' 36,000 cfs		50	
3 - 67,276, 5 - 58,500	40,000	44,100		51	
494,320	320,000	132,300	2,501,200 kw	52	
497,000	293,000	74,000	1,967,000 kw	53	Corps of Engineers, U.S. Army
969	1,727	727	9,345 million kWh	54	Compiled by
October 1964 - July 1966	March 1954 - January 1956	September 1956 - January 1957	July 1943 - July 1966	55	Northwestern Division
				56	Missouri River Region
$107,498,000	$199,066,000	$49,617,000	$1,166,404,000		August 2010

Plate 3
Summary of Master Manual Technical Criteria

NAVIGATION TARGET FLOWS

Location	Minimum Service (kcfs)	Full Service (kcfs)
Sioux City	25	31
Omaha	25	31
Nebraska City	31	37
Kansas City	35	41

RELATION OF SYSTEM STORAGE TO NAVIGATION SERVICE LEVEL

Date	System Storage (MAF)	Navigation Service Level
March 15	54.5 or more	35,000 cfs (full-service)
March 15	49.0 to 31	29,000 cfs (minimum-service)
March 15	31.0 or less	No navigation service
July 1	57.0 or more	35,000 cfs (full-service)
July 1	50.5 or less	29,000 cfs (minimum-service)

RELATION OF SYSTEM STORAGE TO NAVIGATION SEASON LENGTH

Date	System Storage (MAF)	Final Day of Navigation Support at Mouth of the Missouri River
July 1	51.5 or more	November 30 (8-month season)
July 1	46.8 through 41.0	October 31 (7-month season)
July 1	36.5 or less	September 30 (6-month season)

GAVINS POINT RELEASES NEEDED TO MEET TARGET FLOWS

1950 to 1996 Data (kcfs)

Median, Upper Quartile, Upper Decile Runoff

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Full Service	26.7	28.0	27.9	31.6	33.2	32.6	32.0	31.1
Minimum Service	20.7	22.0	21.9	25.6	27.2	26.6	26.0	25.1

Lower Quartile, Lower Decile Runoff

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Full Service	29.8	31.3	31.2	34.3	34.0	33.5	33.1	31.2
Minimum Service	23.8	25.3	25.2	28.3	28.0	27.5	27.1	25.2

RESERVOIR UNBALANCING SCHEDULE

	Fort Peck		Garrison		Oahe	
Year	*March 1*	*Rest of Year*	*March 1*	*Rest of Year*	*March 1*	*Rest of Year*
1	High	Float	Low	Hold Peak	Raise & hold during spawn	Float
2	Raise & hold during spawn	Float	High	Float	Low	Hold peak
3	Low	Hold peak	Raise & hold during spawn	Float	High	Float

Notes: **Float year:** Normal regulation, then unbalance 1 foot during low pool years or 3 feet when System storage is near 57.0 MAF on March 1.

Low year: Begin low, then hold peak the remainder of the year.

High year: Begin high, raise and hold pool during spawn, then float.

MRNRC RECOMMENDED RESERVOIR ELEVATION GUIDELINES FOR UNBALANCING

	Fort Peck	Garrison	Oahe
Implement unbalancing if March 1 pool is above this level.	2234 feet msl	1837.5 feet msl	1607.5 feet msl
Implement unbalancing if March 1 pool level is in this range **and** the pool is expected to raise more than 3 feet after March 1.	2227-2234 feet msl	1827-1837.5 feet msl	1600-1607.5 feet msl
Scheduling Criteria	Avoid pool level decline during spawn period which ranges from April 15 – May 30	Schedule after spawn period of April 20 – May 20	Schedule after spawn period of April 8 – May 15

Plate 3 (cont'd)
Summary of Master Manual Technical Criteria

TECHNICAL CRITERIA FOR SPRING PULSES FROM GAVINS POINT DAM

Criteria Applicable to Both the March and May Spring Pulses

Flood Control Constraints	No change from current levels

Criteria Applicable to the March Spring Pulse

Drought Preclude	40.0 MAF or below measured on March 1.
Drought Proration of Pulse Magnitude*	None, 5 kcfs added to navigation releases, but no greater than 35 kcfs.
Initiation of Pulse	Extend the stepped System release increases that precede the beginning of the navigation season.
Rate of Rise before Peak	Approximately 5 kcfs for 1 day.
Duration of Peak	Two days.
Rate of Fall after Peak	Drop over 5 days to navigation target release.

Criteria Applicable to Time Period Between the Bimodal Pulses

Release	Existing Master Manual Criteria

Criteria Applicable to the May Spring Pulse

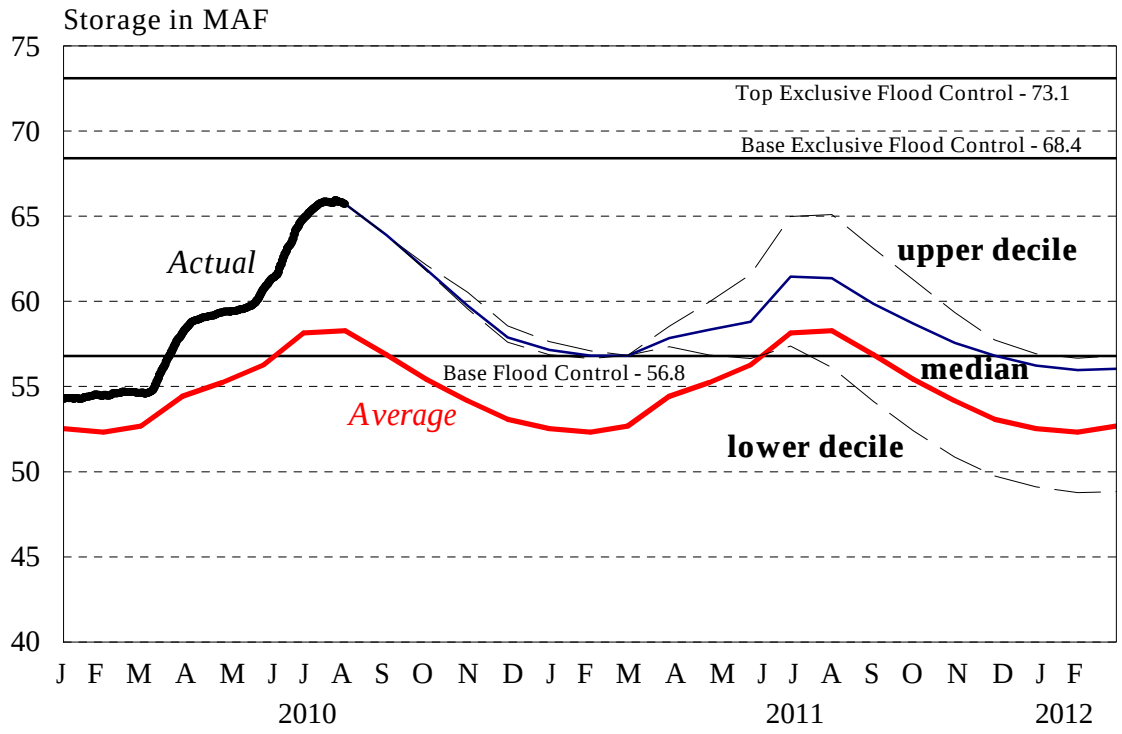
Drought Preclude	40.0 MAF or below measured on May 1.
Proration of Pulse Magnitude Based On System Storage*	Prorated from 16 kcfs based on a May 1 System Storage check; 100% at 54.5 MAF; straight line interpolation to 75% at 40.0 MAF.
Proration of Pulse Magnitude Based On Projected Runoff*	After the proration of the spring pulse magnitude for System Storage, the resultant magnitude would be further adjusted either up or down based on the May CY runoff forecast; 100% for Median; straight-line interpolation to 125% at Upper Quartile runoff; 125% for runoff above Upper Quartile; straight-line interpolation to 75% at Lower Quartile runoff; 75% for runoff below Lower Quartile.
Initiation of Pulse	Between May 1 to May 19, depending on Missouri River water temperature immediately below Gavins Point Dam. If possible, pulse will be initiated after the second daily occurrence of a 16 degree Celsius water temperature; however, the decision will be informed by the potential for 'take' of Threatened and Endangered bird species.
Rate of Rise before Peak	Approximately 6 kcfs per day.
Duration of Peak	Two days.
Rate of Fall after Peak	Approximately 30% drop over 2 days followed by a proportional reduction in releases back to the existing Master Manual criteria over an 8-day period.

Spring Pulse Downstream Flow Limits

Omaha	41,000 cfs
Nebraska City	47,000 cfs
Kansas City	71,000 cfs

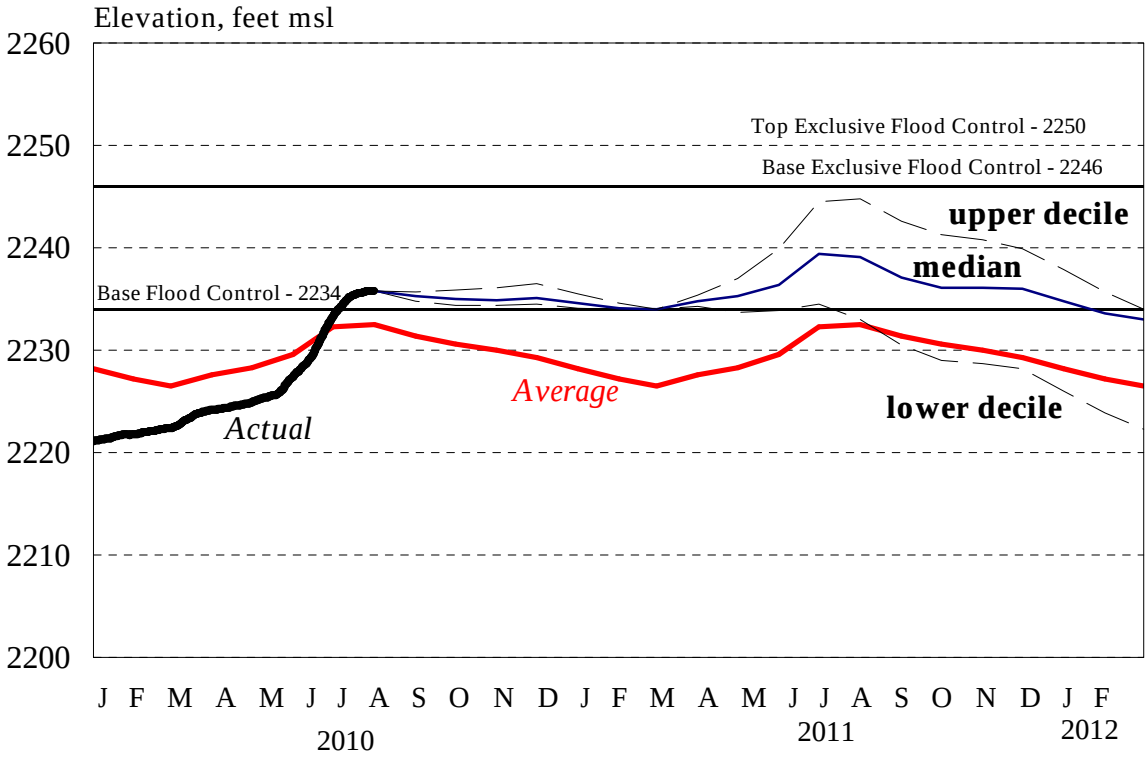
* Spring pulse magnitudes will be determined by taking the difference between pre-pulse Gavins Point releases and the peak pulse Missouri River flows measured just downstream of the mouth of the James River.

System Storage
2010-2011 Draft AOP



Average: 1967-2009

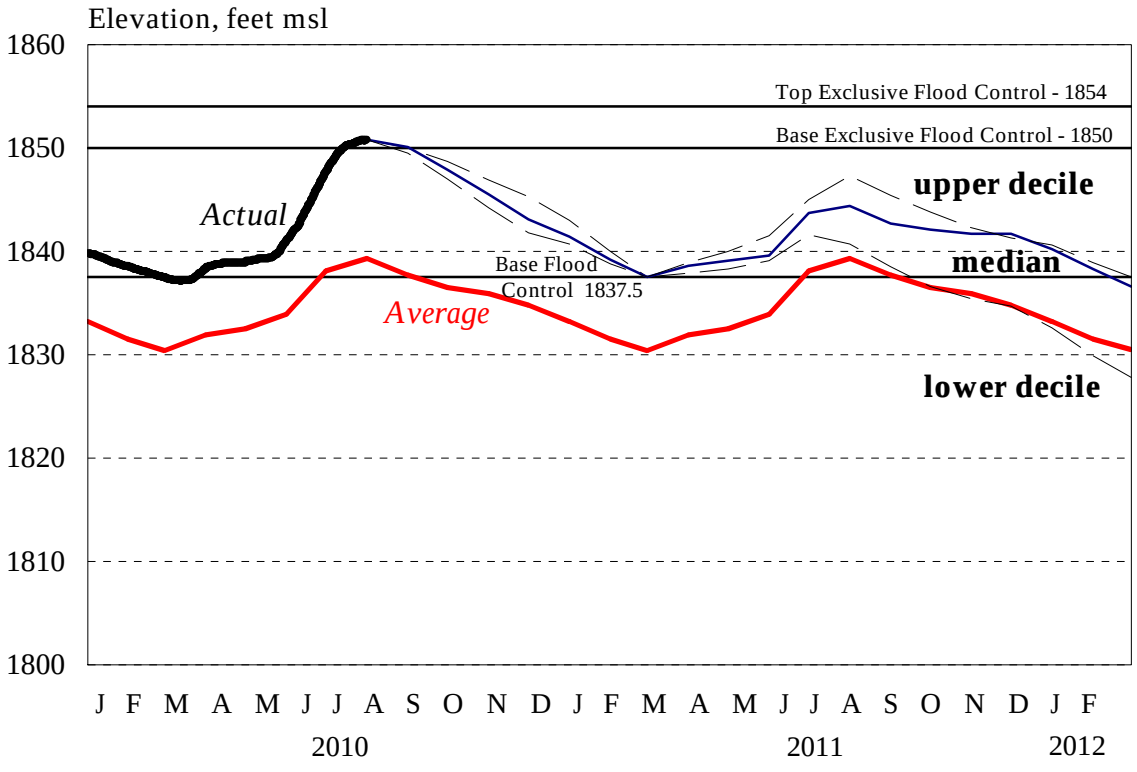
Fort Peck
2010-2011 Draft AOP



Average: 1967-2009

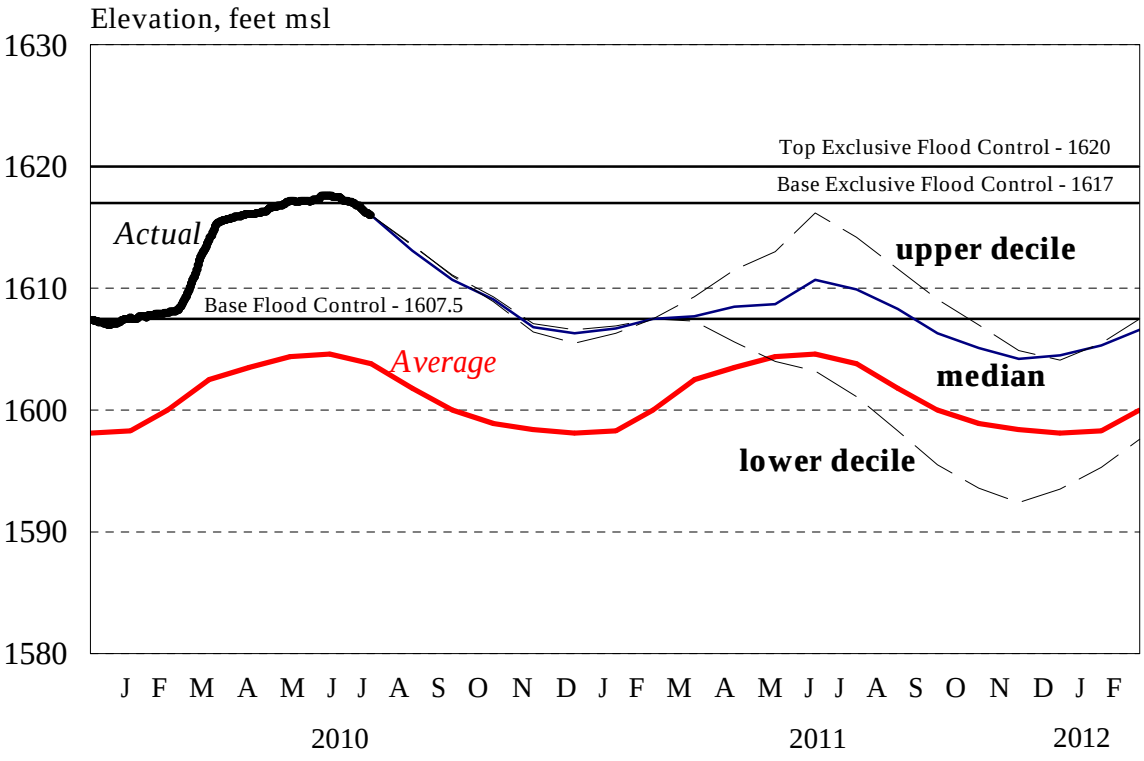
Plate 4

Garrison
2010-2011 Draft AOP



Average: 1967-2009

Oahe
2010-2011 Draft AOP



Average: 1967-2009

Plate 5

System Storage

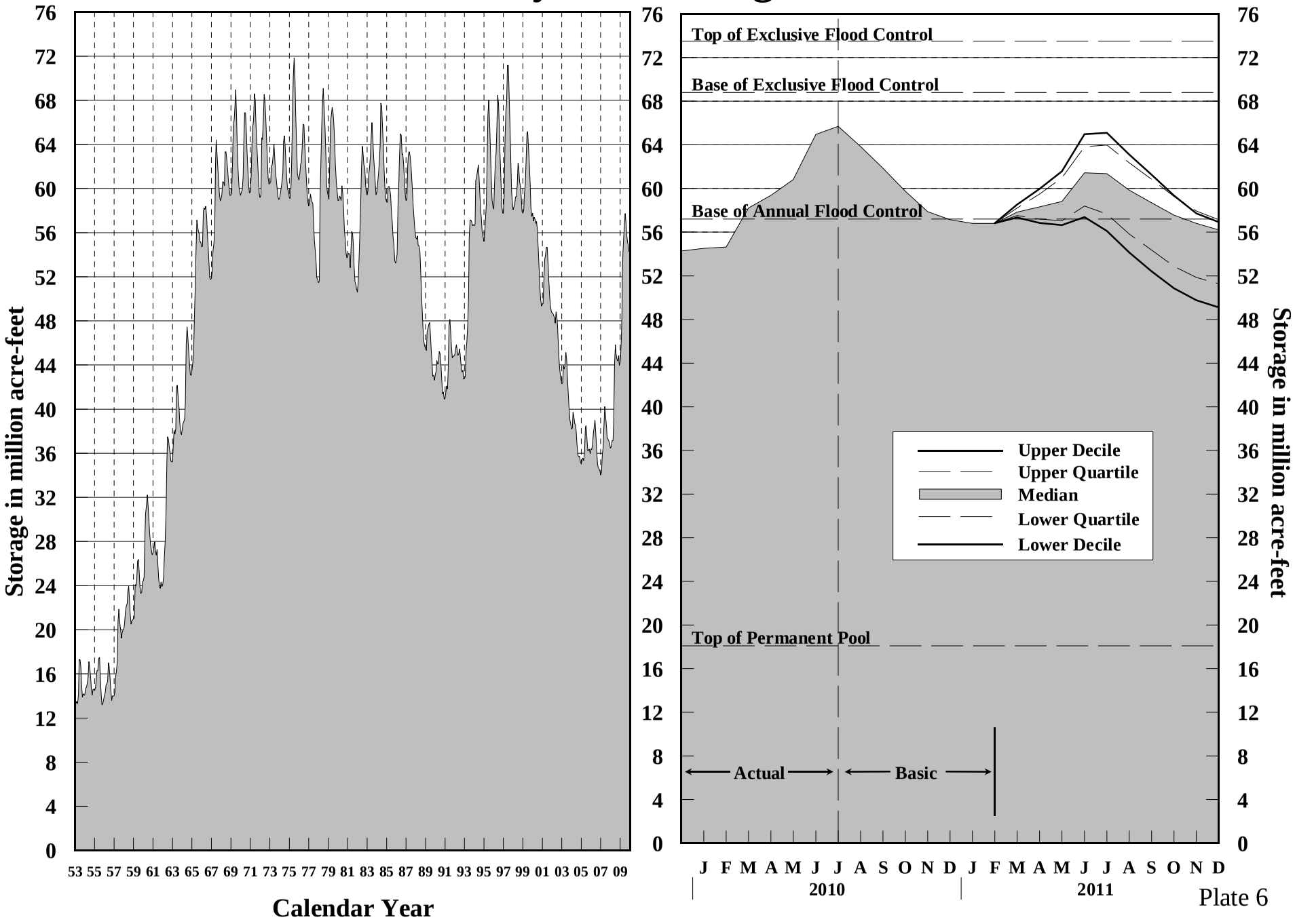


Plate 6

Gavins Point Releases

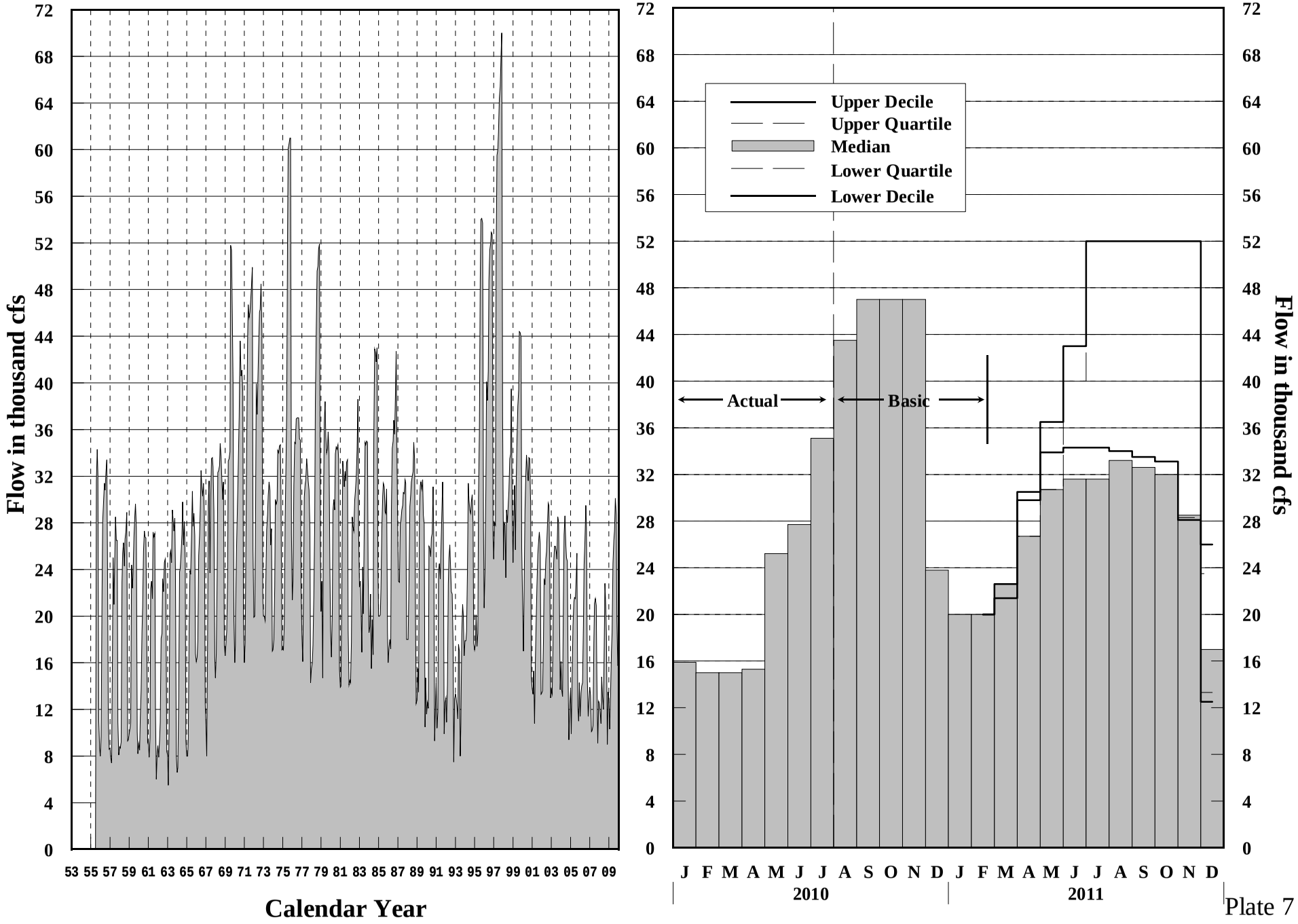
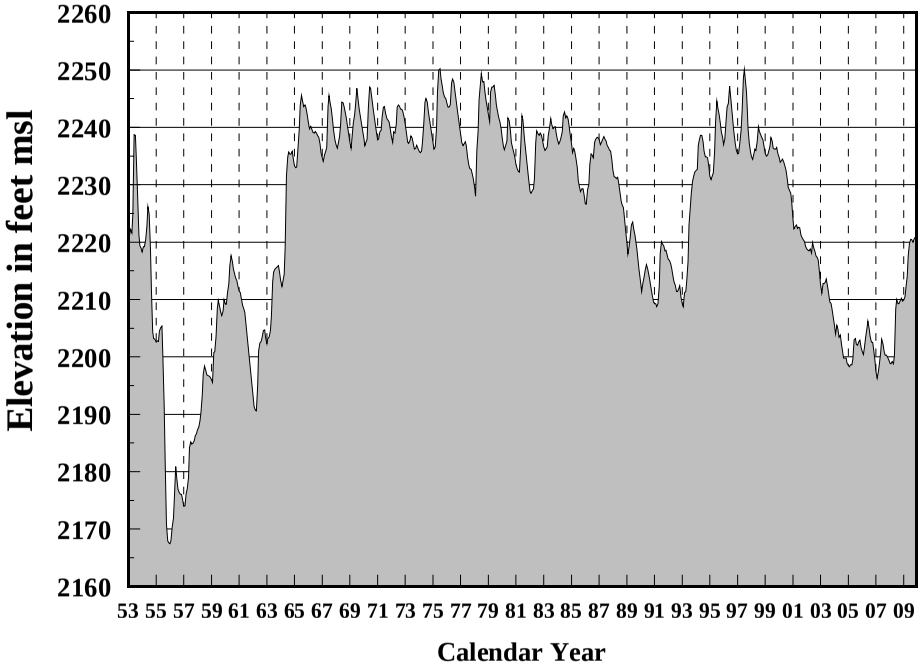
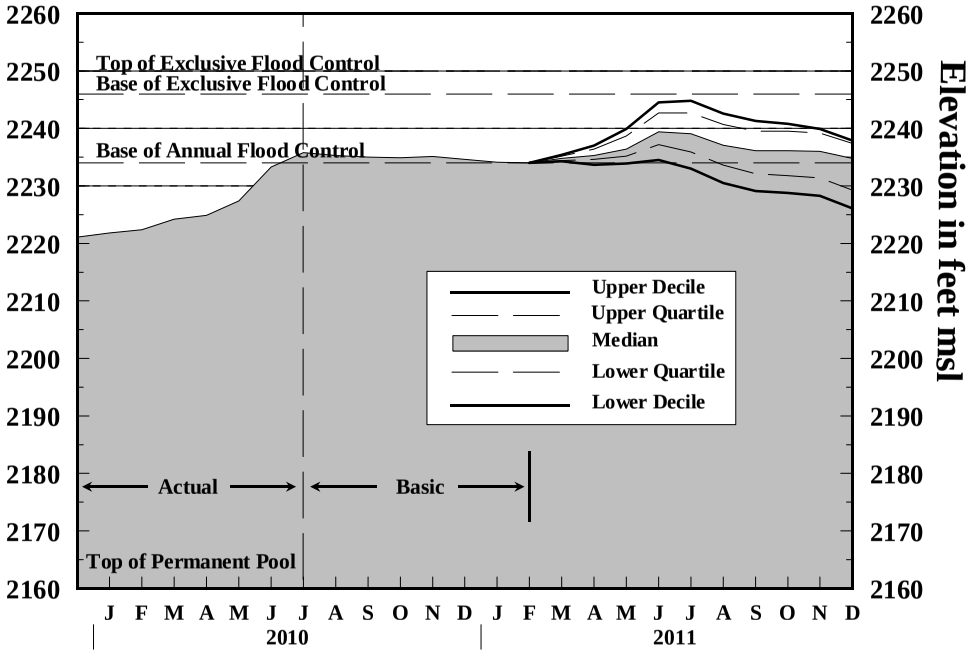
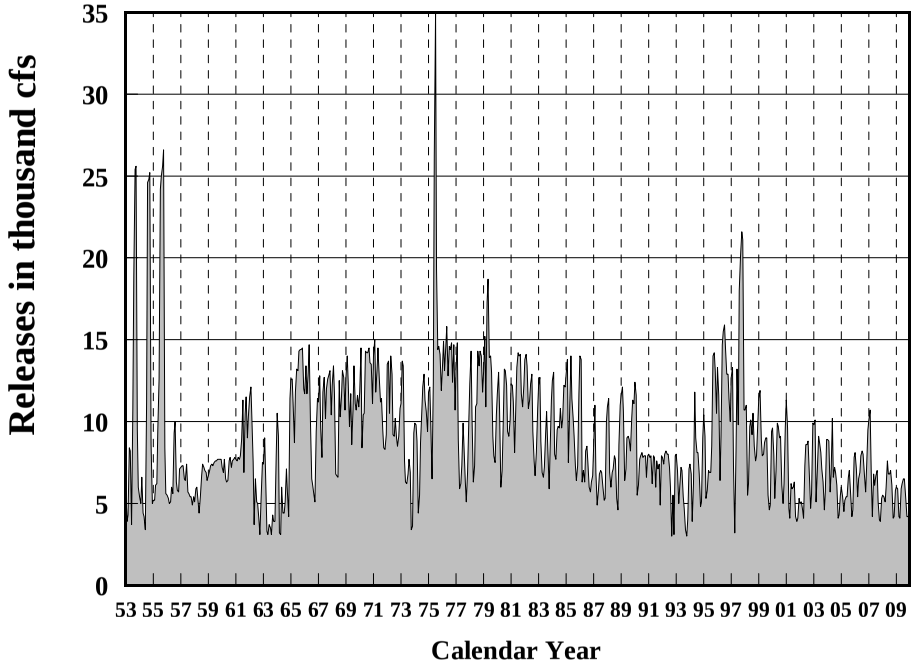


Plate 7

Fort Peck
Elevations and Releases







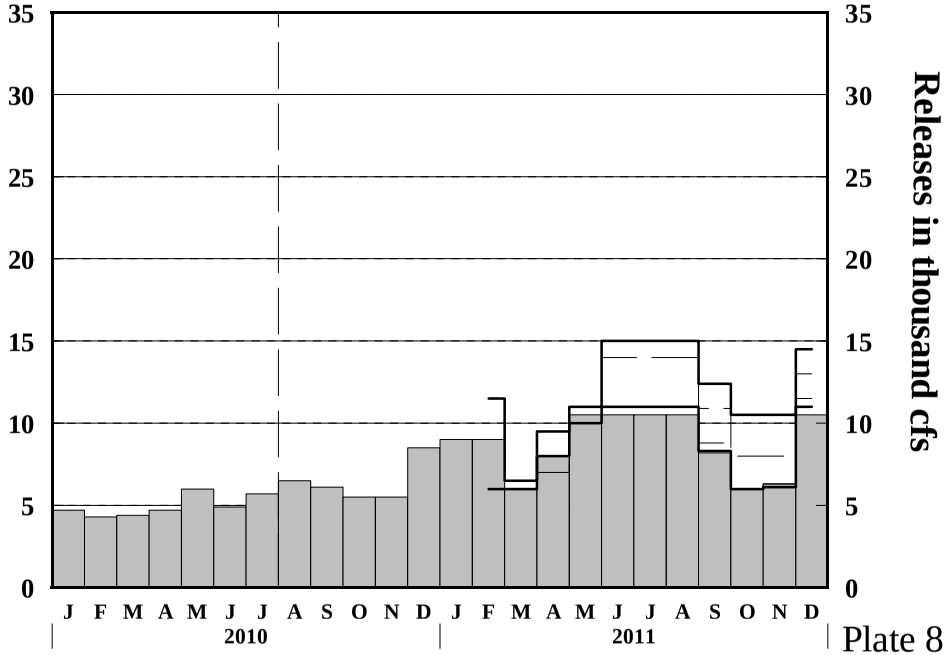
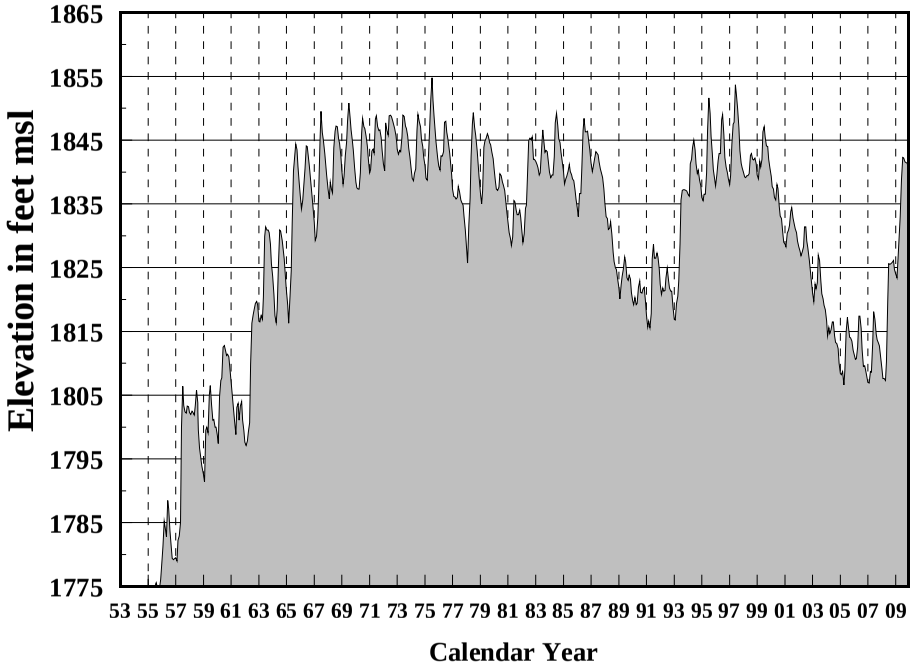
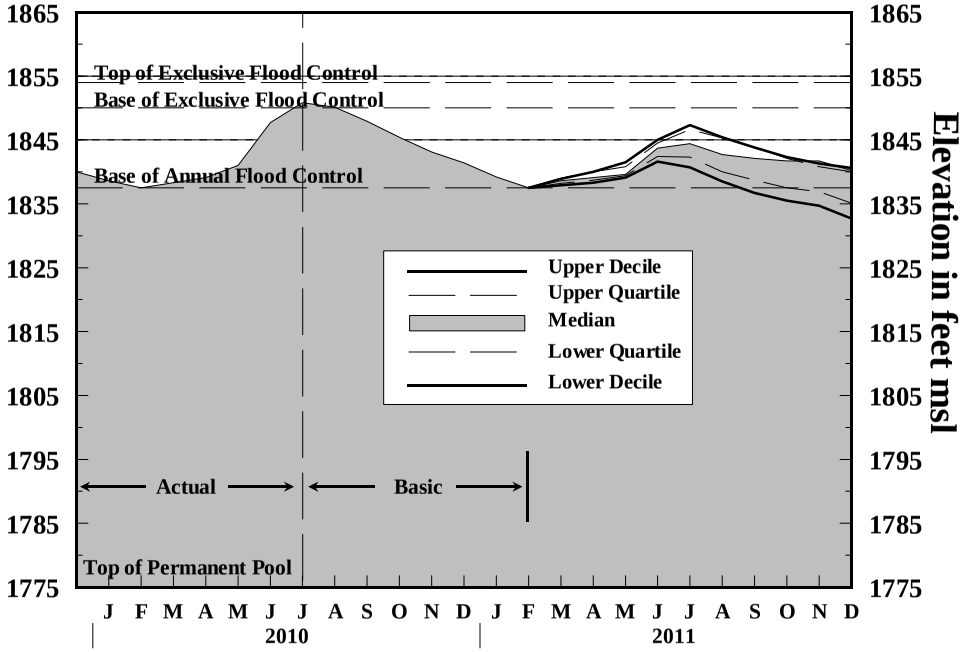
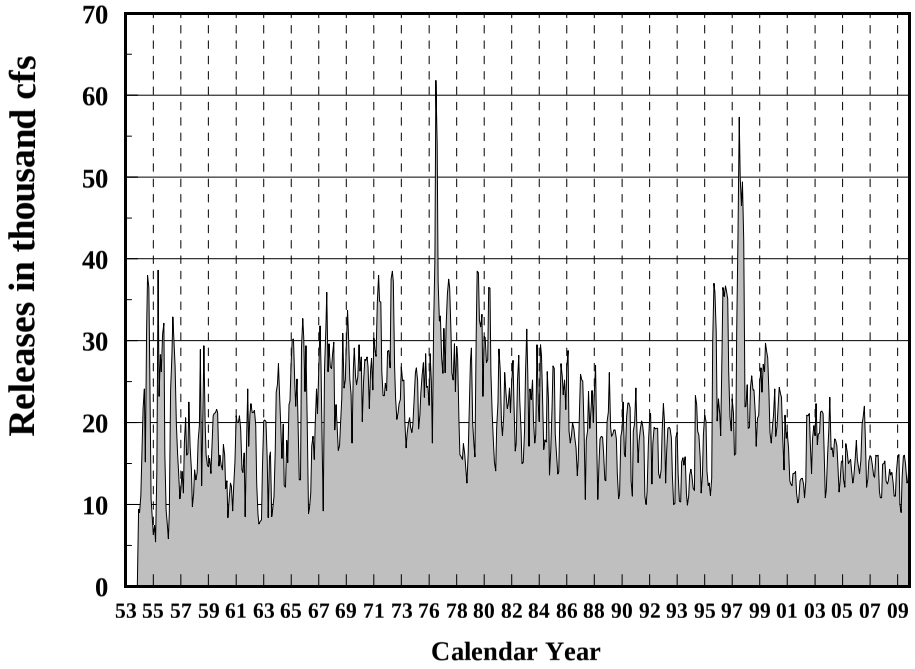


Plate 8

Garrison
Elevations and Releases







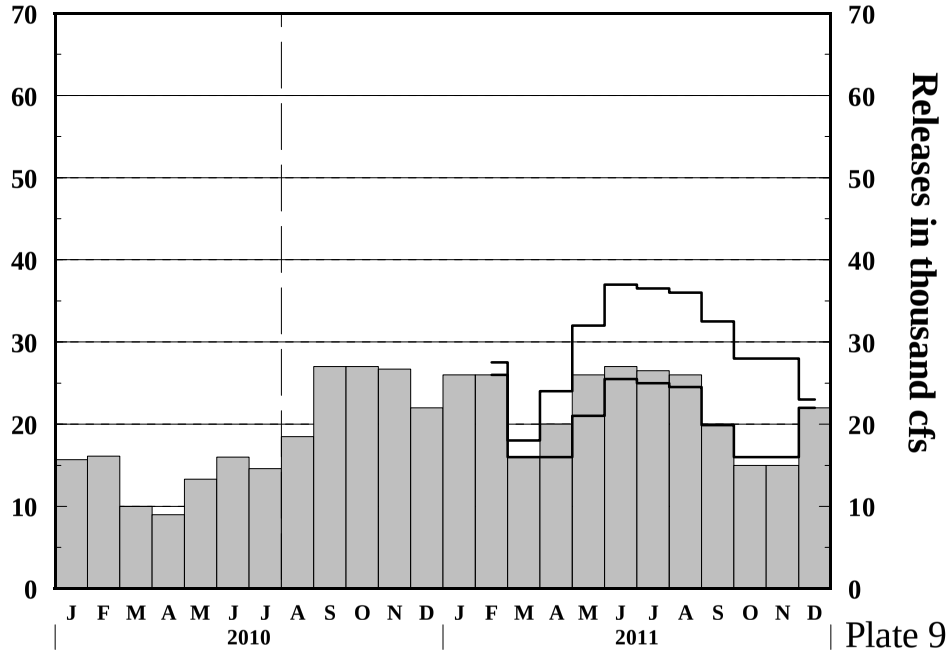
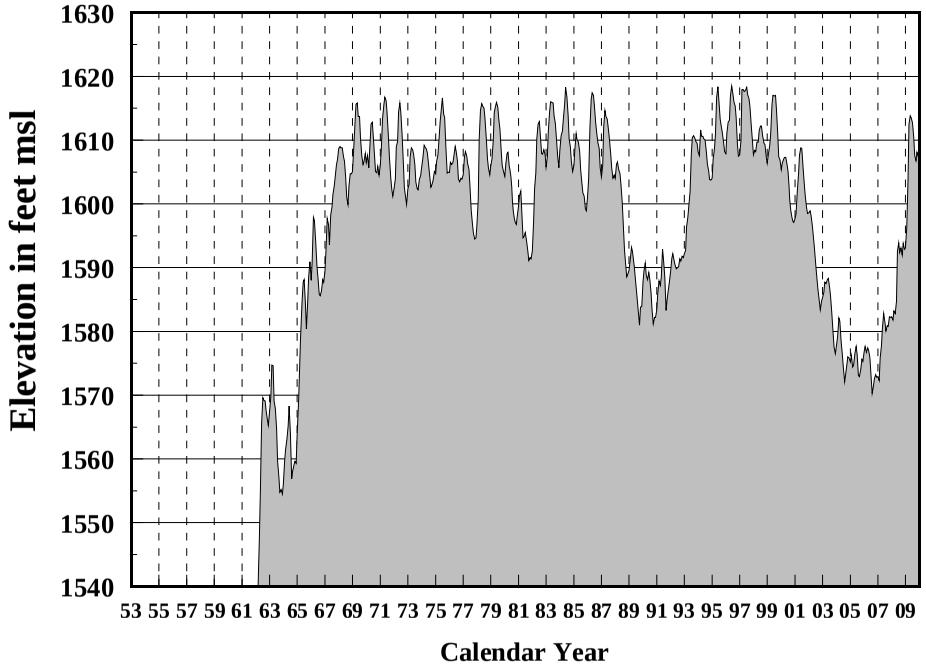
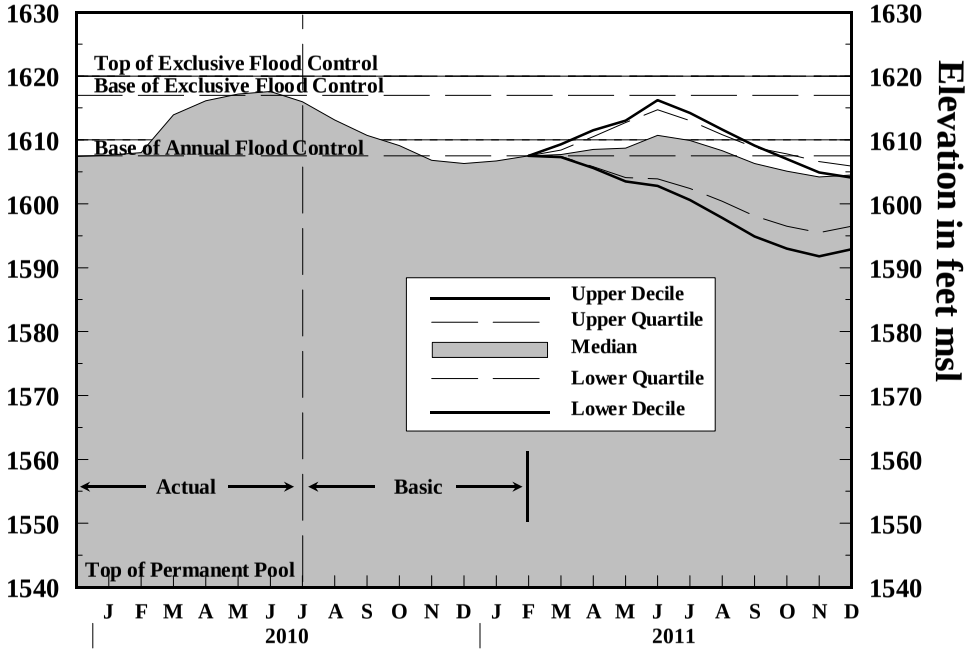


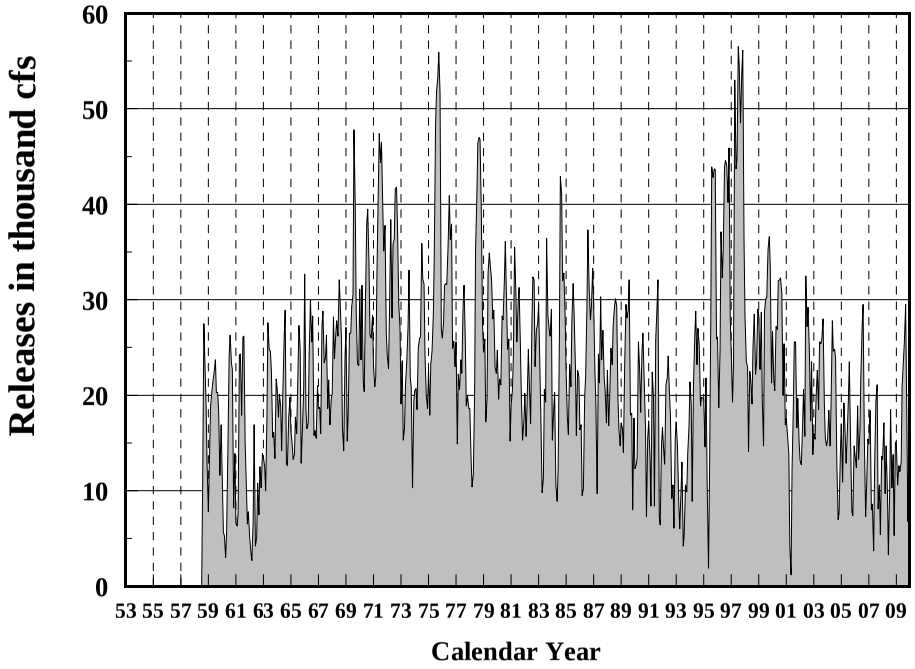
Plate 9

Oahe

Elevations and Releases







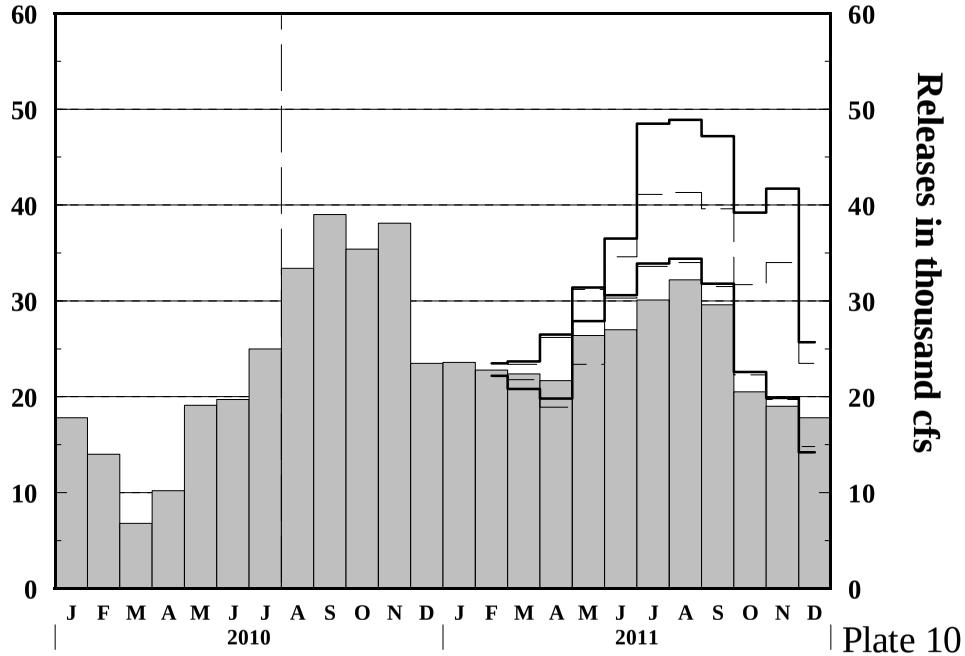
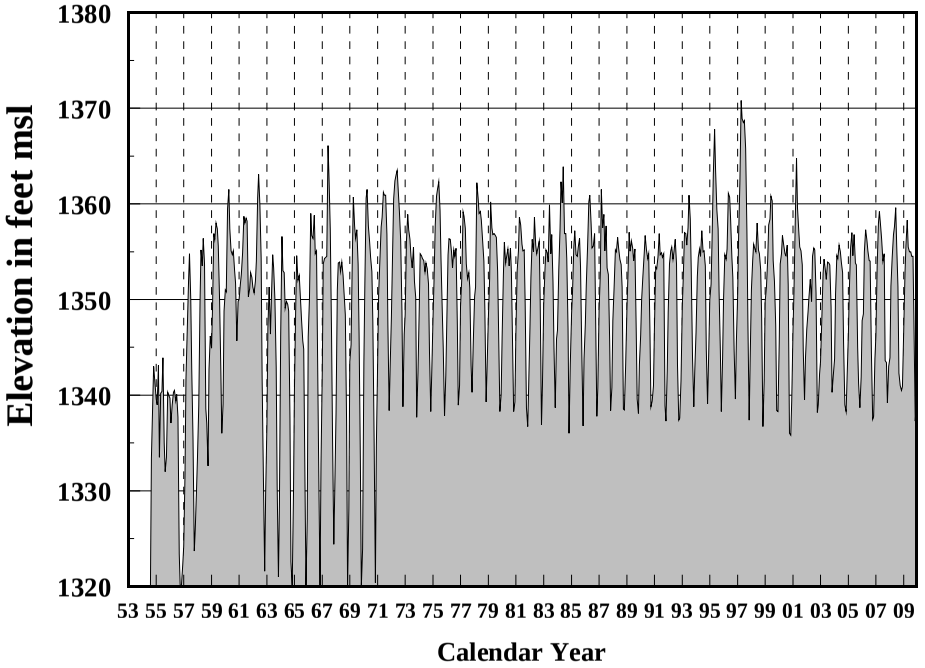
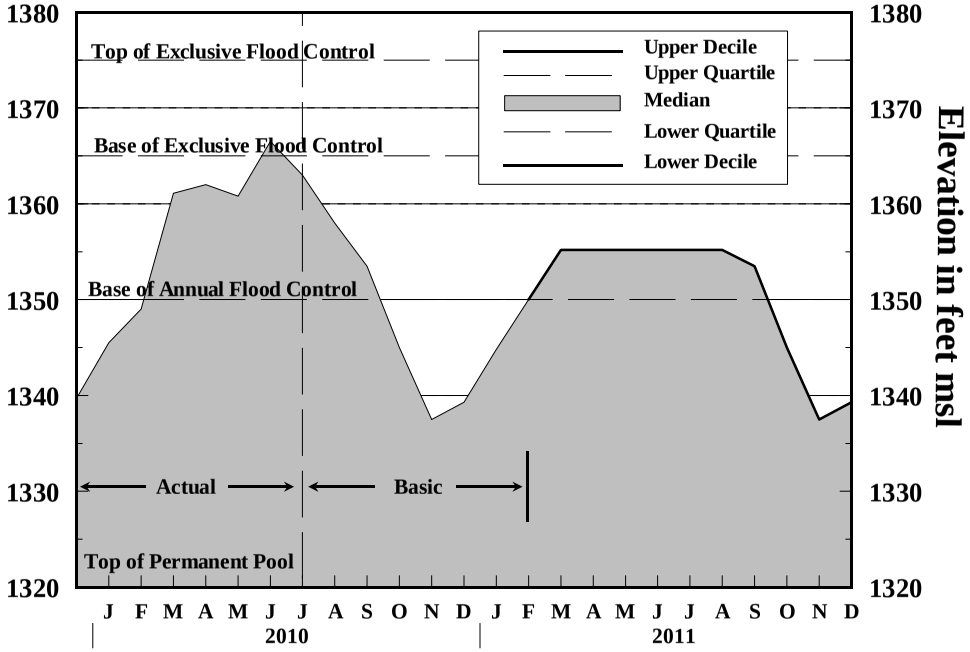
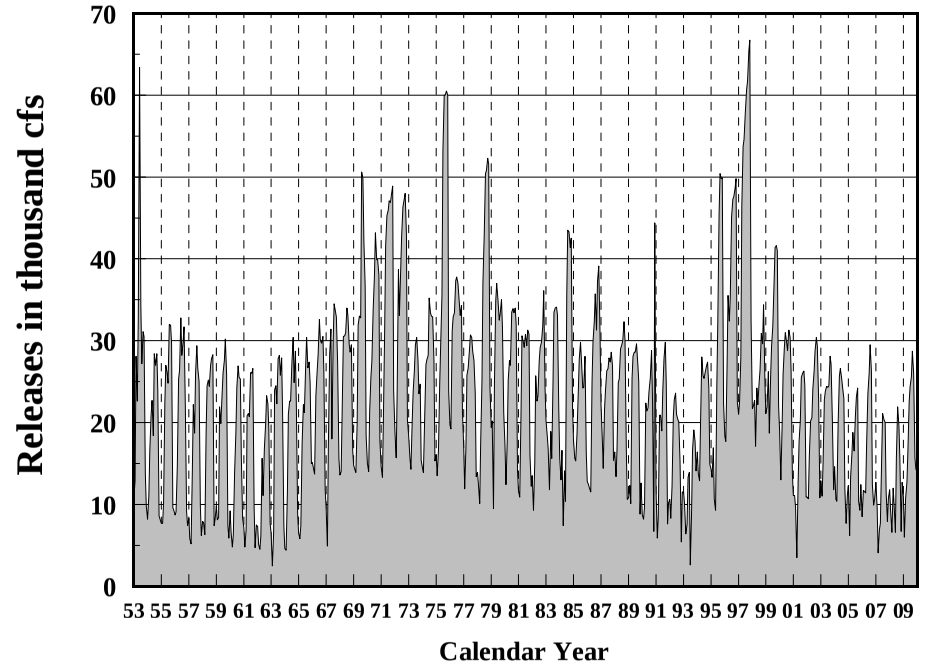


Plate 10

Fort Randall
Elevations and Releases







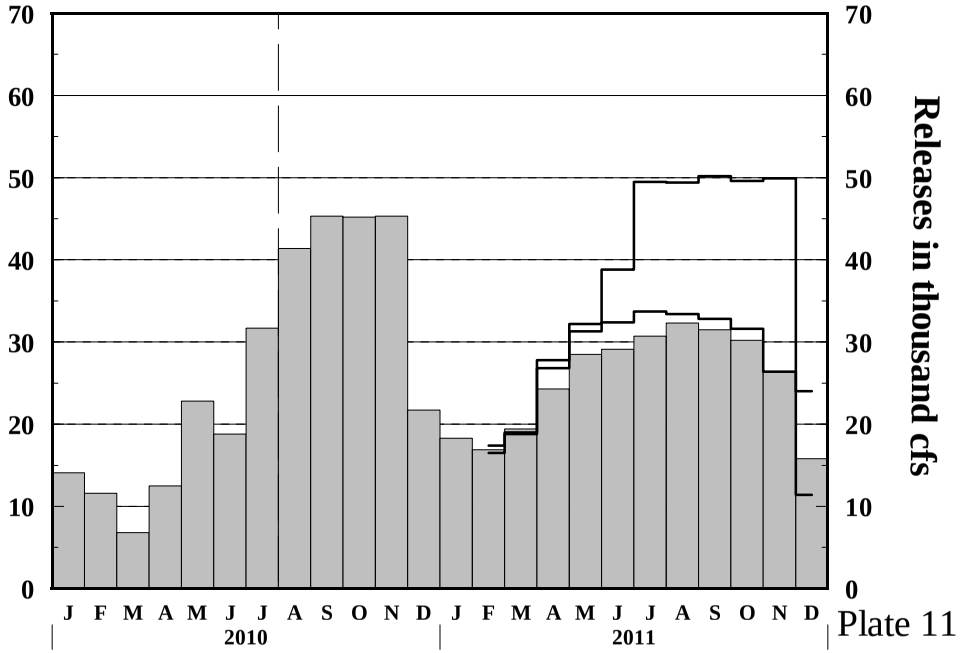
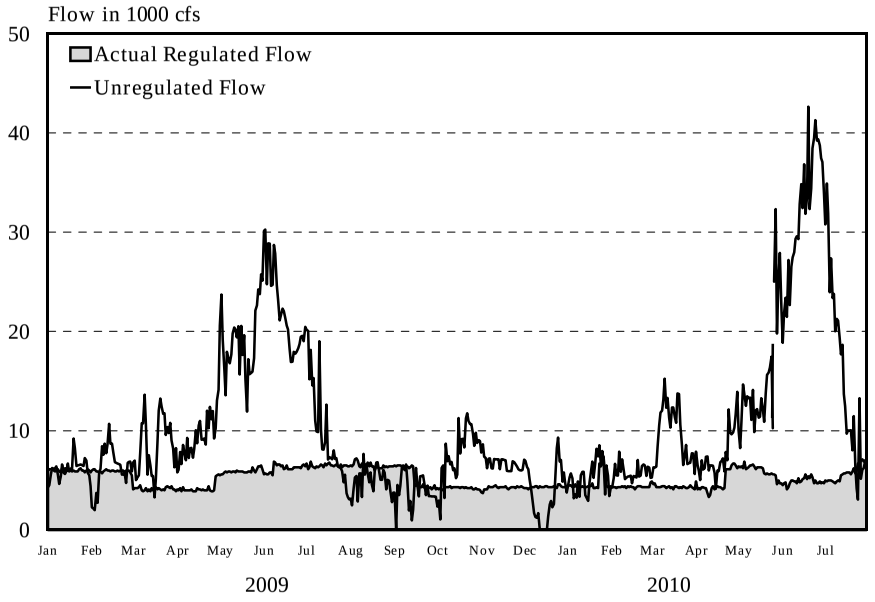


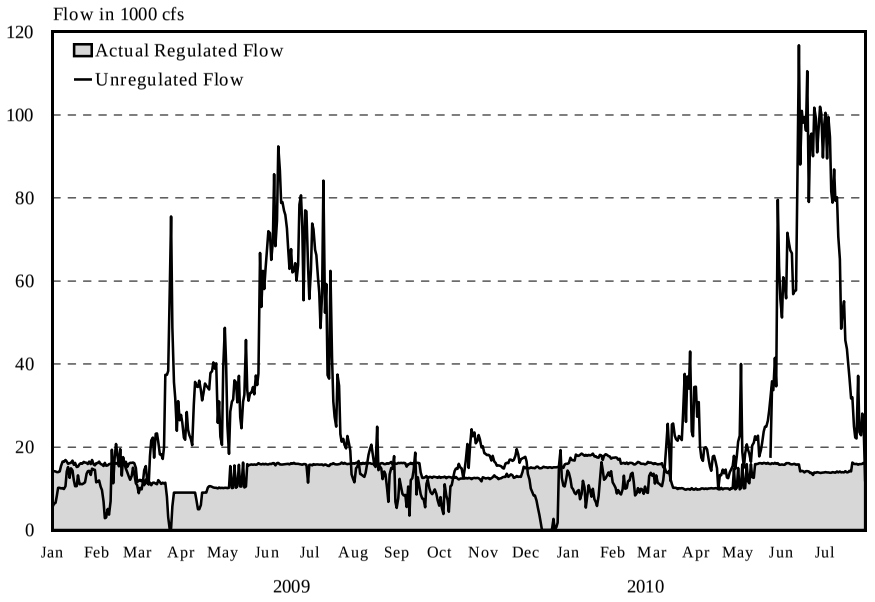
Plate 11

Reservoir Release and Unregulated Flow

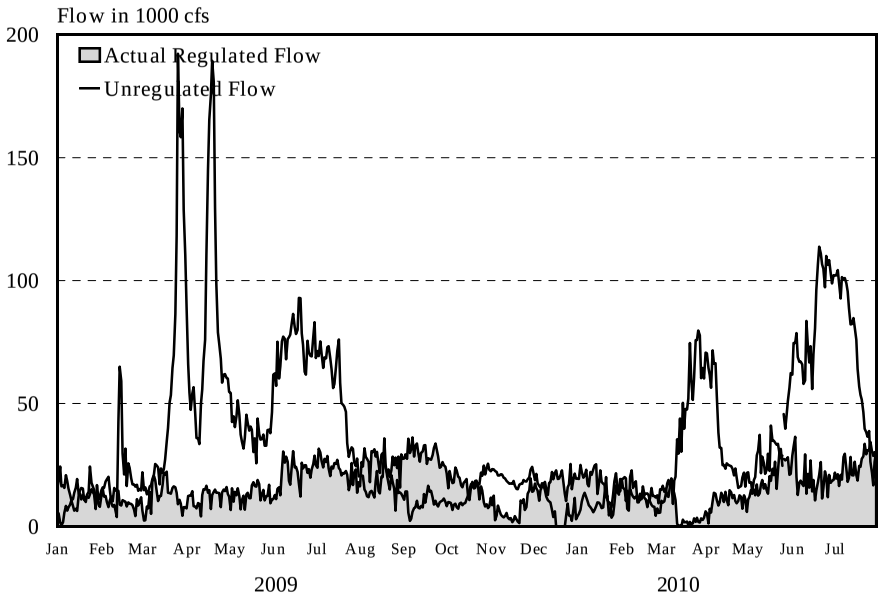
Fort Peck



Garrison



Oahe



Gavins Point

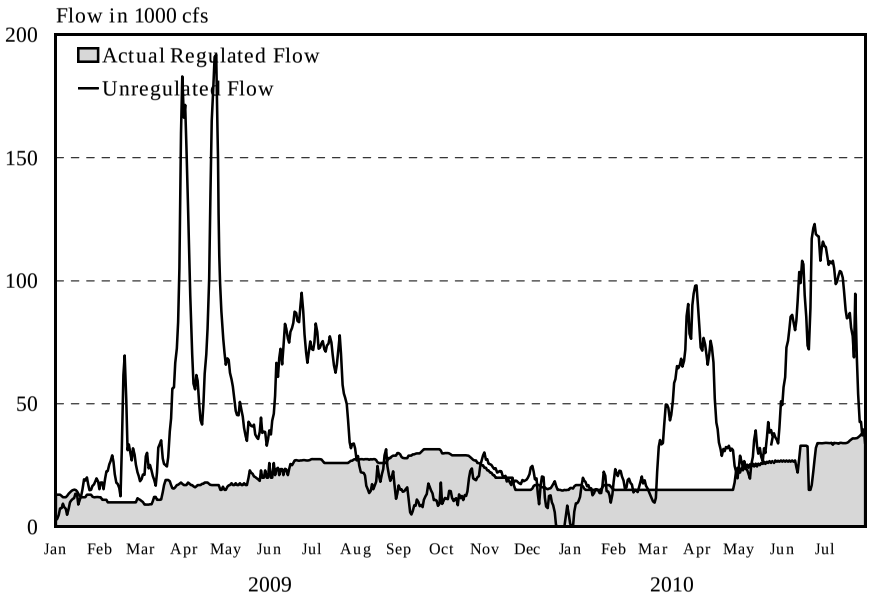


Plate 12

System Gross Capability and Average Monthly Generation

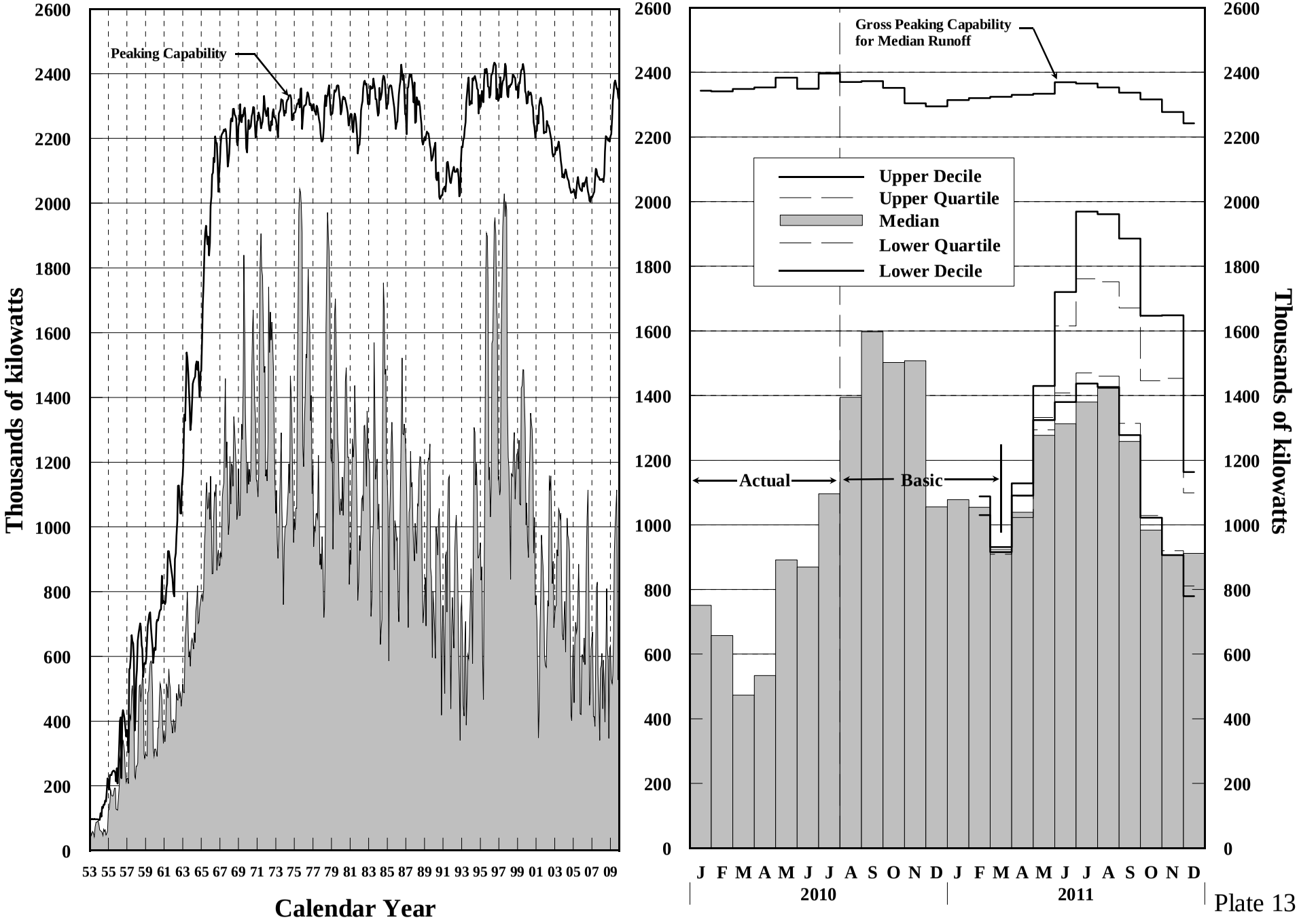
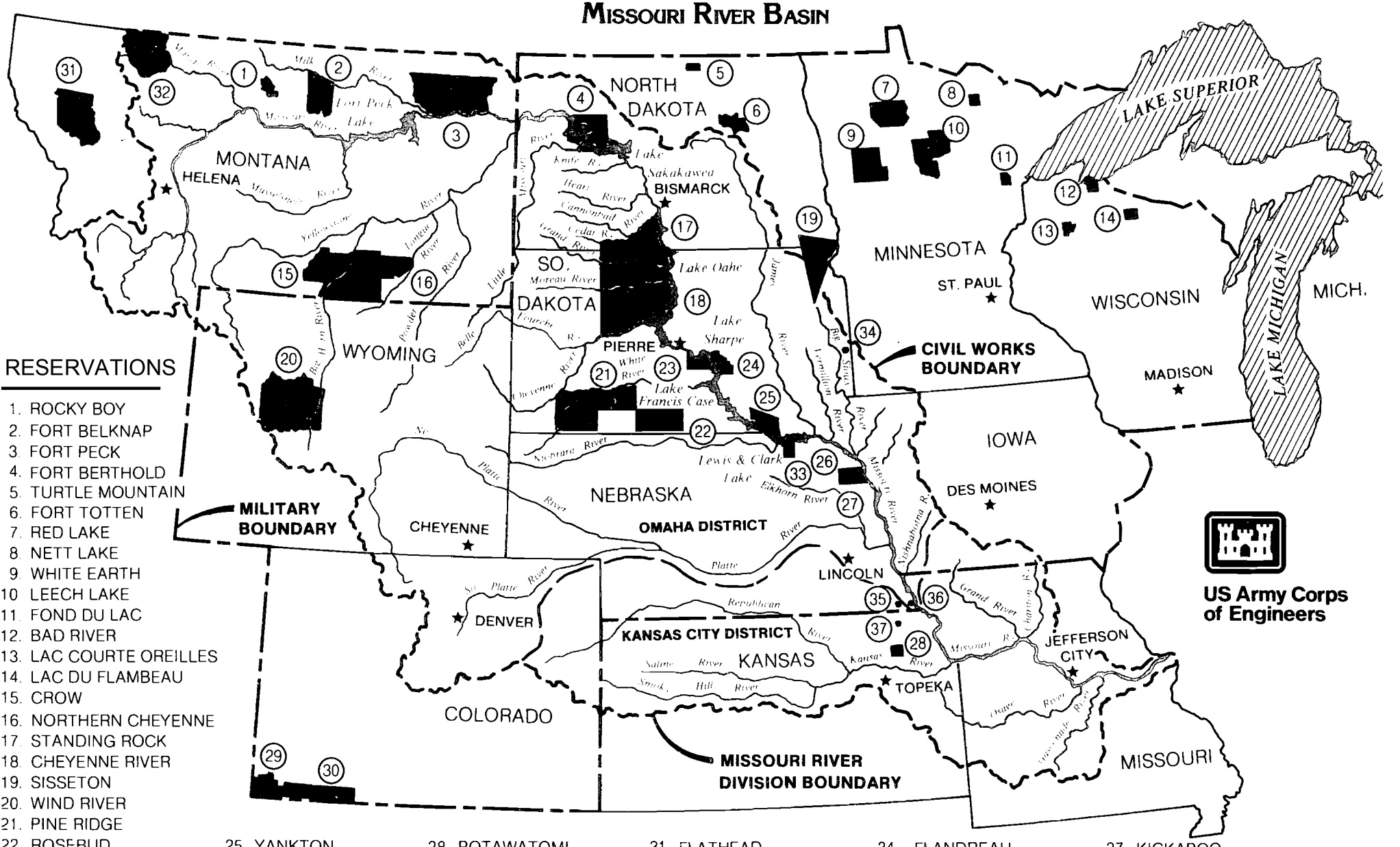


Plate 13

AMERICAN INDIAN RESERVATIONS

MISSOURI RIVER BASIN



RESERVATIONS

1. ROCKY BOY
2. FORT BELKNAP
3. FORT PECK
4. FORT BERTHOLD
5. TURTLE MOUNTAIN
6. FORT TOTTEN
7. RED LAKE
8. NETT LAKE
9. WHITE EARTH
10. LEECH LAKE
11. FOND DU LAC
12. BAD RIVER
13. LAC COURTE OREILLES
14. LAC DU FLAMBEAU
15. CROW
16. NORTHERN CHEYENNE
17. STANDING ROCK
18. CHEYENNE RIVER
19. SISSETON
20. WIND RIVER
21. PINE RIDGE
22. ROSEBUD
23. LOWER BRULE
24. CROW CREEK
25. YANKTON
26. WINNEBAGO
27. OMAHA
28. POTAWATOMI
29. UTE MOUNTAIN
30. SOUTHERN UTE
31. FLATHEAD
32. BLACKFEET
33. SANTEE
34. FLANDREAU
35. IOWA
36. SAC AND FOX
37. KICKAPOO

For illustrative purposes. No legal boundaries are implied.

TIME OF STUDY 14:10:47 EXTENDED NAV SEASON STUDY NO 1

VALUES IN 1000 AF EXCEPT AS INDICATED

31JUL10		2010						2011	
	INI-SUM	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--										
NAT INFLOW	2517	402	345	385	192	90	102	329	312	360
DEPLETION	-524	31	-58	-30	-41	-19	-22	-128	-152	-106
EVAPORATION	427	87	109	95	43	20	23	50		
MOD INFLOW	2614	284	294	320	189	88	101	407	464	466
RELEASE	3001	400	360	338	164	76	87	523	553	500
STOR CHANGE	-387	-115	-66	-18	26	12	14	-115	-89	-34
STORAGE	15172	15057	14991	14972	14998	15010	15024	14908	14819	14785
ELEV FTMSL	2235.8	2235.3	2235.0	2234.9	2235.0	2235.0	2235.1	2234.6	2234.1	2234.0
DISCH KCFS	5.7	6.5	6.1	5.5	5.5	5.5	5.5	8.5	9.0	9.0
POWER										
AVE POWER MW		89	83	75	75	75	75	116	123	123
PEAK POW MW		163	163	163	163	163	163	163	162	162
ENERGY GWH	496.3	66.3	59.6	56.0	27.1	12.7	14.5	86.4	91.3	82.4
--GARRISON--										
NAT INFLOW	2951	696	470	523	199	93	106	247	261	356
DEPLETION	-486	95	-126	-12	-109	-51	-58	-99	-76	-50
CHAN STOR	-32	-7	4	5		0	0	-29	-5	
EVAPORATION	537	113	140	120	53	24	28	59		
REG INFLOW	5870	881	820	759	419	196	224	780	886	906
RELEASE	10392	1138	1608	1660	803	375	413	1353	1599	1444
STOR CHANGE	-4522	-257	-788	-901	-385	-179	-189	-572	-713	-538
STORAGE	22629	22372	21585	20683	20299	20119	19931	19358	18645	18107
ELEV FTMSL	1850.8	1850.1	1847.9	1845.4	1844.2	1843.7	1843.1	1841.4	1839.2	1837.5
DISCH KCFS	14.6	18.5	27.0	27.0	27.0	27.0	26.0	22.0	26.0	26.0
POWER										
AVE POWER MW		246	355	350	347	345	332	280	327	324
PEAK POW MW		504	502	500	499	499	498	482	474	468
ENERGY GWH	1614.7	182.8	255.5	260.6	124.9	58.0	63.7	208.0	243.6	217.5
--OAHE--										
NAT INFLOW	489	130	120	70	34	16	18		12	90
DEPLETION	200	109	27	-9	2	1	1	15	21	33
CHAN STOR	-42	-14	-32	0			4	16	-16	
EVAPORATION	503	108	131	111	49	23	26	55		
REG INFLOW	10135	1037	1538	1628	786	367	408	1299	1574	1501
RELEASE	12977	2052	2319	2176	1043	520	702	1444	1453	1268
STOR CHANGE	-2842	-1016	-782	-548	-258	-153	-294	-146	121	233
STORAGE	21673	20657	19876	19328	19070	18917	18623	18477	18598	18831
ELEV FTMSL	1616.0	1613.1	1610.7	1609.1	1608.3	1607.8	1606.8	1606.3	1606.7	1607.5
DISCH KCFS	25.0	33.4	39.0	35.4	35.1	37.5	44.2	23.5	23.6	22.8
POWER										
AVE POWER MW		445	512	461	453	482	566	302	303	294
PEAK POW MW		737	725	716	712	709	704	702	704	708
ENERGY GWH	2042.8	331.0	368.5	342.6	163.2	81.0	108.6	224.4	225.6	197.7
--BIG BEND--										
EVAPORATION	97	20	25	22	10	5	5	11		
REG INFLOW	12880	2033	2294	2154	1033	516	696	1433	1453	1268
RELEASE	12900	2053	2294	2154	1033	516	696	1433	1453	1268
STORAGE	1641	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.3	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	23.1	33.4	38.6	35.0	34.7	37.1	43.9	23.3	23.6	22.8
POWER										
AVE POWER MW		152	183	171	173	184	217	117	116	109
PEAK POW MW		486	517	538	538	538	538	538	538	529
ENERGY GWH	752.8	113.2	131.4	126.9	62.1	30.9	41.6	86.9	86.1	73.5
--FORT RANDALL--										
NAT INFLOW	230	80	48	8	4	2	2	12	25	49
DEPLETION	34	15	7	1	1	0	1	3	3	3
EVAPORATION	111	27	32	25	9	4	4	10		
REG INFLOW	12987	2091	2303	2136	1027	513	693	1435	1475	1314
RELEASE	14113	2546	2694	2780	1348	629	719	1334	1125	940
STOR CHANGE	-1127	-455	-390	-643	-321	-116	-26	101	350	374
STORAGE	4248	3793	3403	2760	2438	2322	2296	2397	2747	3121
ELEV FTMSL	1363.0	1358.0	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	31.7	41.4	45.3	45.2	45.3	45.3	45.3	21.7	18.3	16.9
POWER										
AVE POWER MW		350	350	330	306	292	286	159	139	135
PEAK POW MW		365	350	319	296	287	285	293	319	339
ENERGY GWH	1283.5	260.0	252.2	245.5	110.2	49.1	55.0	118.0	103.1	90.4
--GAVINS POINT--										
NAT INFLOW	882	175	139	120	59	28	31	100	100	130
DEPLETION	28	10	-5	2	5	2	3	10	1	
CHAN STOR	27	-19	-7	0	0	0	0	44	6	3
EVAPORATION	34	7	9	8	3	2	2	4		
REG INFLOW	14960	2686	2822	2890	1398	653	746	1463	1230	1073
RELEASE	14962	2675	2797	2890	1398	653	746	1463	1230	1111
STOR CHANGE	-2	11	25							-38
STORAGE	344	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.1	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	35.1	43.5	47.0	47.0	47.0	47.0	47.0	23.8	20.0	20.0
POWER										
AVE POWER MW		114	115	116	116	116	116	84	71	70
PEAK POW MW		114	116	116	116	116	116	117	117	114
ENERGY GWH	498.7	84.9	82.7	86.1	41.6	19.4	22.2	62.2	52.5	47.0
--GAVINS POINT - SIOUX CITY--										
NAT INFLOW	2047	850	425	300	100	47	53	140	40	92
DEPLETION	123	36	24	10	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY										
KAF	16886	3489	3198	3180	1492	696	796	1590	1256	1189
KCFS		56.7	53.7	51.7	50.2	50.2	50.2	25.9	20.4	21.4
--TOTAL--										
NAT INFLOW	9116	2333	1547	1406	588	274	313	828	750	1077
DEPLETION	-625	296	-131	-38	-136	-63	-72	-186	-189	-106
CHAN STOR	-46	-40	-35	5	0	0	3	33	-15	3
EVAPORATION	1709	360	446	380	168	77	88	189		
STORAGE	65707	63855	61855	59744	58806	58370	57875	57142	56811	56808
SYSTEM POWER										
AVE POWER MW		1395	1597	1502	1470	1495	1592	1056	1078	1054
PEAK POW MW		2370	2373	2352	2324	2312	2304	2295	2314	2320
ENERGY GWH	6688.8	1038.2	1150.0	1117.8	529.3	251.2	305.6	785.9	802.2	708.6
DAILY GWH		33.5	38.3	36.1	35.3	35.9	38.2	25.4	25.9	25.3

INI-SUM 31AUG 30SEP 31OCT 15NOV 22NOV 30NOV 31DEC 31JAN 28FEB

VALUES IN 1000 AF EXCEPT AS INDICATED

	31JUL10	2010							2011
	INI-SUM	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--										
NAT INFLOW	3020	482	414	462	231	108	123	395	374	432
DEPLETION	-473	34	-74	-69	-19	-9	-10	-108	-130	-89
EVAPORATION	292	65	82	72	17	8	9	38		
MOD INFLOW	3201	383	406	459	232	108	124	465	504	521
RELEASE	3581	400	373	400	193	90	103	676	707	639
STOR CHANGE	-381	-17	33	59	38	18	20	-211	-203	-118
STORAGE	15172	15155	15188	15247	15285	15303	15323	15112	14909	14791
ELEV FTMSL	2235.8	2235.7	2235.9	2236.1	2236.3	2236.4	2236.5	2235.5	2234.6	2234.0
DISCH KCFS	5.7	6.5	6.3	6.5	6.5	6.5	6.5	11.0	11.5	11.5
POWER										
AVE POWER MW		89	86	89	89	89	89	149	154	153
PEAK POW MW		163	164	164	164	164	164	163	163	162
ENERGY GWH	587.1	66.3	61.9	66.4	32.1	15.0	17.2	110.6	114.5	103.1
--GARRISON--										
NAT INFLOW	3541	835	564	628	239	112	127	296	313	427
DEPLETION	-486	107	-129	-3	-112	-52	-60	-106	-82	-49
CHAN STOR	-56	-7	2	-2				-44	-5	
EVAPORATION	363	85	105	89	21	10	11	44		
REG INFLOW	7189	1036	964	940	524	245	280	991	1097	1115
RELEASE	11705	1537	1846	1906	922	430	492	1353	1691	1527
STOR CHANGE	-4516	-502	-882	-967	-399	-186	-212	-362	-594	-413
STORAGE	22629	22127	21245	20279	19880	19694	19482	19120	18526	18113
ELEV FTMSL	1850.8	1849.5	1847.0	1844.2	1843.0	1842.4	1841.8	1840.7	1838.8	1837.5
DISCH KCFS	14.6	25.0	31.0	31.0	31.0	31.0	31.0	22.0	27.5	27.5
POWER										
AVE POWER MW		331	405	399	395	393	392	278	345	342
PEAK POW MW		503	501	499	498	491	483	479	473	468
ENERGY GWH	1811.7	245.9	291.7	297.1	142.3	66.1	75.3	207.0	256.7	229.6
--OAHE--										
NAT INFLOW	586	156	144	84	40	19	21		14	108
DEPLETION	200	109	27	-9	2	1	1	15	21	33
CHAN STOR	-46	-37	-22	0				36	-22	
EVAPORATION	345	82	100	84	20	9	10	41		
REG INFLOW	11700	1465	1841	1915	941	439	502	1333	1662	1602
RELEASE	14536	2304	2716	2597	1240	612	807	1606	1422	1232
STOR CHANGE	-2836	-839	-875	-682	-299	-173	-305	-273	240	370
STORAGE	21673	20834	19959	19277	18978	18805	18500	18227	18467	18837
ELEV FTMSL	1616.0	1613.6	1611.0	1608.9	1608.0	1607.4	1606.4	1605.5	1606.3	1607.5
DISCH KCFS	25.0	37.5	45.6	42.2	41.7	44.1	50.8	26.1	23.1	22.2
POWER										
AVE POWER MW		499	599	549	537	565	638	334	296	286
PEAK POW MW		740	726	715	710	707	702	697	702	708
ENERGY GWH	2282.6	371.6	431.5	408.2	193.3	95.0	122.4	248.5	220.1	191.9
--BIG BEND--										
EVAPORATION	66	15	19	16	4	2	2	9		
REG INFLOW	14470	2289	2697	2581	1236	610	805	1597	1422	1232
RELEASE	14490	2309	2697	2581	1236	610	805	1597	1422	1232
STORAGE	1641	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.3	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	23.1	37.6	45.3	42.0	41.5	44.0	50.7	26.0	23.1	22.2
POWER										
AVE POWER MW		171	214	204	205	217	250	130	113	106
PEAK POW MW		486	517	538	538	538	538	538	538	529
ENERGY GWH	844.1	127.4	154.4	151.6	74.0	36.5	47.9	96.7	84.3	71.4
--FORT RANDALL--										
NAT INFLOW	277	96	58	10	5	2	3	14	30	59
DEPLETION	34	15	7	1	1	0	1	3	3	3
EVAPORATION	77	20	24	18	4	2	2	7		
REG INFLOW	14658	2370	2724	2572	1236	611	804	1604	1449	1288
RELEASE	15783	2825	3115	3215	1557	727	830	1502	1099	914
STOR CHANGE	-1125	-455	-390	-643	-321	-116	-26	102	350	374
STORAGE	4248	3793	3403	2760	2439	2323	2297	2399	2749	3123
ELEV FTMSL	1363.0	1358.0	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	31.7	45.9	52.3	52.3	52.3	52.3	52.3	24.4	17.9	16.5
POWER										
AVE POWER MW		367	357	336	307	291	285	178	135	131
PEAK POW MW		365	350	318	295	286	284	294	319	339
ENERGY GWH	1315.3	273.3	257.1	249.6	110.4	48.8	54.7	132.6	100.7	88.0
--GAVINS POINT--										
NAT INFLOW	1059	210	167	144	71	33	38	120	120	156
DEPLETION	28	10	-5	2	5	2	3	10	1	
CHAN STOR	27	-27	-12	0	0	0	0	52	12	3
EVAPORATION	23	5	6	6	1	1	1	3		
REG INFLOW	16818	2993	3268	3351	1622	757	865	1660	1230	1073
RELEASE	16820	2982	3243	3351	1622	757	865	1660	1230	1111
STOR CHANGE	-2	11	25							-38
STORAGE	344	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.1	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	35.1	48.5	54.5	54.5	54.5	54.5	54.5	27.0	20.0	20.0
POWER										
AVE POWER MW		113	114	115	115	115	115	95	71	70
PEAK POW MW		114	115	115	115	115	115	117	117	114
ENERGY GWH	504.7	84.2	82.2	85.6	41.4	19.3	22.1	70.4	52.5	47.0
--GAVINS POINT - SIOUX CITY--										
NAT INFLOW	2456	1020	510	360	120	56	64	168	48	110
DEPLETION	123	36	24	10	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY										
KAF	19153	3966	3729	3701	1736	810	926	1815	1264	1207
KCFS		64.5	62.7	60.2	58.3	58.3	58.3	29.5	20.6	21.7
--TOTAL--										
NAT INFLOW	10939	2799	1857	1688	706	329	376	993	899	1292
DEPLETION	-574	311	-150	-68	-117	-54	-62	-173	-173	-88
CHAN STOR	-73	-72	-32	-2	0	0	-1	47	-15	3
EVAPORATION	1166	271	336	286	66	31	35	142		
STORAGE	65707	63885	61796	59563	58583	58126	57603	56859	56652	56828
SYSTEM POWER										
AVE POWER MW		1571	1776	1691	1648	1671	1769	1164	1114	1088
PEAK POW MW		2372	2373	2349	2320	2301	2286	2289	2311	2320
ENERGY GWH	7345.4	1168.8	1278.9	1258.4	593.5	280.7	339.6	865.8	828.8	731.0
DAILY GWH		37.7	42.6	40.6	39.6	40.1	42.4	27.9	26.7	26.1

31JUL10		2010						2011	
INI-SUM	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--									
NAT INFLOW 2014	322	276	308	154	72	82	263	250	288
DEPLETION -411	19	-83	-58	-30	-14	-16	-88	-86	-56
EVAPORATION 531	108	136	118	54	25	29	62		
MOD INFLOW 1894	195	223	248	129	60	69	289	336	344
RELEASE 2277	400	314	246	119	56	71	369	369	333
STOR CHANGE -383	-205	-91	2	10	5	-2	-80	-33	11
STORAGE 15172	14967	14877	14878	14889	14894	14891	14811	14778	14789
ELEV FTMSL 2235.8	2234.8	2234.4	2234.4	2234.5	2234.5	2234.5	2234.1	2234.0	2234.0
DISCH KCFS 5.7	6.5	5.3	4.0	4.0	4.0	4.5	6.0	6.0	6.0
POWER									
AVE POWER MW	89	72	55	55	55	62	82	82	82
PEAK POW MW	163	163	163	163	163	163	162	162	162
ENERGY GWH 376.6	66.2	52.0	40.7	19.7	9.2	11.8	61.0	60.9	55.0
--GARRISON--									
NAT INFLOW 2361	557	376	418	159	74	85	198	209	285
DEPLETION -512	32	-160	-19	-100	-47	-53	-77	-54	-34
CHAN STOR -3	-7	11	12			-5	-14		
EVAPORATION 683	142	177	152	68	32	36	76		
REG INFLOW 4464	775	685	543	310	145	169	553	632	652
RELEASE 8980	1076	1150	1199	580	271	309	1353	1599	1444
STOR CHANGE -4517	-301	-465	-656	-270	-126	-141	-800	-967	-792
STORAGE 22629	22328	21863	21207	20937	20811	20670	19871	18904	18112
ELEV FTMSL 1850.8	1850.0	1848.7	1846.9	1846.1	1845.7	1845.3	1843.0	1840.0	1837.5
DISCH KCFS 14.6	17.5	19.3	19.5	19.5	19.5	19.5	22.0	26.0	26.0
POWER									
AVE POWER MW	232	255	255	254	253	252	282	329	324
PEAK POW MW	504	503	501	501	500	500	498	477	468
ENERGY GWH 1401.6	173.0	183.6	190.0	91.3	42.5	48.5	210.1	244.7	218.1
--OAHE--									
NAT INFLOW 392	104	96	56	27	13	14		10	72
DEPLETION 200	109	27	-9	2	1	1	15	21	33
CHAN STOR -44	-10	-7	-1				-10	-16	
EVAPORATION 636	136	166	141	62	29	32	70		
REG INFLOW 8493	924	1046	1123	543	254	290	1258	1572	1483
RELEASE 11329	1800	1861	1693	809	411	576	1395	1480	1304
STOR CHANGE -2837	-876	-815	-570	-266	-157	-286	-137	92	179
STORAGE 21673	20797	19982	19412	19146	18989	18703	18566	18658	18836
ELEV FTMSL 1616.0	1613.5	1611.1	1609.3	1608.5	1608.0	1607.1	1606.6	1606.9	1607.5
DISCH KCFS 25.0	29.3	31.3	27.5	27.2	29.6	36.3	22.7	24.1	23.5
POWER									
AVE POWER MW	391	412	360	353	382	467	292	309	303
PEAK POW MW	739	727	718	713	710	706	703	705	708
ENERGY GWH 1787.2	291.0	297.0	267.6	127.1	64.3	89.6	217.1	230.1	203.4
--BIG BEND--									
EVAPORATION 121	25	31	27	12	6	7	14		
REG INFLOW 11208	1776	1830	1666	797	405	570	1381	1480	1304
RELEASE 11228	1796	1830	1666	797	405	570	1381	1480	1304
STORAGE 1641	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL 1420.3	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS 23.1	29.2	30.8	27.1	26.8	29.2	35.9	22.5	24.1	23.5
POWER									
AVE POWER MW	133	146	132	134	146	178	113	118	113
PEAK POW MW	486	517	538	538	538	538	538	538	529
ENERGY GWH 656.5	99.1	104.9	98.5	48.2	24.4	34.2	83.8	87.7	75.6
--FORT RANDALL--									
NAT INFLOW 183	64	38	6	3	1	2	10	20	39
DEPLETION 34	15	7	1	1	0	1	3	3	3
EVAPORATION 139	34	40	31	12	5	5	12		
REG INFLOW 11239	1811	1821	1640	787	401	565	1377	1497	1340
RELEASE 12365	2266	2211	2283	1108	517	591	1276	1147	966
STOR CHANGE -1126	-455	-390	-643	-321	-116	-26	101	350	374
STORAGE 4248	3793	3403	2760	2438	2322	2296	2398	2748	3122
ELEV FTMSL 1363.0	1358.0	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS 31.7	36.9	37.2	37.1	37.2	37.2	37.2	20.7	18.7	17.4
POWER									
AVE POWER MW	323	313	296	278	267	263	152	141	138
PEAK POW MW	365	350	319	296	287	285	293	319	339
ENERGY GWH 1192.4	240.1	225.4	220.3	100.3	44.9	50.5	112.9	105.1	92.9
--GAVINS POINT--									
NAT INFLOW 705	140	111	96	47	22	25	80	80	104
DEPLETION 28	10	-5	2	5	2	3	10	1	
CHAN STOR 26	-10	-1	0	0	0	0	31	4	2
EVAPORATION 42	8	11	10	4	2	2	5		
REG INFLOW 13026	2378	2316	2367	1145	535	611	1371	1230	1073
RELEASE 13028	2367	2291	2367	1145	535	611	1371	1230	1111
STOR CHANGE -2	11	25							-38
STORAGE 344	355	380	380	380	380	380	380	380	342
ELEV FTMSL 1206.1	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS 35.1	38.5	38.5	38.5	38.5	38.5	38.5	22.3	20.0	20.0
POWER									
AVE POWER MW	115	116	117	117	117	117	78	71	70
PEAK POW MW	115	117	117	117	117	117	117	117	114
ENERGY GWH 497.3	85.2	83.4	86.8	42.0	19.6	22.4	58.4	52.5	47.0
--GAVINS POINT - SIOUX CITY--									
NAT INFLOW 1638	680	340	240	80	37	43	112	32	74
DEPLETION 123	36	24	10	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY									
KAF 14543	3011	2607	2597	1219	569	650	1470	1248	1171
KCFS	49.0	43.8	42.2	41.0	41.0	41.0	23.9	20.3	21.1
--TOTAL--									
NAT INFLOW 7293	1867	1237	1124	470	219	250	663	601	862
DEPLETION -538	221	-190	-73	-116	-54	-62	-124	-101	-40
CHAN STOR -20	-28	4	11	0	0	-5	8	-12	2
EVAPORATION 2152	452	560	479	212	98	111	239		
STORAGE 65707	63862	62126	60258	59411	59017	58562	57647	57089	56823
SYSTEM POWER									
AVE POWER MW	1283	1314	1215	1190	1220	1339	999	1050	1030
PEAK POW MW	2372	2376	2355	2327	2315	2308	2312	2318	2320
ENERGY GWH 5911.7	954.7	946.3	904.0	428.5	204.9	257.1	743.2	781.0	692.0
DAILY GWH	30.8	31.5	29.2	28.6	29.3	32.1	24.0	25.2	24.7

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB11		2011										2012				
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	9500	315	147	189	790	1590	2465	1205	450	375	525	208	97	111	345	295	395
DEPLETION	192	-24	-11	-14	-23	260	513	205	-46	-139	-83	-29	-14	-15	-129	-152	-107
EVAPORATION	334							23	71	89	77	18	8	10	39		
MOD INFLOW	8974	338	158	203	813	1330	1952	977	425	425	531	218	102	117	435	447	502
RELEASE	8977	193	90	116	476	676	893	922	922	740	646	312	146	167	892	922	863
STOR CHANGE	-3	145	68	87	337	654	1059	55	-498	-315	-114	-94	-44	-50	-457	-475	-361
STORAGE	14791	14936	15004	15091	15428	16081	17141	17196	16698	16383	16269	16175	16131	16081	15624	15149	14788
ELEV FTMSL	2234.0	2234.7	2235.0	2235.4	2237.0	2239.9	2244.5	2244.8	2242.6	2241.3	2240.8	2240.4	2240.2	2239.9	2237.9	2235.7	2234.0
DISCH KCFS	11.5	6.5	6.5	6.5	8.0	11.0	15.0	15.0	15.0	12.4	10.5	10.5	10.5	10.5	14.5	15.0	15.0
POWER																	
AVE POWER MW		89	89	89	110	150	168	170	169	168	145	145	145	145	166	164	163
PEAK POW MW		163	163	163	164	167	170	170	168	168	167	167	167	167	165	163	162
ENERGY GWH	1321.5	32.0	14.9	19.2	79.0	111.7	120.9	126.3	125.8	121.0	108.0	52.2	24.3	27.8	123.2	122.0	113.1
--GARRISON--																	
NAT INFLOW	14000	528	246	316	1355	1840	3425	2715	835	570	645	258	120	137	270	325	415
DEPLETION	979	4	2	3	18	59	874	589	99	-132	14	-120	-56	-64	-126	-110	-75
CHAN STOR	-34	50			-15	-29	-39			24	19				-39	-5	
EVAPORATION	377							26	81	101	86	20	9	11	44		
REG INFLOW	21586	766	334	430	1798	2428	3405	3023	1577	1366	1209	670	313	357	1205	1352	1353
RELEASE	21589	536	250	321	1428	1968	2202	2214	2214	1906	1752	848	396	452	1414	1906	1783
STOR CHANGE	-3	231	84	108	370	460	1203	809	-637	-540	-543	-178	-83	-95	-209	-554	-430
STORAGE	18113	18344	18428	18537	18907	19367	20570	21379	20743	20203	19660	19482	19399	19304	19094	18541	18110
ELEV FTMSL	1837.5	1838.3	1838.5	1838.9	1840.0	1841.5	1845.0	1847.3	1845.5	1844.0	1842.3	1841.8	1841.6	1841.3	1840.6	1838.9	1837.5
DISCH KCFS	27.5	18.0	18.0	18.0	24.0	32.0	37.0	36.0	36.0	32.0	28.5	28.5	28.5	28.5	23.0	31.0	31.0
POWER																	
AVE POWER MW		224	225	225	301	403	460	458	459	411	363	361	360	360	291	388	385
PEAK POW MW		471	472	473	478	483	500	501	500	499	490	483	483	482	479	473	468
ENERGY GWH	3295.6	80.7	37.8	48.7	216.7	299.8	331.5	340.9	341.4	295.6	269.9	129.9	60.6	69.2	216.3	288.9	267.6
--OAHE--																	
NAT INFLOW	3800	358	167	215	545	360	1265	215	110	150	95	108	50	57	-45	25	125
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-13	38			-23	-30	-19	4		15	14				22	-33	
EVAPORATION	361							26	79	96	81	19	9	10	40		
REG INFLOW	24334	908	406	522	1901	2226	3303	2233	2128	1946	1790	936	437	499	1339	1880	1880
RELEASE	24338	618	287	375	1176	1716	2169	2982	3004	2810	2412	1152	571	759	1578	1468	1261
STOR CHANGE	-3	289	119	147	725	510	1134	-749	-876	-864	-622	-216	-134	-260	-239	412	619
STORAGE	18837	19127	19246	19393	20118	20629	21763	21014	20138	19274	18652	18436	18302	18042	17803	18215	18834
ELEV FTMSL	1607.5	1608.4	1608.8	1609.3	1611.5	1613.0	1616.2	1614.1	1611.5	1608.9	1606.9	1606.2	1605.8	1604.9	1604.1	1605.5	1607.5
DISCH KCFS	22.2	20.8	20.7	21.0	19.8	27.9	36.5	48.5	48.9	47.2	39.2	38.7	41.1	47.9	25.7	23.9	21.9
POWER																	
AVE POWER MW		269	269	273	259	368	486	642	638	612	505	494	523	602	326	304	282
PEAK POW MW		713	715	717	729	737	753	742	729	715	705	701	699	694	690	697	708
ENERGY GWH	3824.8	96.9	45.1	59.0	186.5	274.1	349.6	477.7	474.6	440.5	375.4	178.0	87.9	115.5	242.3	225.8	196.0
--BIG BEND--																	
EVAPORATION	71							5	15	19	16	4	2	2	9		
REG INFLOW	24267	618	287	375	1176	1716	2169	2977	2989	2792	2396	1148	569	757	1570	1468	1261
RELEASE	24267	618	287	375	1176	1716	2169	2977	2989	2792	2396	1148	569	757	1570	1468	1261
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	22.2	20.8	20.7	21.0	19.8	27.9	36.5	48.4	48.6	46.9	39.0	38.6	41.0	47.7	25.5	23.9	21.9
POWER																	
AVE POWER MW		98	97	98	92	131	171	226	227	222	189	191	203	235	128	117	105
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1400.8	35.4	16.3	21.2	66.6	97.2	122.8	168.4	169.1	159.7	140.9	68.8	34.1	45.2	95.0	87.0	73.1
--FORT RANDALL--																	
NAT INFLOW	1500	148	69	89	425	220	150	90	85	80	30	20	9	11	15		60
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	81							6	19	24	18	4	2	2	7		
REG INFLOW	25608	764	355	462	1597	1927	2307	3043	3040	2841	2406	1163	576	765	1577	1465	1318
RELEASE	25607	472	221	462	1597	1927	2307	3043	3040	2987	3049	1484	692	791	1474	1115	944
STOR CHANGE	1	292	134		0		0	0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3123	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	16.5	15.9	15.9	25.9	26.8	31.3	38.8	49.5	49.4	50.2	49.6	49.9	49.9	49.9	24.0	18.1	16.4
POWER																	
AVE POWER MW		131	134	218	226	264	323	356	356	353	336	307	291	285	175	137	131
PEAK POW MW		351	356	356	356	356	356	356	356	350	318	295	286	284	294	319	339
ENERGY GWH	2279.3	47.2	22.6	47.2	162.9	196.1	232.2	264.7	264.7	254.0	250.0	110.6	48.9	54.8	130.2	102.2	90.9
--GAVINS POINT--																	
NAT INFLOW	2300	121	56	73	225	345	290	215	185	135	155	70	33	37	90	105	165
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-2	1	0	-19	-2	-9	-14	-21	0	-1	1	-1	0	0	48	11	3
EVAPORATION	24							2	5	6	6	1	1	1	3		
REG INFLOW	27766	595	278	516	1815	2244	2559	3197	3210	3119	3197	1547	722	825	1599	1230	1112
RELEASE	27766	595	278	516	1815	2244	2559	3197	3197	3094	3197	1547	722	825	1599	1230	1150
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.0	20.0	20.0	28.9	30.5	36.5	43.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	26.0	20.0	20.0
POWER																	
AVE POWER MW		69	69	98	102	114	113	111	112	114	115	115	115	115	79	70	69
PEAK POW MW		114	114	114	114	114	113	111	113	115	115	115	115	115	78	78	76
ENERGY GWH	874.2	24.8	11.6	21.2	73.5	85.0	81.6	82.9	83.6	82.4	85.7	41.5	19.4	22.1	58.6	52.0	48.3
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	3200	165	77	99	515	915	395	265	210	155	80	48	22	25	60	35	135
DEPLETION	266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																	
KAF	30700	753	351	611	2308	3123	2923	3423	3371	3225	3266	1589	741	847	1646	1251	1271
KCFS		25.3	25.3	34.2	38.8	50.8	49.1	55.7	54.8	54.2	53.1	53.4	53.4	53.4	26.8	20.3	22.1
--TOTAL--																	
NAT INFLOW	34300	1633	762	980	3855	5270	7990	4705	1875	1465	1530	710	331	379	735	785	1295
DEPLETION	2312	12	6	7	75	454	1599	1063	230	-217	-65	-136	-63	-73	-217	-226	-137
CHAN STOR	-47	88	0	-19	-40	-68	-72	-17	0	38	34	-1	0	-1	34	-27	3
EVAPORATION	1249							86	271	334	285	66	31	35	142		
STORAGE	56828	57785	58190	58532	59965	61589	64985	65101	63104	61265	59342	58533	58156	57724	56922	56656	56819
SYSTEM POWER																	
AVE POWER MW		881	883	1002	1091	1430	1720	1964	1961	1880	1653	1614	1637	1743	1163	1180	1134
PEAK POW MW		2328	2329	2333	2350	2365	2401	2390	2376	2364	2334	2300	2288	2280	2244	2269	2282
ENERGY GWH	12996.2	317.1	148.3	216.5	785.2	1063.9	1238.6	1460.9	1459.2	1353.3	1229.9	580.9	275.1	334.6	865.6	878.0	789.1
DAILY GWH		21.1	21.2	24.1	26.2	34.3	41.3	47.1	47.1	45.1	39.7	38.7	39.3	41.8	27.9	28.3	27.2
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB11		2011										2012			
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																
NAT INFLOW 8650	288	134	173	715	1445	2245	1100	410	340	480	188	88	100	315	270	360
DEPLETION 191	-24	-11	-14	-23	260	513	204	-62	-129	-89	-30	-14	-16	-123	-146	-105
EVAPORATION 329							22	70	87	75	18	8	10	39		
MOD INFLOW 8130	312	145	187	738	1185	1732	874	402	382	494	200	93	106	399	416	465
RELEASE 8130	193	90	116	476	676	833	861	861	649	492	238	111	127	799	830	777
STOR CHANGE 1	118	55	71	262	509	899	13	-459	-267	2	-38	-18	-20	-400	-414	-312
STORAGE 14791	14910	14965	15036	15298	15806	16705	16718	16259	15993	15995	15956	15938	15918	15518	15104	14792
ELEV FTMSL 2234.0	2234.6	2234.8	2235.2	2236.4	2238.7	2242.7	2242.7	2240.7	2239.5	2239.5	2239.4	2239.3	2239.2	2237.4	2235.5	2234.0
DISCH KCFS 11.5	6.5	6.5	6.5	8.0	11.0	14.0	14.0	14.0	10.9	8.0	8.0	8.0	8.0	13.0	13.5	13.5
POWER																
AVE POWER MW	89	89	89	110	150	167	168	168	150	111	111	111	111	165	164	163
PEAK POW MW	163	163	163	164	166	168	168	167	166	166	166	166	166	165	163	162
ENERGY GWH 1254.9	32.0	14.9	19.2	78.9	111.3	120.2	125.3	124.8	107.9	82.5	39.9	18.6	21.3	123.0	121.9	113.2
--GARRISON--																
NAT INFLOW 12800	484	226	290	1240	1685	3130	2480	760	520	590	235	110	125	245	300	380
DEPLETION 997	4	2	3	18	100	802	621	93	-133		-118	-55	-63	-117	-96	-64
CHAN STOR -20	50			-15	-29	-29			30	28				-49	-5	0
EVAPORATION 376							25	81	100	86	20	9	11	43		
REG INFLOW 19536	723	314	404	1683	2232	3132	2694	1447	1231	1024	571	266	305	1069	1221	1221
RELEASE 19536	476	222	286	1369	1968	1904	1906	1906	1727	1629	788	368	421	1353	1660	1553
STOR CHANGE 1	247	92	118	315	264	1228	788	-459	-496	-606	-218	-101	-116	-284	-439	-333
STORAGE 18113	18360	18452	18570	18884	19149	20376	21165	20705	20210	19604	19386	19285	19169	18886	18447	18114
ELEV FTMSL 1837.5	1838.3	1838.6	1839.0	1840.0	1840.8	1844.5	1846.7	1845.4	1844.0	1842.2	1841.5	1841.2	1840.8	1840.0	1838.6	1837.5
DISCH KCFS 27.5	16.0	16.0	16.0	23.0	32.0	32.0	31.0	31.0	29.0	26.5	26.5	26.5	26.5	22.0	27.0	27.0
POWER																
AVE POWER MW	200	200	201	289	402	406	399	400	372	338	335	335	335	278	338	335
PEAK POW MW	471	472	474	477	480	499	501	500	499	488	482	481	480	477	472	468
ENERGY GWH 2994.8	71.9	33.6	43.4	207.8	299.1	292.1	297.1	297.9	268.1	251.1	120.7	56.3	64.3	206.7	251.4	233.4
--OAHE--																
NAT INFLOW 3100	302	141	181	520	305	1010	185	95	125	65	55	26	29	-65	10	115
DEPLETION 681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR 3	46			-28	-35		4		8	10	0			18	-20	0
EVAPORATION 361							25	78	96	82	19	9	10	41		
REG INFLOW 21596	800	352	453	1812	2167	2769	1896	1807	1736	1633	823	384	439	1252	1632	1640
RELEASE 21596	648	301	392	1122	1441	2056	2530	2542	2359	1950	923	464	638	1445	1488	1297
STOR CHANGE 1	152	52	61	690	726	713	-633	-735	-623	-317	-100	-80	-199	-193	144	343
STORAGE 18837	18990	19041	19102	19792	20518	21231	20598	19863	19240	18922	18822	18742	18543	18350	18495	18838
ELEV FTMSL 1607.5	1608.0	1608.2	1608.4	1610.5	1612.7	1614.7	1612.9	1610.7	1608.8	1607.8	1607.5	1607.2	1606.6	1605.9	1606.4	1607.5
DISCH KCFS 22.2	21.8	21.7	22.0	18.9	23.4	34.6	41.1	41.3	39.6	31.7	31.0	33.4	40.2	23.5	24.2	22.5
POWER																
AVE POWER MW	282	280	285	246	309	459	545	542	515	410	400	430	514	301	310	290
PEAK POW MW	710	711	712	724	735	746	736	725	715	709	708	706	703	699	702	708
ENERGY GWH 3403.0	101.4	47.1	61.5	177.3	229.7	330.2	405.6	403.3	370.7	304.9	143.9	72.2	98.7	224.2	230.5	201.9
--BIG BEND--																
EVAPORATION 71							5	15	19	16	4	2	2	9		
REG INFLOW 21525	648	301	392	1122	1441	2056	2525	2527	2340	1934	920	463	636	1437	1488	1297
RELEASE 21525	648	301	392	1122	1441	2056	2525	2527	2340	1934	920	463	636	1437	1488	1297
STORAGE 1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL 1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS 22.2	21.8	21.7	22.0	18.9	23.4	34.6	41.1	41.1	39.3	31.4	30.9	33.3	40.1	23.4	24.2	22.5
POWER																
AVE POWER MW	103	101	103	88	110	162	192	192	186	153	154	166	198	117	118	108
PEAK POW MW	517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH 1243.9	37.2	17.0	22.2	63.6	81.6	116.4	142.9	143.0	134.1	114.1	55.4	27.8	38.1	87.1	88.2	75.2
--FORT RANDALL--																
NAT INFLOW 1200	131	61	78	285	180	140	80	75	70	15	15	7	8	10	-5	50
DEPLETION 80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION 81							6	19	24	18	4	2	2	7		
REG INFLOW 22565	777	361	469	1403	1612	2184	2581	2568	2380	1929	930	468	641	1438	1480	1344
RELEASE 22564	485	227	469	1403	1612	2184	2581	2568	2526	2572	1251	584	667	1335	1130	970
STOR CHANGE 1	292	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE 3123	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL 1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS 16.5	16.3	16.3	26.3	23.6	26.2	36.7	42.0	41.8	42.4	41.8	42.0	42.0	42.0	21.7	18.4	16.9
POWER																
AVE POWER MW	135	138	222	199	221	308	336	335	336	318	296	284	279	159	139	134
PEAK POW MW	351	356	356	356	356	356	356	356	350	319	296	287	285	294	319	339
ENERGY GWH 2150.6	48.5	23.2	47.9	143.5	164.5	221.7	250.2	249.6	241.7	236.8	106.7	47.7	53.6	118.1	103.6	93.3
--GAVINS POINT--																
NAT INFLOW 2000	109	51	65	185	300	240	175	165	120	140	65	30	35	85	95	140
DEPLETION 114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR -2	0	0	-19	5	-5	-20	-10	0	-1	1	0	0	0	38	6	3
EVAPORATION 24							2	5	6	6	1	1	1	3		
REG INFLOW 24423	595	278	516	1589	1888	2380	2705	2718	2643	2705	1309	611	698	1445	1230	1112
RELEASE 24423	595	278	516	1589	1888	2380	2705	2705	2618	2705	1309	611	698	1445	1230	1150
STOR CHANGE								13	25							-38
STORAGE 342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL 1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS 20.0	20.0	20.0	28.9	26.7	30.7	40.0	44.0	44.0	44.0	44.0	44.0	44.0	44.0	23.5	20.0	20.0
POWER																
AVE POWER MW	69	69	98	91	103	114	113	114	115	116	116	116	116	78	70	69
PEAK POW MW	114	114	114	114	114	114	113	114	116	116	116	116	116	78	78	76
ENERGY GWH 861.8	24.8	11.6	21.2	65.6	76.3	82.0	84.1	84.8	82.9	86.3	41.8	19.5	22.3	58.4	52.0	48.3
--GAVINS POINT - SIOUX CITY--																
NAT INFLOW 2550	145	68	87	410	705	315	215	155	125	65	38	18	20	50	30	105
DEPLETION 266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																
KAF 26707	733	342	599	1977	2557	2664	2881	2824	2719	2759	1341	626	715	1482	1246	1241
KCFS	24.7	24.7	33.6	33.2	41.6	44.8	46.9	45.9	45.7	44.9	45.1	45.1	45.1	24.1	20.3	21.6
--TOTAL--																
NAT INFLOW 30300	1459	681	875	3355	4620	7080	4235	1660	1300	1355	595	278	317	640	700	1150
DEPLETION 2329	12	6	7	75	495	1527	1094	208	-208	-85	-135	-63	-72	-202	-206	-124
CHAN STOR -19	95	0	-19	-37	-69	-49	-6	0	36	39	-1	0	-1	9	-19	3
EVAPORATION 1242							85	268	331	284	66	31	35	142		
STORAGE 56828	57637	57970	58220	59486	60985	63825	63992	62353	60846	59282	58604	58289	57928	57154	56795	56831
SYSTEM POWER																
AVE POWER MW	877	878	997	1023	1294	1615	1754	1752	1674	1446	1412	1441	1553	1099	1139	1099
PEAK POW MW	2326	2326	2329	2344	2360	2392	2384	2371	2364	2336	2306	2295	2289	2251	2272	2282
ENERGY GWH 11909.0	315.7	147.5	215.4	736.6	962.5	1162.5	1305.3	1303.4	1205.4	1075.7	508.4	242.1	298.3	817.5	847.6	765.2
DAILY GWH	21.0	21.1	23.9	24.6	31.0	38.8	42.1	42.0	40.2	34.7	33.9	34.6	37.3	26.4	27.3	26.4

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB11		2011										2012			
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																
NAT INFLOW 7200	230	107	138	600	1180	1810	840	315	295	430	180	84	96	300	250	345
DEPLETION 418	-36	-17	-21	25	298	525	234	11	-75	-42	-41	-19	-22	-132	-153	-118
EVAPORATION 462							29	89	111	96	44	20	23	50		
MOD INFLOW 6320	266	124	159	575	882	1285	577	215	259	376	177	83	94	382	403	463
RELEASE 6533	179	83	107	476	646	625	646	646	490	369	179	83	111	646	646	604
STOR CHANGE -213	87	41	52	99	236	660	-68	-431	-230	7	-2	-1	-17	-264	-243	-141
STORAGE 14785	14872	14913	14965	15064	15300	15961	15893	15462	15232	15238	15237	15236	15219	14956	14713	14572
ELEV FTMSL 2234.0	2234.4	2234.6	2234.8	2235.3	2236.4	2239.4	2239.1	2237.1	2236.1	2236.1	2236.1	2236.1	2236.0	2234.8	2233.6	2233.0
DISCH KCFS 9.0	6.0	6.0	6.0	8.0	10.5	10.5	10.5	10.5	8.2	6.0	6.0	6.0	7.0	10.5	10.5	10.5
POWER																
AVE POWER MW	82	82	82	109	143	144	144	144	113	82	82	82	96	142	142	141
PEAK POW MW	163	163	163	163	164	166	166	165	164	164	164	164	164	163	162	161
ENERGY GWH 1078.4	29.5	13.8	17.7	78.8	106.2	103.5	107.4	107.0	81.4	61.3	29.7	13.8	18.4	106.0	105.6	98.4
--GARRISON--																
NAT INFLOW 10800	460	214	276	870	1325	3095	1860	595	460	495	195	91	104	180	260	320
DEPLETION 989	4	2	3	-3	177	765	602	107	-142	-25	-121	-56	-65	-115	-87	-57
CHAN STOR -15	30			-20	-25				22	22			-10	-34		
EVAPORATION 538							33	104	129	112	51	24	27	58		
REG INFLOW 15791	664	296	380	1329	1769	2955	1871	1029	984	798	444	207	243	849	993	981
RELEASE 16060	476	222	286	1190	1599	1607	1599	1599	1251	922	446	208	270	1291	1599	1496
STOR CHANGE -269	188	74	95	139	170	1348	272	-569	-267	-124	-2	-1	-27	-443	-606	-515
STORAGE 18107	18295	18368	18463	18602	18772	20121	20392	19823	19556	19432	19429	19428	19401	18959	18353	17838
ELEV FTMSL 1837.5	1838.1	1838.3	1838.6	1839.1	1839.6	1843.7	1844.5	1842.8	1842.0	1841.7	1841.6	1841.6	1841.6	1840.2	1838.3	1836.6
DISCH KCFS 26.0	16.0	16.0	16.0	20.0	26.0	27.0	26.0	26.0	21.0	15.0	15.0	15.0	17.0	21.0	26.0	26.0
POWER																
AVE POWER MW	199	200	200	250	326	342	333	332	268	191	191	191	216	266	325	322
PEAK POW MW	470	471	472	474	476	499	499	498	486	483	483	483	483	478	471	465
ENERGY GWH 2452.6	71.8	33.6	43.3	180.3	242.3	245.9	247.8	247.2	192.7	142.0	68.6	32.0	41.4	197.6	242.1	224.0
--OAHE--																
NAT INFLOW 2300	232	108	139	405	195	780	160	75	95	35	30	14	16	-80		95
DEPLETION 681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR -1	40			-16	-24	-4	4		20	24			-8	-16	-21	
EVAPORATION 503							32	99	122	104	46	22	25	53		
REG INFLOW 17175	724	319	411	1530	1699	2238	1558	1459	1216	887	429	200	252	1129	1560	1563
RELEASE 17452	666	309	402	1293	1624	1607	1849	1979	1759	1259	562	296	272	1096	1324	1154
STOR CHANGE -277	58	11	9	237	75	630	-292	-520	-543	-372	-133	-96	-20	34	236	408
STORAGE 18831	18889	18900	18909	19146	19221	19851	19560	19039	18496	18125	17992	17896	17876	17910	18146	18554
ELEV FTMSL 1607.5	1607.7	1607.7	1607.7	1608.5	1608.7	1610.7	1609.8	1608.2	1606.4	1605.2	1604.7	1604.4	1604.4	1604.5	1605.3	1606.6
DISCH KCFS 22.8	22.4	22.2	22.5	21.7	26.4	27.0	30.1	32.2	29.6	20.5	18.9	21.3	17.1	17.8	21.5	20.1
POWER																
AVE POWER MW	289	287	291	282	342	352	393	417	380	262	241	271	218	227	274	257
PEAK POW MW	709	709	709	713	714	725	720	711	702	695	693	692	691	692	696	703
ENERGY GWH 2723.3	104.1	48.3	62.9	202.7	254.8	253.6	292.2	310.5	273.8	195.0	86.7	45.6	41.9	168.6	203.9	178.9
--BIG BEND--																
EVAPORATION 103							6	20	25	22	10	5	5	11		
REG INFLOW 17349	666	309	402	1293	1624	1607	1843	1959	1734	1238	552	292	267	1085	1324	1154
RELEASE 17349	666	309	402	1293	1624	1607	1843	1959	1734	1238	552	292	267	1085	1324	1154
STORAGE 1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL 1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS 22.8	22.4	22.2	22.5	21.7	26.4	27.0	30.0	31.9	29.1	20.1	18.6	21.0	16.8	17.6	21.5	20.1
POWER																
AVE POWER MW	106	104	105	102	124	126	140	149	138	99	93	105	85	89	106	96
PEAK POW MW	517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH 1002.0	38.2	17.5	22.8	73.3	92.0	91.0	104.4	110.9	99.4	73.5	33.6	17.7	16.3	66.0	78.6	67.0
--FORT RANDALL--																
NAT INFLOW 900	119	55	71	155	140	135	70	65	30		10	5	5	5	-10	45
DEPLETION 80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION 117							8	25	31	25	9	4	4	10		
REG INFLOW 18052	783	363	472	1444	1755	1730	1887	1984	1726	1212	551	292	268	1077	1311	1196
RELEASE 18050	490	229	472	1444	1755	1730	1887	1984	1872	1855	872	408	294	974	961	822
STOR CHANGE 2	294	134					0	0	-146	-643	-321	-116	-26	102	350	374
STORAGE 3121	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2399	2749	3123
ELEV FTMSL 1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS 16.9	16.5	16.5	26.5	24.3	28.5	29.1	30.7	32.3	31.5	30.2	29.3	29.4	18.5	15.8	15.6	14.3
POWER																
AVE POWER MW	136	139	223	205	240	245	258	271	263	242	221	215	135	116	119	114
PEAK POW MW	351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH 1782.0	48.9	23.4	48.2	147.6	178.9	176.4	192.2	201.8	189.2	179.7	79.7	36.1	25.9	86.6	88.3	79.3
--GAVINS POINT--																
NAT INFLOW 1500	104	49	62	145	160	175	100	90	95	120	60	28	32	80	85	115
DEPLETION 114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR 4	1	0	-19	4	-8	-1	-3	-3	2	2	2	0	20	5	0	2
EVAPORATION 36							2	6	9	8	3	2	2	4		
REG INFLOW 19404	595	278	516	1589	1888	1880	1943	2054	1965	1968	925	432	341	1045	1045	940
RELEASE 19404	595	278	516	1589	1888	1880	1943	2041	1940	1968	925	432	341	1045	1045	978
STOR CHANGE								13	25							-38
STORAGE 342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL 1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS 20.0	20.0	20.0	28.9	26.7	30.7	31.6	31.6	33.2	32.6	32.0	31.1	31.1	21.5	17.0	17.0	17.0
POWER																
AVE POWER MW	69	69	98	91	103	105	105	109	109	108	106	106	76	60	60	60
PEAK POW MW	114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH 794.2	24.8	11.6	21.2	65.6	76.3	75.3	77.8	80.9	78.3	80.6	38.3	17.9	14.5	44.7	44.7	41.5
--GAVINS POINT - SIOUX CITY--																
NAT INFLOW 1700	138	64	83	325	295	150	180	120	105	55	30	14	16	25	25	75
DEPLETION 266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																
KAF 20838	726	339	595	1892	2147	1999	2084	2125	2021	2012	949	443	354	1057	1056	1039
KCFS	24.4	24.4	33.3	31.8	34.9	33.6	33.9	34.6	34.0	32.7	31.9	31.9	22.3	17.2	17.2	18.1
--TOTAL--																
NAT INFLOW 24400	1283	598	769	2500	3295	6145	3210	1260	1080	1135	505	236	269	510	610	995
DEPLETION 2548	0	0	0	102	610	1502	1105	295	-163	-63	-149	-69	-79	-209	-204	-130
CHAN STOR -12	70	0	-19	-31	-56	-5	1	-3	43	48	1	0	3	-46	-20	2
EVAPORATION 1759							110	344	427	367	163	76	86	187		
STORAGE 56808	57434	57694	57849	58324	58806	61445	61357	59849	58688	57556	57098	56884	56795	56224	55962	56050
SYSTEM POWER																
AVE POWER MW	881	882	1000	1039	1277	1313	1373	1422	1271	984	935	971	825	900	1026	990
PEAK POW MW	2324	2322	2324	2330	2334	2369	2365	2354	2336	2316	2291	2281	2278	2242	2264	2273
ENERGY GWH 9832.5	317.3	148.1	216.1	748.2	950.4	945.6	1021.8	1058.3	914.8	732.1	336.5	163.1	158.4	669.5	763.2	689.1
DAILY GWH	21.2	21.2	24.0	24.9	30.7	31.5	33.0	34.1	30.5	23.6	22.4	23.3	19.8	21.6	24.6	23.8

INI-SUM 15MAR 22MAR 31MAR 30APR 31MAY 30JUN 31JUL 31AUG 30SEP 31OCT 15NOV 22NOV 30NOV 31DEC 31JAN 29FEB

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB11		2011										2012				
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	6000	203	95	122	485	955	1480	665	285	255	340	165	77	88	260	220	305
DEPLETION	315	-17	-8	-10	38	195	405	227	2	-100	-79	-30	-14	-16	-98	-105	-76
EVAPORATION	552							35	107	133	115	52	24	28	59		
MOD INFLOW	5133	220	103	132	447	760	1075	403	176	222	304	143	67	76	299	325	381
RELEASE	6750	179	83	107	417	615	655	676	676	525	369	179	83	111	707	707	661
STOR CHANGE	-1617	42	19	25	30	145	420	-273	-501	-302	-65	-36	-17	-35	-408	-382	-280
STORAGE	14789	14831	14850	14875	14906	15051	15471	15198	14698	14395	14330	14294	14278	14243	13835	13453	13172
ELEV FTMSL	2234.0	2234.2	2234.3	2234.4	2234.6	2235.2	2237.2	2235.9	2233.6	2232.1	2231.8	2231.6	2231.5	2231.4	2229.3	2227.4	2226.0
DISCH KCFS	6.0	6.0	6.0	6.0	7.0	10.0	11.0	11.0	11.0	8.8	6.0	6.0	6.0	7.0	11.5	11.5	11.5
POWER																	
AVE POWER MW		82	82	82	96	136	149	149	148	120	81	81	81	95	151	150	148
PEAK POW MW		162	162	163	163	163	165	164	162	161	161	160	160	160	159	157	156
ENERGY GWH	1093.8	29.5	13.8	17.7	68.8	101.4	107.1	110.8	110.1	86.2	60.5	29.3	13.7	18.2	112.2	111.2	103.3
--GARRISON--																	
NAT INFLOW	9200	423	198	254	705	1110	2635	1585	505	390	420	165	77	88	150	220	275
DEPLETION	1050	15	7	9	21	126	639	566	129	-103	22	-107	-50	-57	-82	-53	-34
CHAN STOR	-55				-10	-30	-10			21	28			-10	-45		
EVAPORATION	642							41	127	156	133	59	28	31	67		
REG INFLOW	14203	587	274	352	1091	1569	2641	1655	926	883	662	391	182	215	827	980	970
RELEASE	16189	476	222	286	952	1353	1666	1660	1660	1321	1045	506	236	301	1291	1660	1553
STOR CHANGE	-1986	110	51	66	139	217	975	-6	-735	-438	-384	-115	-54	-87	-464	-680	-583
STORAGE	18112	18223	18274	18340	18479	18695	19670	19665	18930	18492	18109	17994	17940	17853	17389	16709	16126
ELEV FTMSL	1837.5	1837.9	1838.0	1838.2	1838.7	1839.4	1842.4	1842.4	1840.1	1838.7	1837.5	1837.1	1836.9	1836.7	1835.1	1832.8	1830.7
DISCH KCFS	26.0	16.0	16.0	16.0	16.0	22.0	28.0	27.0	27.0	22.2	17.0	17.0	17.0	19.0	21.0	27.0	27.0
POWER																	
AVE POWER MW		199	200	200	200	275	353	343	341	279	212	211	211	235	258	327	322
PEAK POW MW		469	470	471	472	475	492	490	478	473	468	467	466	465	459	451	443
ENERGY GWH	2435.2	71.8	33.5	43.2	144.2	204.9	254.5	254.8	253.9	200.5	157.9	76.0	35.4	45.1	192.0	243.1	224.2
--OAHE--																	
NAT INFLOW	1300	203	95	122	180	130	275	140	65	75	15	13	6	7	-90	-10	75
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-6	40				-24	-25	4		21	23	0		-9	-9	-27	0
EVAPORATION	562							36	111	136	116	52	24	27	60		
REG INFLOW	16240	695	306	393	1083	1387	1771	1595	1498	1252	977	466	217	271	1121	1605	1600
RELEASE	18277	633	297	508	1561	1916	1802	2069	2092	1874	1371	594	312	265	910	1112	962
STOR CHANGE	-2037	62	9	-115	-478	-528	-31	-474	-594	-622	-393	-128	-95	7	210	494	638
STORAGE	18836	18898	18907	18793	18315	17786	17755	17282	16687	16066	15672	15544	15450	15456	15667	16161	16799
ELEV FTMSL	1607.5	1607.7	1607.7	1607.4	1605.8	1604.1	1603.9	1602.3	1600.2	1598.0	1596.5	1596.1	1595.7	1595.7	1596.5	1598.3	1600.6
DISCH KCFS	23.5	21.3	21.4	28.5	26.2	31.2	30.3	33.6	34.0	31.5	22.3	20.0	22.5	16.7	14.8	18.1	16.7
POWER																	
AVE POWER MW		275	276	367	337	395	383	423	423	387	272	242	272	202	180	221	207
PEAK POW MW		709	709	707	699	690	689	680	670	658	651	649	647	647	651	660	672
ENERGY GWH	2761.1	99.0	46.4	79.2	242.3	294.2	275.5	314.4	314.6	278.7	202.4	87.3	45.7	38.8	133.9	164.5	144.1
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	18148	633	297	508	1561	1916	1802	2061	2068	1843	1344	582	306	258	896	1112	962
RELEASE	18148	633	297	508	1561	1916	1802	2061	2068	1843	1344	582	306	258	896	1112	962
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	23.5	21.3	21.4	28.5	26.2	31.2	30.3	33.5	33.6	31.0	21.8	19.5	22.1	16.3	14.6	18.1	16.7
POWER																	
AVE POWER MW		101	100	133	123	146	142	157	157	147	107	98	111	82	74	89	80
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1046.2	36.3	16.8	28.8	88.4	108.5	102.1	116.7	117.1	105.7	79.7	35.3	18.6	15.7	54.7	66.1	55.8
--FORT RANDALL--																	
NAT INFLOW	450	73	34	44	90	65	125	35	25		-20	-8	-4	-4	-30	-15	40
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	18372	704	330	551	1647	1972	1915	2068	2046	1797	1292	561	297	249	851	1094	999
RELEASE	18370	411	196	551	1647	1972	1915	2068	2046	1943	1935	882	413	274	748	744	625
STOR CHANGE	2	293	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3122	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	17.4	13.8	14.1	30.9	27.7	32.1	32.2	33.6	33.3	32.7	31.5	29.6	29.8	17.3	12.2	12.1	10.9
POWER																	
AVE POWER MW		114	119	260	233	270	271	283	280	273	252	224	218	126	90	92	87
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1819.5	41.2	20.0	56.1	168.0	200.6	194.9	210.3	208.1	196.2	187.3	80.5	36.6	24.2	66.7	68.5	60.4
--GAVINS POINT--																	
NAT INFLOW	1300	87	41	52	125	140	150	85	75	80	110	53	25	28	75	75	100
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	11	7	-1	-32	6	-8	0	-3	1	1	2	3	0	23	9	0	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	19523	506	236	571	1773	2084	2041	2109	2104	2018	2035	928	433	321	818	818	727
RELEASE	19523	506	236	571	1773	2084	2041	2109	2091	1993	2035	928	433	321	818	818	765
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.0	17.0	17.0	32.0	29.8	33.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.2	13.3	13.3	13.3
POWER																	
AVE POWER MW		59	59	106	100	110	111	111	110	111	111	107	107	71	47	47	47
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	786.8	21.2	9.9	22.8	72.3	81.6	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.7	35.1	35.1	32.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1050	121	56	73	140	170	90	105	75	60	35	25	12	13	10	20	45
DEPLETION	266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																	
KAF	20307	620	289	640	1891	2218	2100	2175	2130	2029	2059	947	442	331	815	824	796
KCFS		20.8	20.8	35.8	31.8	36.1	35.3	35.4	34.6	34.1	33.5	31.8	31.8	20.8	13.3	13.4	13.8
--TOTAL--																	
NAT INFLOW	19300	1111	518	666	1725	2570	4755	2615	1030	860	900	413	193	220	375	510	840
DEPLETION	2506	30	14	18	139	456	1256	1062	308	-149	-53	-123	-57	-66	-142	-122	-65
CHAN STOR	-50	47	-1	-32	-4	-62	-35	1	1	43	53	3	0	5	-44	-27	2
EVAPORATION	2076							131	410	506	432	191	88	101	217		
STORAGE	56823	57330	57544	57520	57211	57045	58409	57657	55840	54357	52872	52272	51991	51850	51291	51073	51184
SYSTEM POWER																	
AVE POWER MW		831	836	1147	1089	1332	1408	1464	1460	1315	1035	963	999	811	799	925	891
PEAK POW MW		2323	2321	2320	2313	2307	2325	2314	2289	2276	2254	2227	2216	2212	2178	2203	2215
ENERGY GWH	9942.6	299.0	140.5	247.8	784.1	991.3	1013.6	1089.3	1085.9	947.1	770.2	346.8	167.8	155.7	594.6	688.6	620.4
DAILY GWH		19.9	20.1	27.5	26.1	32.0	33.8	35.1	35.0	31.6	24.8	23.1	24.0	19.5	19.2	22.2	21.4
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB11		2011										2012			
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																
NAT INFLOW 5400	194	90	116	470	845	1195	610	270	245	320	158	74	84	230	210	290
DEPLETION 373	-17	-8	-10	38	195	405	219	1	-108	-90	-24	-11	-13	-80	-69	-55
EVAPORATION 533							34	104	128	111	50	23	27	57		
MOD INFLOW 4494	211	98	126	432	650	790	357	165	225	299	132	61	70	253	279	345
RELEASE 6830	179	83	107	565	615	655	676	676	495	369	179	83	103	676	707	661
STOR CHANGE -2336	32	15	19	-133	35	135	-319	-511	-270	-70	-47	-22	-33	-423	-428	-316
STORAGE 14789	14821	14836	14855	14722	14757	14893	14574	14063	13793	13723	13676	13654	13621	13198	12770	12453
ELEV FTMSL 2234.0	2234.2	2234.2	2234.3	2233.7	2233.9	2234.5	2233.0	2230.5	2229.1	2228.8	2228.5	2228.4	2228.3	2226.1	2223.8	2222.1
DISCH KCFS 6.0	6.0	6.0	6.0	9.5	10.0	11.0	11.0	11.0	8.3	6.0	6.0	6.0	6.5	11.0	11.5	11.5
POWER																
AVE POWER MW	82	82	82	129	136	148	147	146	112	81	81	80	87	144	147	146
PEAK POW MW	162	162	162	162	162	163	161	160	159	158	158	158	158	156	154	152
ENERGY GWH 1097.5	29.5	13.8	17.7	93.2	101.1	106.3	109.6	108.8	80.6	60.0	29.0	13.5	16.7	106.9	109.5	101.4
--GARRISON--																
NAT INFLOW 7400	365	170	219	575	1055	2205	1080	360	160	390	148	69	79	135	135	255
DEPLETION 933	15	7	9	21	111	524	493	111	-107	20	-93	-43	-50	-52	-22	-12
CHAN STOR -55				-35	-5	-10			26	23			-5	-45	-5	
EVAPORATION 623							40	124	151	129	58	27	30	65		
REG INFLOW 12619	528	247	317	1085	1554	2326	1223	802	637	633	361	169	196	753	859	928
RELEASE 15476	476	222	286	952	1291	1517	1506	1506	1209	1015	491	229	270	1291	1660	1553
STOR CHANGE -2857	52	24	31	133	263	808	-283	-705	-572	-381	-129	-60	-74	-538	-801	-625
STORAGE 18112	18165	18189	18220	18353	18616	19424	19141	18436	17864	17483	17354	17293	17220	16681	15880	15255
ELEV FTMSL 1837.5	1837.7	1837.8	1837.9	1838.3	1839.1	1841.6	1840.8	1838.5	1836.7	1835.4	1835.0	1834.8	1834.5	1832.7	1829.9	1827.6
DISCH KCFS 26.0	16.0	16.0	16.0	16.0	21.0	25.5	24.5	24.5	20.3	16.5	16.5	16.5	17.0	21.0	27.0	27.0
POWER																
AVE POWER MW	199	199	199	200	263	321	310	308	253	204	202	202	208	254	321	316
PEAK POW MW	469	469	469	471	474	483	480	472	465	461	459	458	457	450	440	432
ENERGY GWH 2306.0	71.7	33.5	43.1	143.8	195.3	231.4	230.5	228.8	181.8	151.4	72.9	33.9	39.9	189.2	238.9	219.8
--OAHE--																
NAT INFLOW 1150	196	91	118	170	115	255	125	50	65	5	8	4	4	-100	-20	65
DEPLETION 681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR -8	40				-20	-19	4		18	17			-2	-19	-28	0
EVAPORATION 540							35	108	131	111	49	23	26	57		
REG INFLOW 15397	688	303	389	1073	1315	1609	1427	1333	1134	936	448	209	245	1104	1595	1590
RELEASE 18324	643	301	514	1576	1931	1822	2084	2112	1894	1391	601	315	267	875	1073	926
STOR CHANGE -2927	45	1	-125	-503	-616	-214	-657	-780	-760	-454	-153	-106	-22	229	522	664
STORAGE 18836	18881	18882	18757	18254	17638	17425	16768	15989	15229	14774	14622	14516	14494	14723	15245	15909
ELEV FTMSL 1607.5	1607.7	1607.7	1607.3	1605.6	1603.5	1602.8	1600.5	1597.7	1594.9	1593.1	1592.5	1592.1	1592.0	1592.9	1594.9	1597.4
DISCH KCFS 23.5	21.6	21.7	28.8	26.5	31.4	30.6	33.9	34.4	31.8	22.6	20.2	22.7	16.8	14.2	17.4	16.1
POWER																
AVE POWER MW	279	280	371	339	398	385	422	422	385	271	240	269	200	170	209	196
PEAK POW MW	709	709	706	698	687	683	671	657	643	634	631	629	628	633	643	655
ENERGY GWH 2740.2	100.6	47.1	80.1	244.4	295.9	277.2	314.1	313.8	277.2	201.6	86.6	45.3	38.3	126.1	155.7	136.2
--BIG BEND--																
EVAPORATION 129							8	24	31	27	12	6	7	14		
REG INFLOW 18195	643	301	514	1576	1931	1822	2076	2088	1863	1364	588	310	260	861	1073	926
RELEASE 18195	643	301	514	1576	1931	1822	2076	2088	1863	1364	588	310	260	861	1073	926
STORAGE 1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL 1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS 23.5	21.6	21.7	28.8	26.5	31.4	30.6	33.8	34.0	31.3	22.2	19.8	22.3	16.4	14.0	17.4	16.1
POWER																
AVE POWER MW	102	102	135	124	147	143	158	159	148	109	99	112	83	71	86	77
PEAK POW MW	517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH 1048.7	36.9	17.1	29.1	89.3	109.3	103.2	117.5	118.2	106.8	80.9	35.8	18.8	15.8	52.5	63.8	53.7
--FORT RANDALL--																
NAT INFLOW 350	68	32	41	85	60	115	25	15	-10	-30	-13	-6	-7	-40	-20	35
DEPLETION 80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION 146							10	32	39	31	12	5	5	12		
REG INFLOW 18319	710	332	554	1657	1982	1925	2073	2056	1807	1302	563	298	248	806	1050	958
RELEASE 18317	416	198	554	1657	1982	1925	2073	2056	1953	1945	884	414	274	703	700	584
STOR CHANGE 2	293	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE 3122	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL 1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS 17.4	14.0	14.3	31.0	27.8	32.2	32.4	33.7	33.4	32.8	31.6	29.7	29.8	17.3	11.4	11.4	10.1
POWER																
AVE POWER MW	116	121	261	235	271	272	283	281	274	253	224	218	126	84	87	81
PEAK POW MW	351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH 1815.2	41.7	20.2	56.4	169.0	201.6	195.9	210.8	209.1	197.2	188.3	80.7	36.7	24.1	62.7	64.5	56.4
--GAVINS POINT--																
NAT INFLOW 1200	82	38	49	115	130	140	80	65	70	100	48	22	25	70	70	95
DEPLETION 114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR 12	7	-1	-32	6	-8	0	-3	1	1	2	4	0	23	11	0	2
EVAPORATION 45							3	8	11	10	4	2	2	5		
REG INFLOW 19371	506	236	571	1773	2084	2041	2109	2104	2018	2035	925	432	317	769	769	681
RELEASE 19371	506	236	571	1773	2084	2041	2109	2091	1993	2035	925	432	317	769	769	719
STOR CHANGE								13	25							-38
STORAGE 342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL 1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS 20.0	17.0	17.0	32.0	29.8	33.9	34.3	34.3	34.0	33.5	33.1	31.1	31.1	20.0	12.5	12.5	12.5
POWER																
AVE POWER MW	59	59	106	100	110	111	111	110	111	111	106	106	71	44	44	44
PEAK POW MW	114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH 780.4	21.2	9.9	22.8	72.3	81.6	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	33.0	33.0	30.7
--GAVINS POINT - SIOUX CITY--																
NAT INFLOW 700	87	41	52	90	120	65	70	40	35	25	18	8	9	5	15	20
DEPLETION 266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																
KAF 19805	586	274	619	1841	2168	2075	2140	2095	2004	2049	937	437	324	761	770	725
KCFS	19.7	19.7	34.7	30.9	35.3	34.9	34.8	34.1	33.7	33.3	31.5	31.5	20.4	12.4	12.5	12.6
--TOTAL--																
NAT INFLOW 16200	992	463	595	1505	2325	3975	1990	800	565	810	365	170	195	300	390	760
DEPLETION 2447	30	14	18	139	441	1141	981	289	-161	-66	-104	-49	-55	-94	-55	-22
CHAN STOR -51	46	-1	-32	-29	-34	-29	2	1	46	43	3	0	16	-53	-33	2
EVAPORATION 2015							129	399	490	418	185	86	97	210		
STORAGE 56823	57245	57420	57345	56841	56523	57253	55995	54012	52290	50741	50091	49787	49633	49003	48646	48705
SYSTEM POWER																
AVE POWER MW	838	843	1154	1128	1324	1380	1431	1426	1283	1028	953	988	773	767	894	860
PEAK POW MW	2322	2320	2318	2310	2303	2309	2292	2269	2251	2227	2199	2187	2184	2149	2172	2184
ENERGY GWH 9788.0	301.6	141.6	249.2	812.0	984.9	993.5	1064.7	1060.8	923.4	764.6	343.2	166.0	148.5	570.5	665.5	598.3
DAILY GWH	20.1	20.2	27.7	27.1	31.8	33.1	34.3	34.2	30.8	24.7	22.9	23.7	18.6	18.4	21.5	20.6