US Army Corps
of Engineers

Northwestern Division
Missouri River Basin
Water Management Division

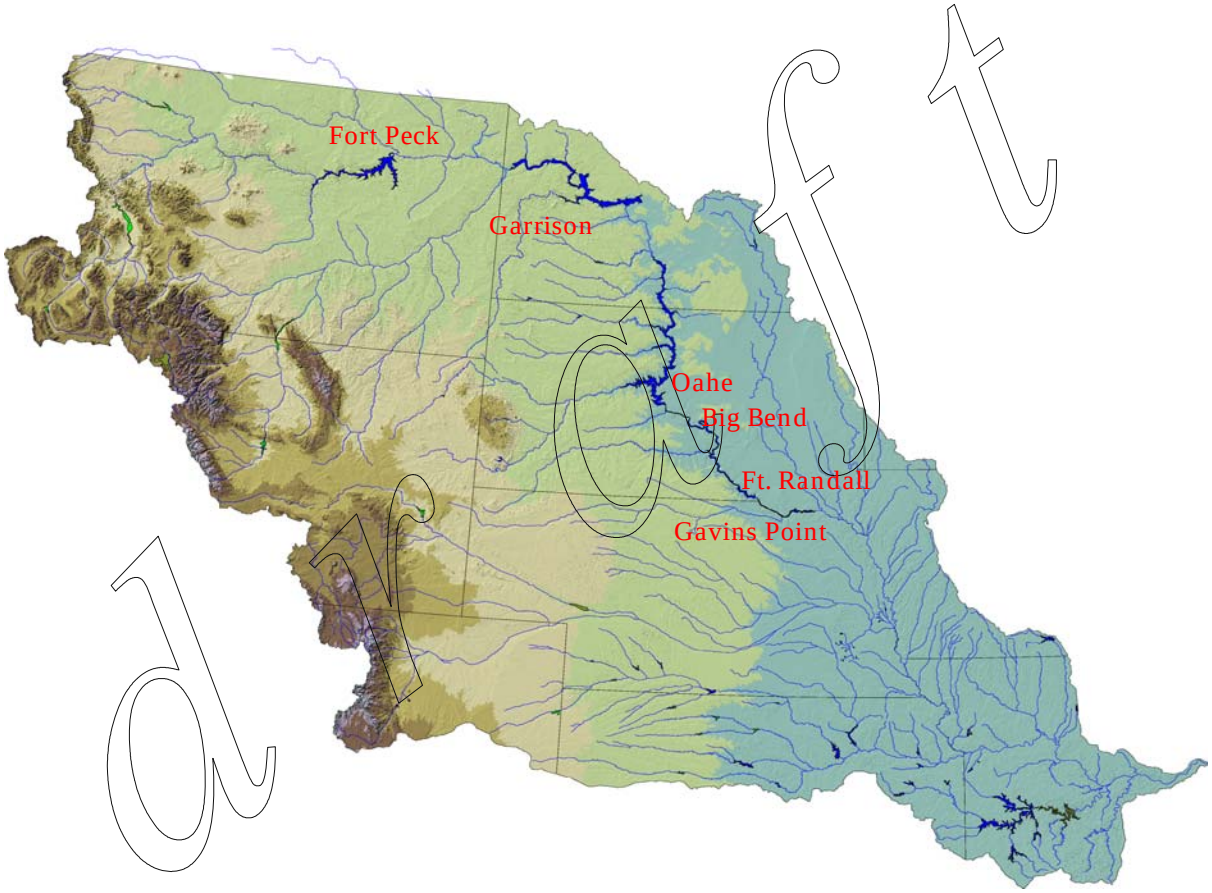
Draft

AOP

2011-2012

Missouri River Mainstem System

2011-2012 Annual Operating Plan



Annual Operating Plan Process
59 Years Serving the Missouri River Basin

September 2011

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
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September 2011

This Draft Annual Operating Plan (AOP) presents pertinent information regarding water management in the Missouri River Mainstem Reservoir System through December 2012 and provides a framework for the development of detailed monthly, weekly, and daily regulation schedules for the six individual dams. 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 Mainstem Reservoir System Master Water Control Manual (Master Manual).

The historic Missouri River Flood of 2011 has severely impacted many communities, homeowners, farmers, and businesses. I recognize and regret that citizens in the basin have suffered much property damage, inconvenience, and disruption to their lives and livelihoods.

A risk analysis was conducted to determine the best way to prepare the basin for the 2012 runoff season, including options that would increase the volume of flood control storage. Due to the risk imposed by additional flood water evacuation and the associated delay in the recovery process, the Draft AOP does not provide additional flood control storage in 2012. This decision does not preclude changes in the future. The Corps has initiated an external independent review to assess the 2011 flood; whether or not this leads to long-term changes in flood control storage or leads to adjustments in the Master Manual remains to be seen.

Eight public meetings to discuss this Draft AOP are planned throughout the basin in late October and early November. An afternoon open house will be held at each location to provide an opportunity for stakeholders to speak with Corps officials on a one-on-one basis. The evening public meeting will include a presentation from the Corps followed by a question/answer session. The meetings are scheduled as follows: October 24 in Omaha, Nebraska; October 25 in St. Joseph, Missouri; October 26 in Overland Park, Kansas; October 27 in Jefferson City, Missouri; October 31 in Glasgow, Montana; November 1 in Bismarck, North Dakota; November 2 in Pierre, South Dakota; and November 3 in Sioux City, Iowa. We ask that any comments be provided by November 25, 2011. The Final AOP is scheduled for publication in December 2011.

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

John R. McMahon
Brigadier General, US Army
Division Commander

MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM

Annual Operating Plan
2011 - 2012

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
ISAP	-	Independent Science Advisory Panel
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
2011 – 2012

I. FOREWORD

This Draft Annual Operating Plan (AOP) presents pertinent information and plans for regulating the Missouri River Mainstem Reservoir System (System) through December 2012 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 2010 Regulation," dated September 2011. 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 2011 Regulation" will be available at the same site in April of 2012.

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 meetings are 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 22, 2011, was sent to the Tribes offering consultation on the 2011-2012 AOP. Meeting times and locations of the eight 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 2011 spring public meetings were held at the following locations and dates: April 12 at Nebraska City, Nebraska, and Fort Peck, Montana; April 13 at Bismarck, North Dakota and Pierre, South Dakota; April 14 at Jefferson City, Missouri and Kansas

City, Missouri. The attendees were given an update regarding the outlook for 2011 runoff and projected System regulation for the remainder of 2011. Eight fall public meetings on the Draft 2011-2012 AOP are planned: October 24 in Omaha, Nebraska; October 25 in St. Joseph, Missouri; October 26 in Overland Park, Kansas; October 27 in Jefferson City, Missouri; October 31 in Glasgow, Montana; November 1 in Bismarck, North Dakota; November 2 in Pierre, South Dakota; and November 3 in Sioux City, Iowa. In the spring of 2012, 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 2011-2012 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 1970s, 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.

The 2011 flood event was unprecedented in both magnitude and duration along much of Missouri River resulting in significant damage to the projects, levees and other infrastructure. The Corps is in the initial phases of inspection, repair and restoration of this important infrastructure and it is unlikely that all repairs will be completed prior to the 2012 runoff season.

In addition, although a full assessment cannot be completed until the water levels recede, it is likely that the flood has also had a significant impact on the Missouri River ecosystem including emergent sandbar habitat utilized by the terns and plovers, and riverine habitat utilized by the pallid sturgeon. We expect emergent sandbar habitat to be abundant next year, as it was following the 1997 flood event; however riverine habitat impacts are generally unknown at this time. The river experienced a natural rise of near historic proportions in 2011, therefore we believe the efforts of the Missouri River Recovery Program should be focused on capturing the impact of the historic flood event rather than monitoring and analyzing a much smaller managed spring pulse in 2012.

Based our discussions with the USFWS regarding the above factors, and the ongoing review of the Gavins Point spring pulse by the Independent Science Advisory Panel which may inform the future direction of the spring pulse, we do not propose to include the pulse in this year's draft AOP.

With regard to summer releases to minimize take of the interior least tern and piping plover, based on the historic runoff experienced this year, we anticipate an abundance of high, secure nesting habitat for the two bird species. This expectation is based on the observed habitat following the previous runoff of record in 1997. The proposed summer release pattern to be included in the draft AOP will be a steady release or a steady release flow-to- target pattern provided nests are at a sufficient elevation so as not to be inundated.

The Corps will continue to work closely with the USFWS to ensure the AOP will meet the intent of the 2003 Amended BiOp and result in management actions that support the continued existence of these species on the river.

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 2011 - DECEMBER 2012

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 normally used as input to the Basic reservoir regulation simulation in the AOP studies for the period August 2011 to February 2012. Due to the on-going flood evacuation and much higher than normal August runoff, this year's AOP studies use the September 1 calendar year runoff forecast as input to the Basic simulation. The September 1 runoff forecast for 2011 was 61.0 million acre-feet (MAF). Two other runoff scenarios based on

the September 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 September through February runoff forecast, respectively.

Simulations for the March 1, 2012 to February 28, 2013 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. This report will be updated next year to include inflow data through 2011. 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 2013. 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 2013.

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 September 2011 through February 2013. The natural water supply for calendar year (CY) 2010 totaled 38.7 MAF.

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

	Natural 1/	Post-1949 Depletions	Net 2/
September 2011 through February 2012 (Basic Runoff Scenario)			
Basic	7,300	1,400	8,700
120% Basic	8,800	1,400	10,200
80% Basic	5,800	1,400	7,200
Runoff Year March 2012 through February 2013 (Statistical Analysis of Past Records)			
Upper Decile	34,300	-2,500	31,800
Upper Quartile	30,300	-2,500	27,800
Median	24,400	-2,600	21,800
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 2011-2012

A. General. The Missouri River basin experienced a historic flood in 2011 with record runoff into the reservoir system, currently forecast to total 61 million acre-feet (MAF), and releases at more than twice the previous records. The flood caused widespread damages from Montana to Missouri and caused many to question the validity of the Master Manual with regard to flood control. A risk analysis was conducted to determine the best way to prepare the basin for the 2012 runoff season. A number of options were considered, including several that provided more than 16.3 MAF of flood control storage as called for in the Master Manual. The selected drawdown strategy was designed to evacuate stored flood water as quickly as possible to allow people to get back into their homes, farms and business to begin the process of recovery, and to allow inspection and repair of infrastructure including the dams and levees to ensure they are ready for the 2012 season. Due to the risk imposed by the sustained high releases necessary to provide additional flood control storage, and the associated delay in the recovery process, the selected plan does not draw down the reservoir below the base of the Annual Flood Control and Multiple Use zone. This decision does not preclude changes in the future. The Corps will conduct an extensive

review to assess the operation of the reservoir system, its effects, and where improvements or adjustments may be warranted; whether or not these studies recommend long-term changes in flood control storage or lead to adjustments in the Master Manual remains to be seen.

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 2011-2012 AOP includes 13 years of regulation at Fort Peck (1940) as the sole Mainstem project, plus 58 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. It also includes the high runoff period from 1993 – 1999 during which five of the seven years experienced runoff greater than Upper Quartile including the previous record runoff of 49.0 MAF in 1997, and the record runoff of 2011, forecast to be 61.0 MAF. 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. <u>2011-2012 AOP Simulations</u>. AOP simulations for the five runoff scenarios are shown in the final section of this AOP as studies 4 through 8. 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; 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 Fort Peck and Oahe 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 2011-2012 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, 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. However, as discussed in Chapter III, spring pulses were not included in this year's AOP studies. The Corps will continue to work closely with the USFWS to ensure the AOP will meet the intent of the 2003 Amended BiOp.

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 2012. Full service navigation flows or more are provided for 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 Median and lower runoff conditions. The upper two runoff scenarios provide a 10-day extension to the navigation season. Upper Quartile and Upper Decile simulations reach the desired 56.8 MAF System storage level on March 1, 2013.

For modeling purposes in this AOP, the Steady Release – Flow to Target (SR-FTT) regulation scenario for Gavins Point dam is shown during the 2012 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 using the long-term average release (see ***Plate 3***) based on the service level for the first third of the month, 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 the 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 2012, 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 and flood evacuation criteria, Gavins Point winter modeled releases ranged from 20,000 cfs to 24,000 cfs during the 2011-2012 winter season depending on the runoff scenario, and from 12,000 cfs to 20,000 cfs during the 2012-2013 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, Fort Peck and Oahe are scheduled to be favored during the 2012 forage fish spawn while also attempting to maintain rising water levels at Garrison. 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 Fort Peck and Oahe. The Lower Quartile and Lower Decile simulations show the Garrison pool dropping during April and May.

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 in recent years. 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 2012. Additionally, experience has shown that storing water in the annual flood control zone, particularly at Oahe, as the current criteria requires in order to implement unbalancing is undesirable due to flood control impacts. The Corps will work with each of the appropriate state agencies in 2012 to determine a modified version of unbalancing that may be implemented for future AOP's that does not adversely impact flood control. 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 August 31, 2011 and the simulated regulating plans for each project through CY 2012 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 2010 through July 2011. ***Plate 13*** presents past and simulated gross average monthly power generation and gross peaking capability for the System.

C. <u>Regulation Plan for the Balance of the 2011 Navigation Season and Fall of 2011.</u> The regulation of the System for the period of August though November 2011 is presented in the following paragraphs.

<u>Fort Peck Dam</u>. As part of the continued evacuation of record runoff into the system in 2011, releases from Fort Peck were 30,000 cfs at the start of August, and then dropped to 25,000 cfs in mid-August. Releases will be held at 25,000 cfs through late September when they will be lowered to 20,000 cfs and eventually reach 9,000 cfs at the beginning of October. Average releases for August were 26,600 cfs and September will be 20,000 cfs, respectively. Releases will be held steady at 9,000 cfs through November. The Fort Peck pool will continue to drop quickly in September before slowing down in October and ending November near 2237.2 ft msl. A record high Fort Peck pool elevation of 2252.3 feet msl was set on June 15, 2.3 feet above the top of exclusive flood control pool. The previous record high pool elevation was 2251.6 feet msl set in July 1975.

<u>Garrison Dam</u>. Releases started August at 110,000 cfs and were gradually reduced during the month. Releases will continue to drop throughout September ending the month near 26,000 cfs. Average releases for August were 91,000 cfs and September will be 38,700 cfs. Releases will then be held steady at 26,000 cfs from October through the end of November to continue the evacuation of water from the annual flood control zone. Releases will be reduced in late November or early December in anticipation of the December freeze-in downstream of Garrison between Washburn and Bismarck, North Dakota. The Garrison pool will continue dropping quickly in September before

slowing down in late September and then steadily dropping through the fall, ending at 1840.5 feet msl at the end of November. The Garrison pool elevation peaked at 1854.6 feet msl on July 1, 0.6 feet above the top of exclusive flood control pool. This was the second highest recorded pool elevation on record. The record high pool elevation was 1854.8 feet msl set in July 1975.

Oahe Dam. Releases started the month of August at 135,000 cfs and were gradually reduced during the month. Releases will continue to drop throughout September reaching 30,000 cfs near the end of the month. The monthly average release was 117,100 cfs in August and will be 59,700 cfs in September. October and November releases will average 24,700 cfs and 31,200 cfs, respectively to continue the evacuation of the record runoff stored in Oahe and to accommodate the fall drawdown of the Fort Randall pool. The Oahe pool will end November at elevation 1608.4 feet msl. A record high Oahe pool elevation of 1619.7 feet msl was set on June 26, within 0.3 feet of the top of exclusive flood control pool. The previous record high pool elevation was 1618.7 feet msl set in June 1995 and 1996.

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

Fort Randall Dam. Releases started the month of August at 147,000 cfs and gradually dropped to 86,000 cfs by the end of the month; averaging 133,000 cfs. Average releases will be 78,300 cfs in September, 36,700 cfs in October, and 38,400 cfs in November to continue the evacuation of flood water, to facilitate the annual drawdown of Fort Randall and to back up the releases from Gavins Point Dam. The fall pool draw down of Fort Randall will be a continuation of the drawdown of the pool that started in early July when the pool peaked at a record elevation of 1374.0 ft msl on July 11 (previous record pool of 1372.2 occurred in May 1997) 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 were reduced from 155,000 cfs to 150,000 cfs on August 1, held at that rate through mid-August, and then gradually reduced to 90,000 cfs by the end of the month. The 90,000 cfs release rate was held until mid-September. Releases will then be reduced 5,000 cfs every other day until releases reach 40,000 cfs in early October, and will be held at that rate through early December. These releases will be 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 early December until they reach the winter release rate of 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 planned winter System release for 2011-2012 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 10,000 cfs in December and 12,000 cfs in January and February to serve winter power loads and to draw down the lake to the base of the annual flood control pool. The Fort Peck pool level is expected to decline about 3.2 feet from near elevation 2237.0 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 2234.9 feet msl by March 31.

Garrison Dam. Releases are scheduled to be 19,000 cfs in December increasing to 24,000 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 prior to 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. The Garrison pool level is expected to decline about 3.0 feet from near elevation 1840.6 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 1838.7 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 23,800 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 is coordinated with the Western Area Power Administration. The Oahe pool level is expected to slowly decline from 1608.5 feet msl at the end of November to 1607.1 feet msl at the end of December. The pool will stay steady during January 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 1607.8 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 19,600 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 in early December 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, 2012, the beginning of next year's runoff season.

E. Regulation During the 2012 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, 2012, 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 2012 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 2012 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 2012 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 Median and lower runoff scenarios as shown in ***Table II***. A 10-day extension to the navigation season is provided for the upper two runoff scenarios.

TABLE II
NAVIGATION SERVICE SUPPORT
FOR THE 2012 SEASON

	Runoff Scenario (MAF)	**System Storage**		**Flow Level Above or Below Full Service (cfs)**		**Season Shortening (Days)**
		March 15 (MAF)	**July 1 (MAF)**	Spring	Summer/Fall	
U.D.	34.3	57.8	65.0	+3.3	+19	0*
U.Q.	30.3	57.6	63.9	0	+12	0*
Med	24.4	57.5	61.6	0	0	0
L.Q.	19.3	57.3	58.4	0	0	0
L.D.	16.2	57.2	57.3	0	0	0

*Includes 10-day extension for Upper Quartile and Upper Decile

As previously stated, the modeled regulation for the 2012 nesting season below Gavins Point dam is Steady Release – Flow-to-Target (SRR-FTT). With the expectation of large quantities of high elevation nesting habitat being available, it's possible that the actual regulation will be Flow to Target. The nesting situation will be closely monitored and if nesting appears to be taking place at low elevations a SRR-FTT release scenario may be implemented. If a SRR-FTT release scenario is used, the initial steady release, which has ranged from 18,000 cfs to 27,000 cfs in the five years previous to 2011, 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 during the last two-thirds of May 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.

Gavins Point releases may be quite variable during the 2012 navigation season but are expected to range from 26,000 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, however, as experienced in 2011, runoff above or below simulated levels can occur and result in releases beyond those modeled for the 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, Fort Peck and Oahe are scheduled to be favored during the 2012 forage fish spawn if runoff is below median. The studies show that inflows are sufficient to maintain steady to rising pools at Fort Peck and Oahe from April through June for the Lower Quartile and Lower Decile runoff scenarios; Garrison 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 Fort Peck and Oahe 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 discussed in the previous section, the 2011-2012 AOP will not include provisions for unbalancing the Fort Peck, Garrison, and Oahe reservoirs to benefit the reservoir fishery and endangered species, but unbalancing will be considered within the carryover multiple use zone in future years.

Fort Peck Dam. 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 2012 nesting season will not be restricted by the repetitive daily pattern unless habitat conditions or nesting patterns warrant a change.

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. 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. 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 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. High elevation nesting habitat is expected to be abundantly available below Garrison Dam during the 2012 nesting season

During 2012, cold-water habitat in Garrison should be adequate for all runoff scenarios.

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 with the exception of the Lower Quartile and Lower Decile.

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 for all 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 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. The need to utilize measures to minimize take may be lessened because of the large quantity of nesting habitat expected during the 2012 nesting season. Periods of zero release 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 not be implemented under any runoff scenarios in 2012.

It is anticipated that sufficient habitat to provide for successful nesting will be available above the planned release rates for all runoff conditions. This expectation is based on experience from the past record runoff in 1997. Following the 1997 runoff, high elevation nesting habitat was readily available and used successfully by the birds. Flows from Gavins Point Dam may follow the flow-to-target (FTT) release scenario. This scenario limits releases from Gavins Point to those needed to meet downstream targets. The actual release scenario will be evaluated when birds begin nesting in early May. If nests are initiated at a lower elevation which would be inundated later in the summer, a steady release-flow to target release scenario may be instituted (A full description of these release scenarios can be found in the Master Manual). Actual releases will be based on hydrologic conditions and the availability of habitat at that time.

All reasonable measures to minimize the loss of nesting T&E bird species will be used. While not anticipated because of the large quantity of high elevation habitat available, 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.

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. However, because of the large quantity of habitat expected we do not anticipate nests being inundated. 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. <u>Regulation Activities for Historic and Cultural Properties</u>. 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. As a result of the 2011 flood event, there will be impacts to cultural resources. A gradual drawdown of reservoir levels was preferred to avoid or minimize further damage to cultural

resource sites. To address impacts, the most effective and comprehensive strategy is a phased approach; site assessment/ Native American Graves Protection and Repatriation Act (NAGPRA) survey, increased law enforcement efforts, engineering design, rip rap repair, and new rip rap placement. Although condition assessments will be conducted for all sites affected by flooding, priority will be given to site assessments at occupation sites to determine impacts and check for any NAGPRA-related items. Increased law enforcement will be necessary to detect or prevent, and possibly prosecute individuals for, Archeological Resources Protection Act (ARPA) violations. Engineers will need to collect data and prepare designs to repair existing rip rap and protection for any sites that were newly impacted.

In 2012 reservoir levels are expected to be more normal, 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 2012 could result in a Fort Peck pool elevation variation from a high of 2244 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 14 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 2012. Based on a review of existing information, approximately 112 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 1616 to 1594 feet msl (see ***Plate 10*** and the studies included at the end of this report). Based on a review of existing information, approximately 221 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 2012. Short-term increases above 1421 due to local rainfall may also occur. Based on a review of existing information, approximately four 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 2012. 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 seven 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 2012. 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 2012

With regulation of the System in accordance with the 2011-2012 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 2011-2012 AOP Studies

Decision Points	2011-2012 Runoff Condition				
	Upper Decile	Upper Quartile	Median	Lower Quartile	Lower Decile
March 1 System Storage March 23-31 GP Release	56.8 MAF 26.7 kcfs	56.8 MAF 26.7 kcfs	56.8 MAF 26.7 kcfs	56.8 MAF 29.8 kcfs	56.8 MAF 29.8 kcfs
March 15 System Storage Spring Service Level	57.8 MAF full service	57.6 MAF full service	57.5 MAF full service	57.3 MAF full service	57.2 MAF full service
May 1 System Storage May Cycling May GP Release	60.2 MAF None 37.0 kcfs	59.7 MAF 28.0/31.6 kcfs 28.7 kcfs	58.4 MAF 28.0/31.6 kcfs 28.7 kcfs	57.2 MAF 31.3/34.3 kcfs 31.9 kcfs	56.8 MAF 31.3/34.3 kcfs 31.9 kcfs
Fish Spawn Rise (Apr-Jun) FTPK Pool Elev Change GARR Pool Elev Change OAHE Pool Elev Change	 +8.5 feet +6.5 feet +6.2 feet	 +7.1 feet +5.5 feet +6.6 feet	 +4.6 feet +5.1 feet +3.3 feet	 +2.6 feet +0.8 feet +0.4 feet	 +0.7 feet -1.0 feet +0.1 feet
July 1 System Storage Sum-Fall Service Level (kcfs) Nav Season Length	64.8 MAF Full Service 10 Day extension	63.9 MAF Full Service 10 Day extension	61.6 MAF Full Service 0 Days shortening	58.4 MAF Full Service 0 Days shortening	57.2 MAF Full Service 0 Days shortening
September 1 System Storage Winter 2011-12 GP Release	63.0 MAF 20.0 kcfs	62.4 MAF 20.0 kcfs	60.0 MAF 17.0 kcfs	55.9 MAF 13.5 kcfs	54.1 MAF 12.5 kcfs
February 28 System Storage End-Year Pool Balance Percent Pool	56.8 MAF Balanced 100%	56.8 MAF Balanced 100%	56.2 MAF Balanced 98%	51.2 MAF Balanced 85%	48.8 MAF Balanced 79%

A. Flood Control. All runoff scenarios studied will begin the March 1, 2012 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 of 16.3 MAF, 11.6 MAF in the annual flood control and multiple use zone and 4.7 MAF in exclusive 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.

If plains and/or mountain snowpack accumulations are much above normal during the winter of 2011-2012, releases will be adjusted to the extent reasonably possible to evacuate water from the reservoir system early in the runoff season. High releases during the late winter and early spring periods may exacerbate localized flooding if coincident with plains snowmelt or spring rains, and may also contribute to significant ice jam flooding. Therefore, if higher than normal releases are indicated, local conditions will need to be closely monitored.

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. A return to higher reservoir elevations has eliminated concern over many of these intakes. 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 2012 would be at least 22 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 2011-2012. Under the 2011-2012 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 2012-2013 will be determined based on the September 1, 2012 System storage check. As shown in Table III, 2012-2013 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; 13,500 cfs

under Lower Quartile, and 12,500 cfs under Lower Decile runoff scenarios, respectively. Should the 2011-2012 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 which temporarily restrict flow. Based on past experiences, these events are expected to occur infrequently and be of short duration.

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. <u>Irrigation</u>. 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 2012 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 at least 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 2012 navigation season will be based on actual System storage on March 15 and July 1, 2012.

The lower three runoff simulations show a normal 8-month navigation season length and full service flows during 2012. The upper two runoff scenarios indicate a 10-day extension to the navigation season and flows above full service navigation flow support. 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 September 2011 through December 2012. 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 2012 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. Recreation access is expected to be at normal levels in 2012. If Lower Quartile or Lower Decile runoff were to occur in 2012, 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 2012 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 2011 and 2012 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 July 2011" (see http://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 2011 and 2012. 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 http://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 2011-2012 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. The most recent training for the monitoring teams was held in August 2011.

Second, mitigation or protection of sites that are being adversely impacted continues. During the reporting period for the 2010 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 http://www.nwo.usace.army.mil/CR/. In addition the Corps 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 was completed in June 2011.

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

	Estimated Committed Sales*	Expected C of E Capability					Expected Bureau Capability**					Expected Total System Capability				
2011			120%	Basic	80%			120%	Basic	80%			120%	Basic	80%	
Sep	2004		2253	2348	2351			202	202	202			2455	2550	2553	
Oct	1879		2344	2343	2346			202	202	202			2546	2545	2548	
Nov	1990		2303	2296	2308			201	201	201			2504	2497	2509	
Dec	2119		2296	2293	2300			198	198	198			2494	2491	2498	
2012																
Jan	2132		2314	2313	2317			195	199	195			2509	2512	2512	
Feb	2117		2320	2320	2320			193	195	193			2513	2515	2513	
		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	2050	2329	2329	2324	2319	2318	192	192	192	192	192	2521	2521	2516	2511	2510
Apr	1918	2353	2346	2331	2315	2311	189	189	189	190	190	2542	2535	2520	2505	2501
May	1878	2370	2365	2338	2314	2308	189	189	190	193	192	2559	2554	2528	2507	2500
Jun	2080	2397	2394	2371	2326	2315	201	201	202	198	196	2598	2595	2573	2524	2511
Jul	2195	2388	2386	2367	2316	2299	202	202	202	195	201	2590	2588	2569	2511	2500
Aug	2198	2374	2373	2357	2295	2274	208	207	208	202	200	2582	2580	2565	2497	2474
Sep	2003	2365	2366	2339	2280	2256	208	208	209	205	200	2573	2574	2548	2485	2456
Oct	1877	2331	2335	2319	2256	2231	208	208	210	206	200	2539	2543	2529	2462	2431
Nov	1988	2292	2297	2284	2218	2192	206	206	207	205	199	2498	2503	2491	2423	2391
Dec	2117	2247	2252	2245	2181	2153	202	203	204	201	197	2449	2455	2449	2382	2350

* 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)

	Estimated Committed Sales*	Expected C of E Generation					Expected Bureau Generation **					Expected Total System Generation				
2011			120%	Basic	80%			120%	Basic	80%			120%	Basic	80%	
Sep	736		1560	1562	1550			110	107	95			1670	1669	1645	
Oct	737		1198	969	755			102	96	85			1300	1065	840	
Nov	805		1202	1007	791			81	80	76			1283	1087	867	
Dec	915		870	812	723			83	82	78			953	894	801	
2012																
Jan	929		910	809	784			83	82	76			993	891	860	
Feb	898		831	741	719			77	76	70			908	817	789	
		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	814	666	663	669	719	724	82	82	80	73	73	748	745	749	792	797
Apr	769	777	743	750	874	877	91	91	76	50	50	868	834	826	924	927
May	712	1075	920	908	1017	1015	121	114	94	53	53	1196	1034	1002	1070	1068
Jun	769	1280	1175	948	1020	1025	140	130	111	55	55	1420	1305	1059	1075	1080
Jul	845	1447	1306	1022	1064	1048	144	120	101	58	58	1591	1426	1123	1122	1106
Aug	861	1447	1304	1059	1060	1044	108	103	84	53	55	1555	1407	1143	1113	1099
Sep	736	1354	1204	913	926	914	96	90	73	51	53	1450	1294	986	977	967
Oct	737	1236	1081	742	762	752	86	83	72	51	53	1322	1164	814	813	805
Nov	803	1190	1052	664	663	646	86	82	81	65	49	1276	1134	745	728	695
Dec	914	848	808	666	598	561	88	84	83	66	51	936	892	749	664	612
CY TOT		13061	11997	9891	10206	10109	1202	1139	1015	722	696	14263	13136	10906	10928	10805

* 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 2011-2012 on cultural sites are included in the Chapter V, section G., entitled, "Regulation Activities for Historic and Cultural Properties."

H. System Storage. If September 1, 2011 Basic runoff forecast verifies, System storage will decline to 57.1 MAF by the close of CY 2011. This would be 23.2 MAF higher than the all-time record low storage of 33.9 MAF set on February 9, 2007 and near last year's storage of 57.0 MAF. This end-of-year storage is 4.5 MAF more than the 1967 to 2010 average. The lowest storage during the 1988-1992 drought was 40.8 MAF in January 1991, and the record low storage was set during the 2000-2007 drought at 33.9 MAF in February 2007. 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, 2012 is presented in ***Table VI*** for the runoff scenarios simulated.

I. Summary of Water Use by Functions. Anticipated water use in CY 2011, under the regulation plan with the Basic forecast of water supply is shown in ***Table VII***. Under the reservoir regulation simulations in this AOP, estimated water use in CY 2012 also is shown in ***Table VII.*** Actual water use data for CY 2010 are included for information and comparison.

TABLE VI
ANTICIPATED DECEMBER 31, 2012 SYSTEM STORAGE

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

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 2010, 2011, AND 2012 ABOVE SIOUX CITY, IOWA
in Million Acre-Feet (MAF)

		CY 2010 Actual	CY 2011 Basic Simulation	Simulations for Calendar Year 2012 Upper Decile	Upper Quartile	Median	Lower Quartile	Lower Decile
Upstream Depletions	(1)							
Irrigation, Tributary Reservoir Evaporation & Other Uses		2.4	2.6					
Tributary Reservoir Storage Change		-0.1	0.2					
Total Upstream Depletions		2.3	2.8	2.5	2.5	2.6	2.5	2.1
System Reservoir Evaporation	(2)	3.1	2.7	1.2	1.2	1.8	2.1	2.0
Sioux City Flows								
Navigation Season								
Unregulated Flood Inflows Between Gavins Point & Sioux City	(3)	0.8	0.8					
Navigation Service Requirement	(4)	15.3	15.7	17.1	16.6	15.9	16.3	16.0
Supplementary Releases								
T&E Species	(5)	0.5	0.0	0.2	0.2	0.3	0.2	0.2
Flood Evacuation	(6)	10.0	34.6	8.4	4.9	0.0	0.0	0.0
Non-navigation Season								
Flows		3.5	3.8	4.8	4.7	4.6	4.4	4.3
Flood Evacuation Releases	(7)	0.5	0.5	0.5	0.4	0.0	0.0	0.0
System Storage Change		0.1	0.1	-0.4	-0.2	-0.8	-6.2	-8.4
Total		38.7	61.0	34.3	30.3	24.4	19.3	16.2
Project Releases								
Fort Peck		4.1	13.3	8.6	8.0	6.7	6.6	6.6
Garrison		13.2	36.7	20.9	19.4	15.9	16.0	15.5
Oahe		17.2	41.5	24.6	21.9	17.6	18.8	18.9
Big Bend		16.6	40.9	24.5	21.8	17.6	18.9	19.0
Fort Randall		19.2	44.4	25.9	22.9	18.9	19.1	19.2
Gavins Point		21.7	46.5	28.1	24.8	19.6	20.3	20.2

(1) Tributary uses above the 1949 level of development including agricultural depletions and tributary storage effects.
(2) Net evaporation is shown for 2012.
(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 FEBRUARY 2018

(Not completed until final plan is adopted.)

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USACE Mainstem Project

USACE Tributary Project

USBR SECTION 7 PROJECT

☆ **State Capitol**

-------- District Boundary

Missouri River Basin

U.S. ARMY ENGINEERS, NORTHWESTERN DIVISION
CORPS OF ENGINEERS, OMAHA, NEBRASKA
AUGUST 2011

PLATE 1. Missouri River Basin Map.

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 full 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 & incremental 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 msl	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 fill	Fort Union clay shale	Pierre shale
16	Type of fill	Hydraulic & rolled earth fill	Rolled earth filled	Rolled earth fill & shale berms
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 msl	2225	1825	1596.5
22	Width (including piers) in feet	820 gated	1336 gated	456 gated
23	No., size and type of gates	16 - 40' x 25' vertical lift gates	28 - 40' x 29' Tainter	8 - 50' x 23.5' Tainter
24	Design discharge capacity, cfs	275,000 at elev 2253.3	827,000 at elev 1858.5	304,000 at elev 1644.4
25	Discharge capacity at maximum 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 control	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 initiated	November 1937	December 1953	August 1958
36	Initially reached min. operating pool	27 May 1942	7 August 1955	3 April 1962
37	Estimated annual sediment inflow	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 conduit & 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)	1,043	2,245	2,618
55	Initial generation, first and last unit	July 1943 - June 1961	January 1956 - October 1960	April 1962 - June 1963
56	Estimated cost September 1999 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 miles of non-contributing areas.
Mile 987.4	Mile 880.0	Mile 811.1		2	
249,330 (1) 5,840	263,480 (1) 14,150	279,480 (1) 16,000		3	(2) Includes 1,350 square miles of non-contributing areas.
80, ending near Pierre, SD	107, ending at Big Bend Dam	25, ending near Niobrara, NE	755 miles	4	
200 (elevation 1420)	540 (elevation 1350)	90 (elevation 1204.5)	5,940 miles	5	(3) With pool at base of flood control.
28,900	30,000 1,100	32,000 2,000		6	
440,000 (April 1952)	447,000 (April 1952)	480,000 (April 1952)		7	(4) Storage first available for regulation of flows.
1959	1946	1952		8	(5) Damming height is height from low water to maximum operating pool. Maximum height is from average streambed to top of dam.
1964	1953	1955		9	
1440	1395	1234		10	
10,570 (including spillway)	10,700 (including spillway)	8,700 (including spillway)	71,596	11	(6) Based on latest available storage data.
78	140	45	863 feet	12	
95	165	74		13	(7) River regulation is attained by flows over low-crested spillway and through turbines.
1200, 700	4300, 1250	850, 450		14	
Pierre shale & Niobrara chalk	Niobrara chalk	Niobrara chalk & Carlile shale		15	(8) Length from upstream face of outlet or to spiral case.
Rolled earth, shale, chalk fill	Rolled earth fill & chalk berms	Rolled earth & chalk fill		16	
17,000,000	28,000,000 & 22,000,000	7,000,000	358,128,000 cu. yds	17	(9) Based on 8th year (1961) of drought drawdown (From study 8-83-1985).
540,000	961,000	308,000	5,554,000 cu. yds.	18	
24 July 1963	20 July 1952	31 July 1955		19	
Left bank - adjacent	Left bank - adjacent	Right bank - adjacent		20	(10) Affected by level of Lake Francis case. Applicable to pool at elevation 1350.
1385	1346	1180		21	
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) 1967-2010 Average
390,000 at elev 1433.6	633,000 at elev 1379.8	584,000 at elev 1221.4		24	(13) Source: Annual Report on Civil Works Activities of the Corps of Engineers. Extract Report Fiscal Year 1999.
270,000	508,000	345,000		25	
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	1,729	727	9,331 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 2011

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

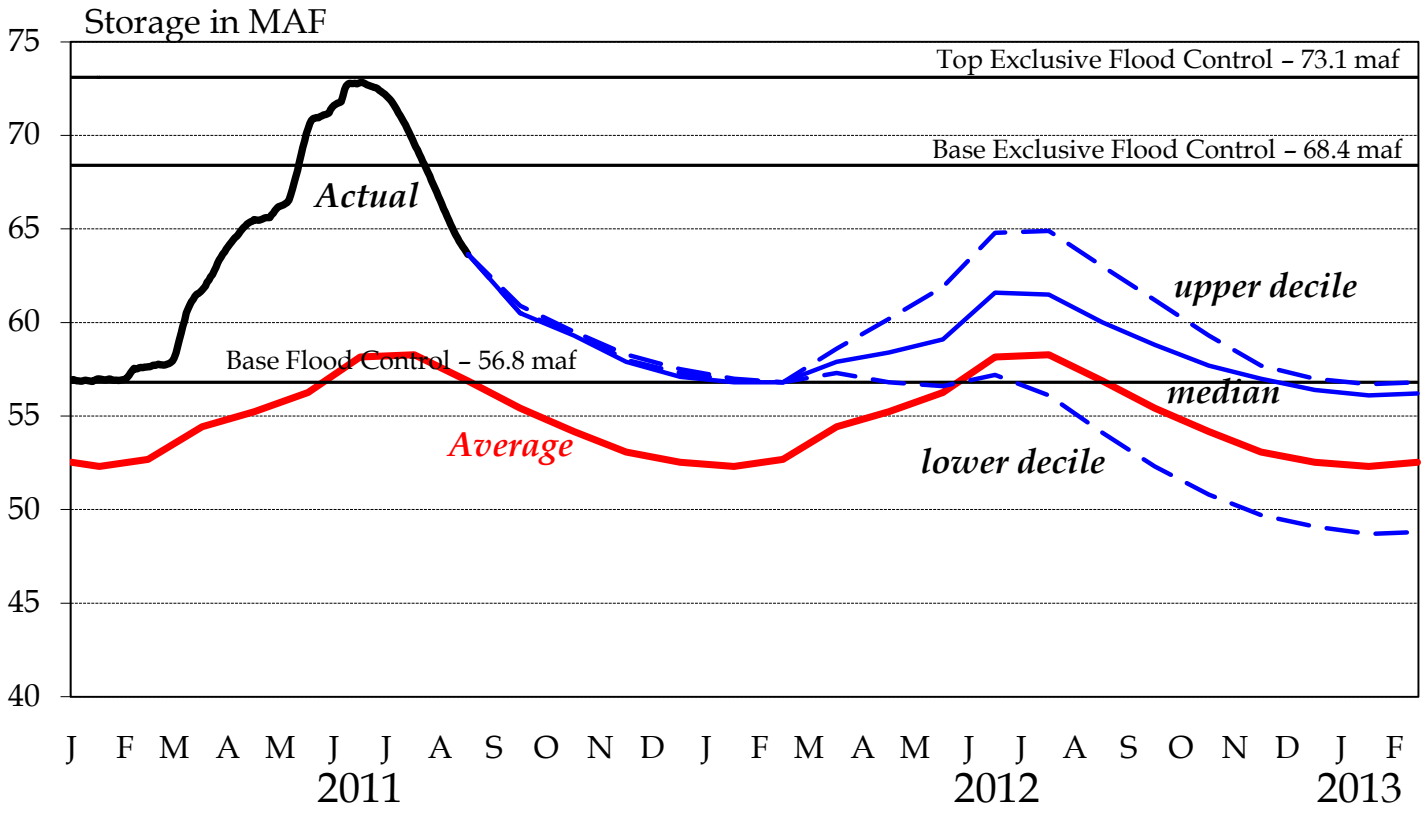
Drought Preclude	40.0 MAF or below measured on May 1.
Proration of Pulse Magnitude Based On System Storage*	Prorated from 16 kcfs based on a May 1 System Storage check; 100% at 54.5 MAF; straight line interpolation to 75% at 40.0 MAF.
Proration of Pulse Magnitude Based On Projected Runoff*	After the 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

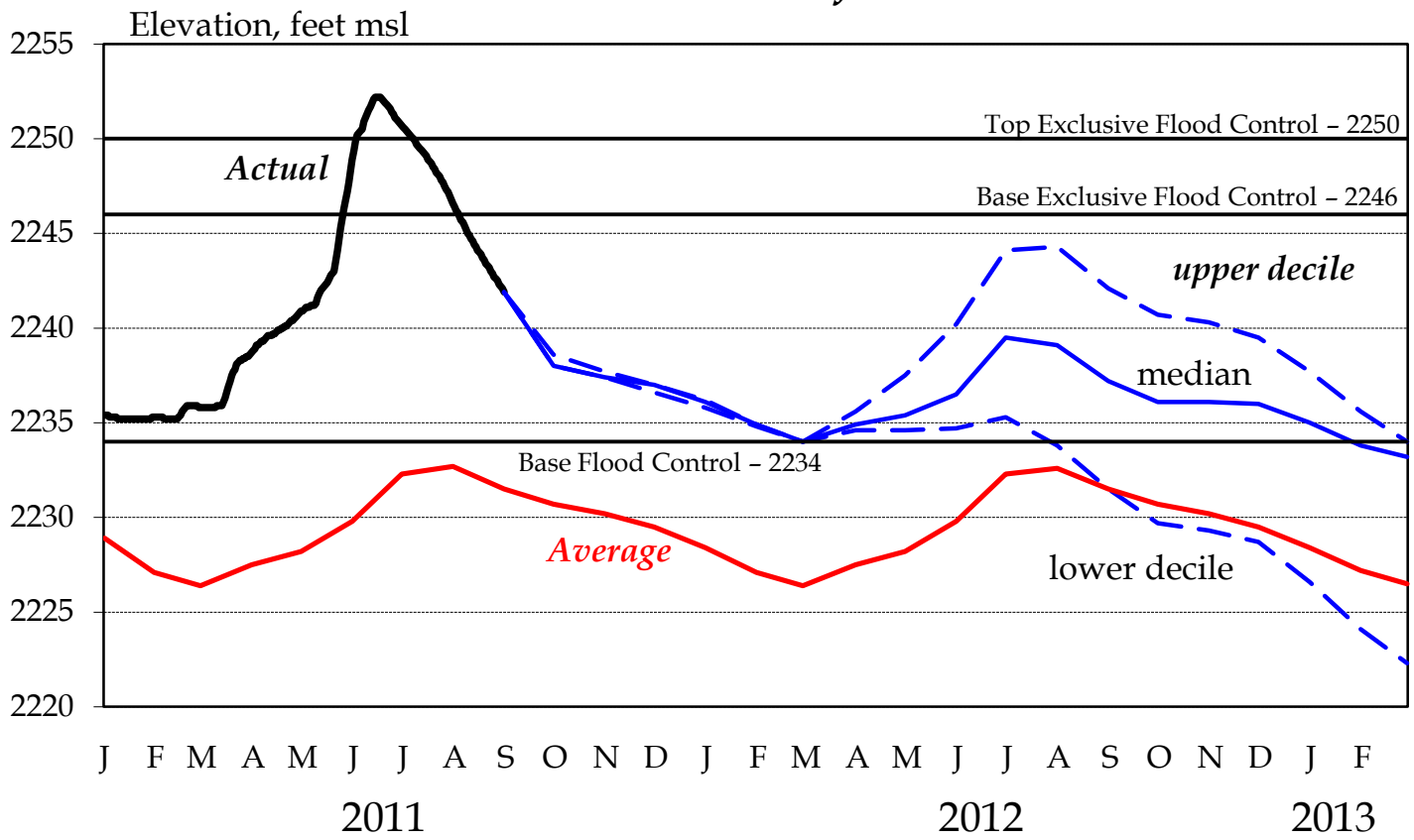
* Spring pulse magnitudes will be determined by taking the difference between pre-pulse Gavins Point releases and the peak pulse Missouri River flows measured just downstream of the mouth of the James River.

System Storage
2011-2012 Draft AOP



Average 1967-2010

Fort Peck
2011-2012 Draft AOP

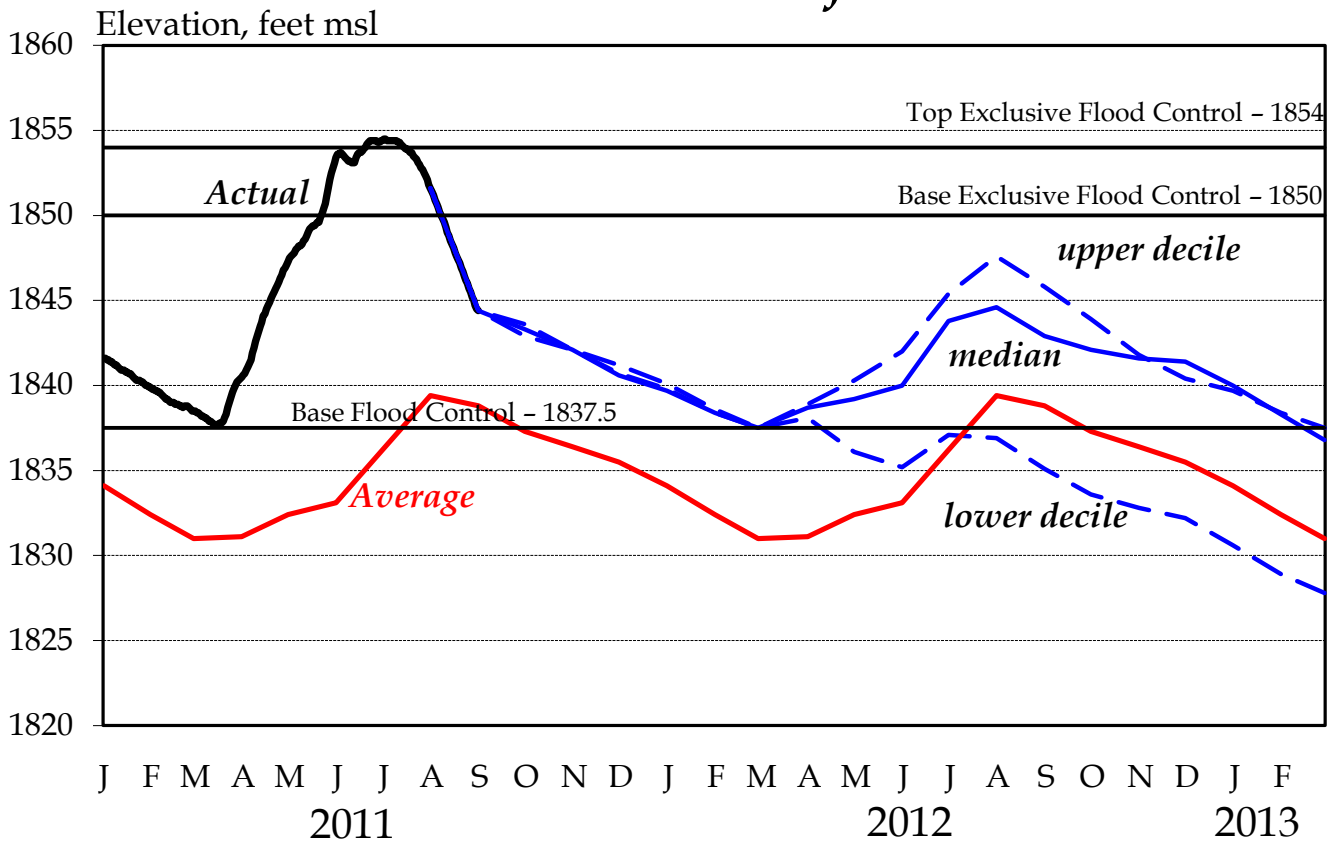


Average 1967-2010

Plate 4

Garrison

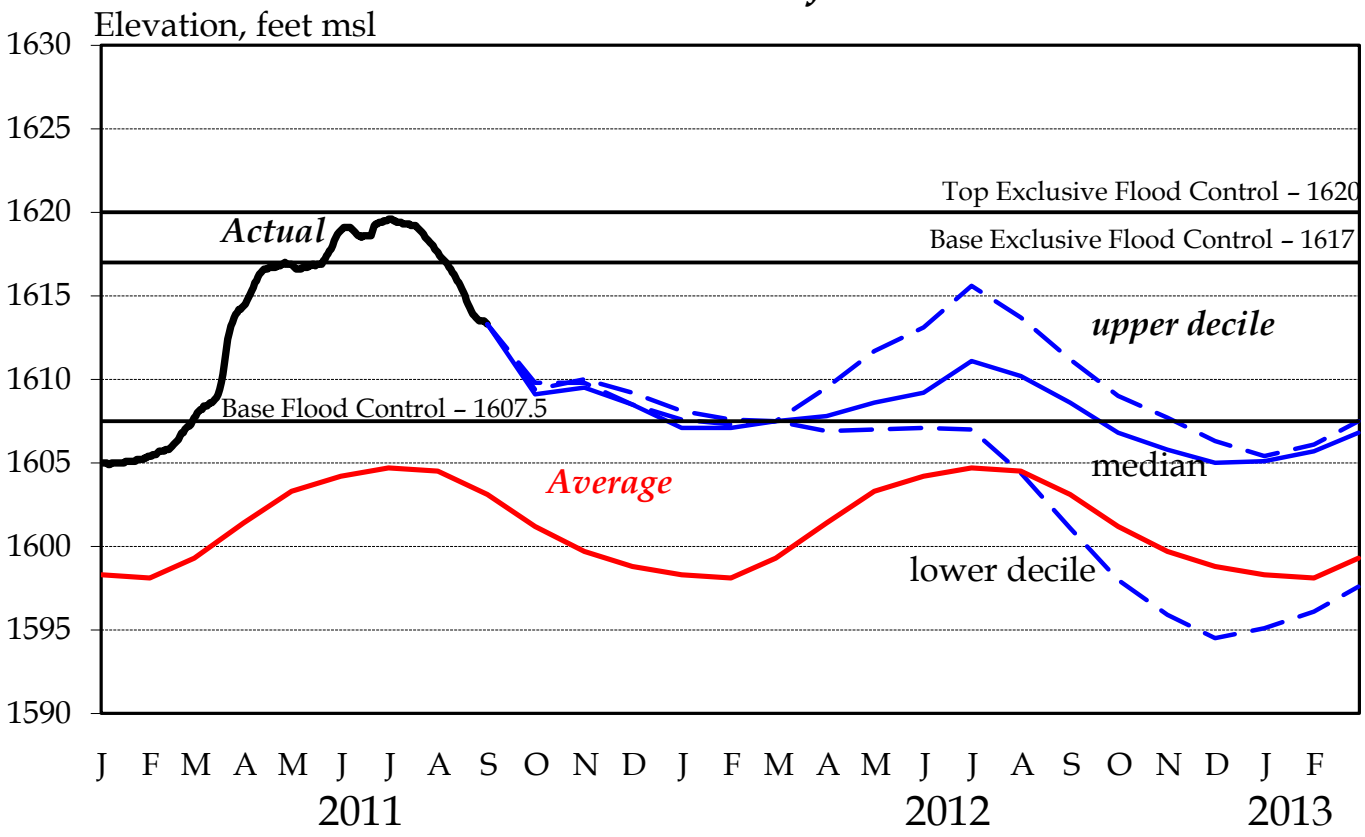
2011-2012 Draft AOP



Average 1967-2010

Oahe

2011-2012 Draft AOP



Average 1967-2010

Plate 5

System Storage

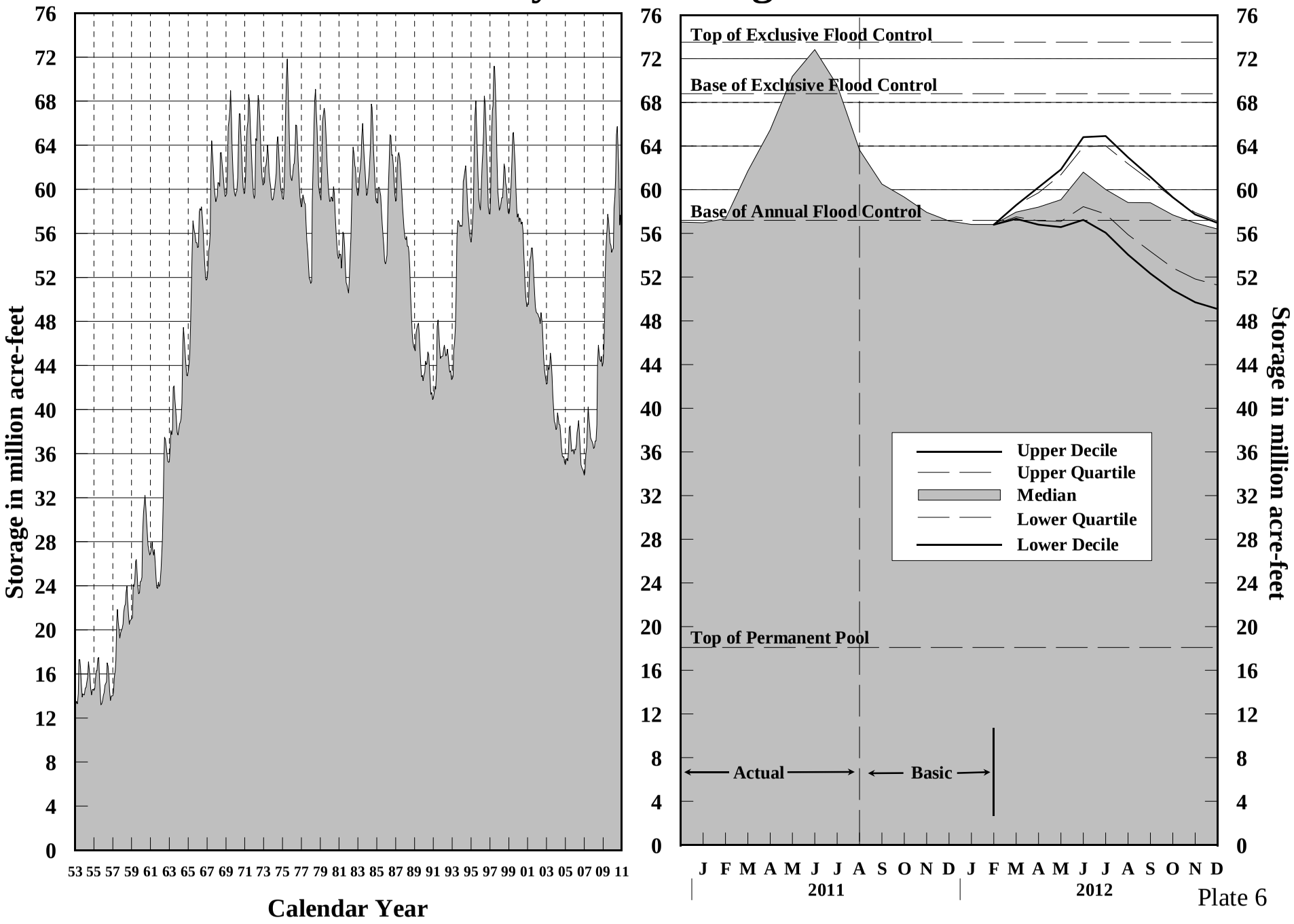


Plate 6

Gavins Point Releases

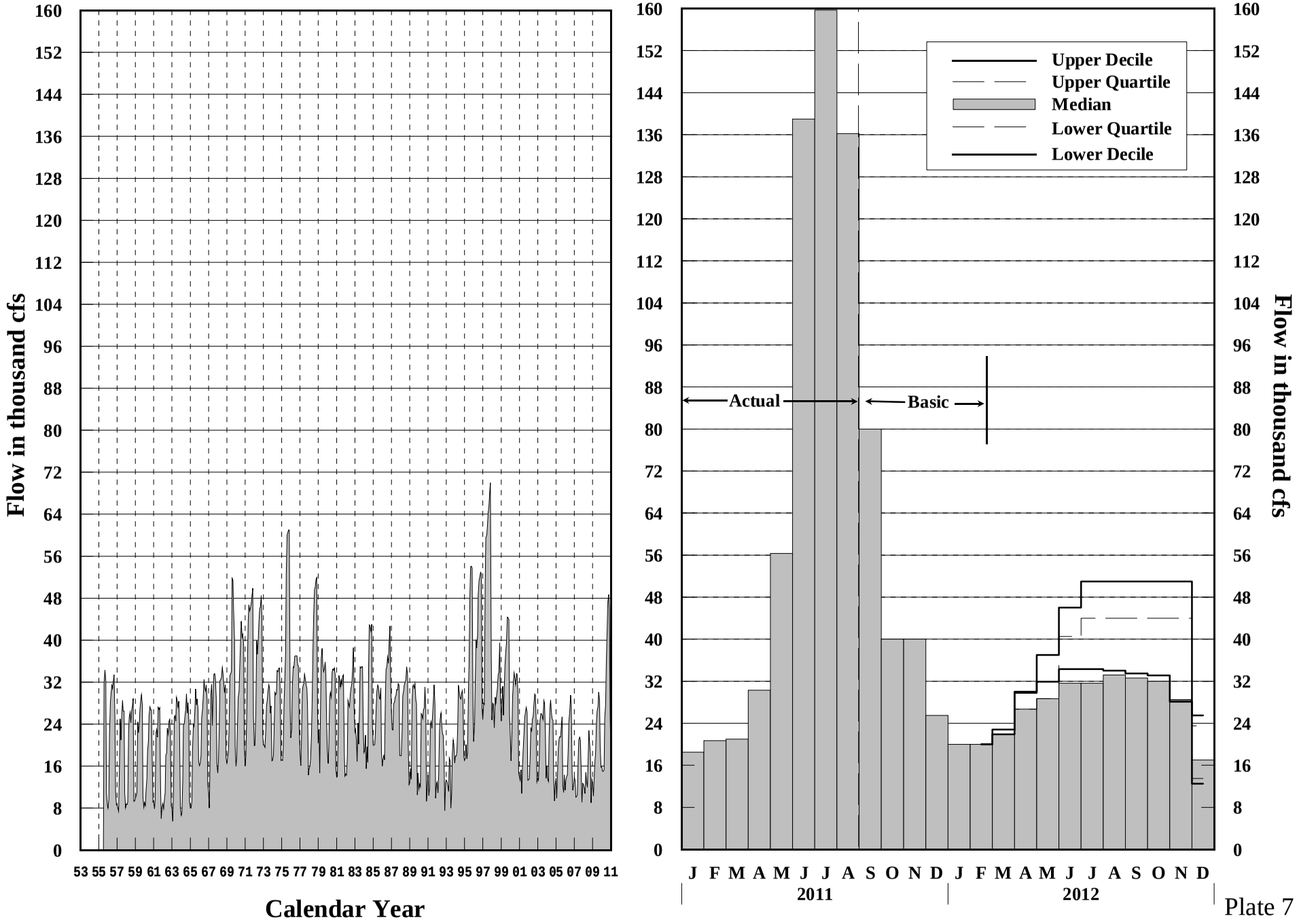
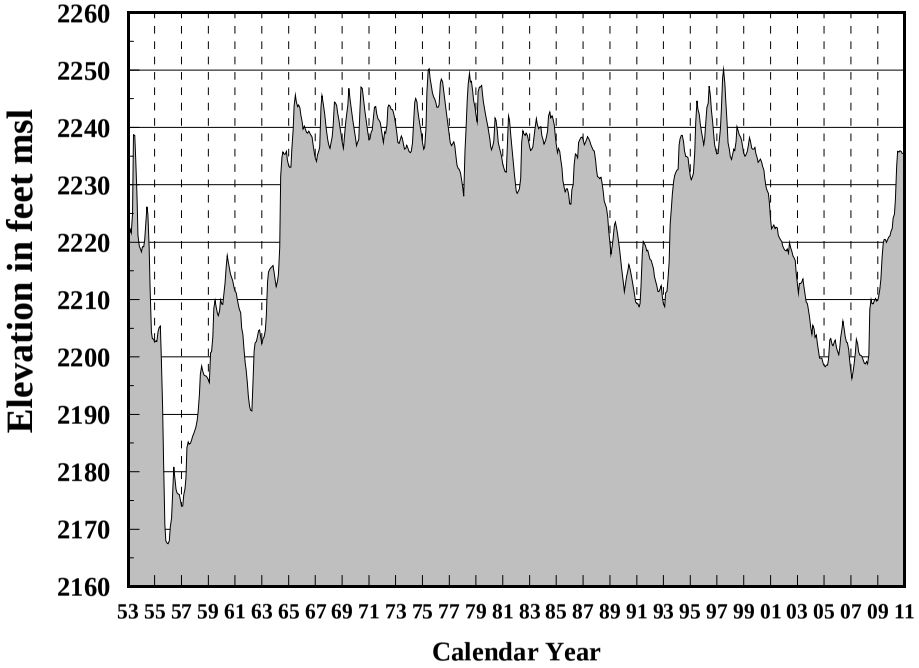
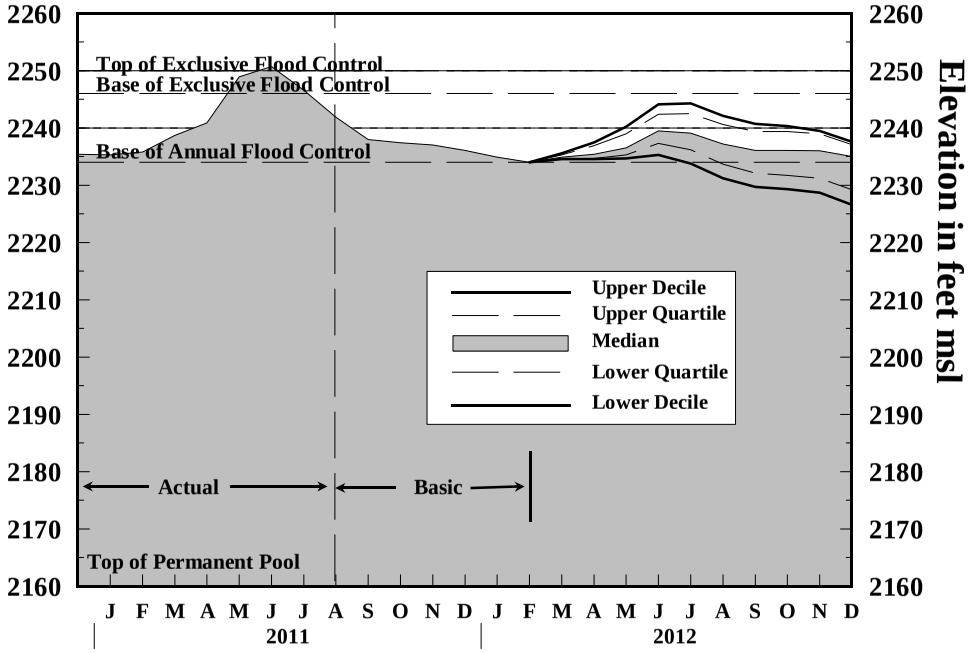
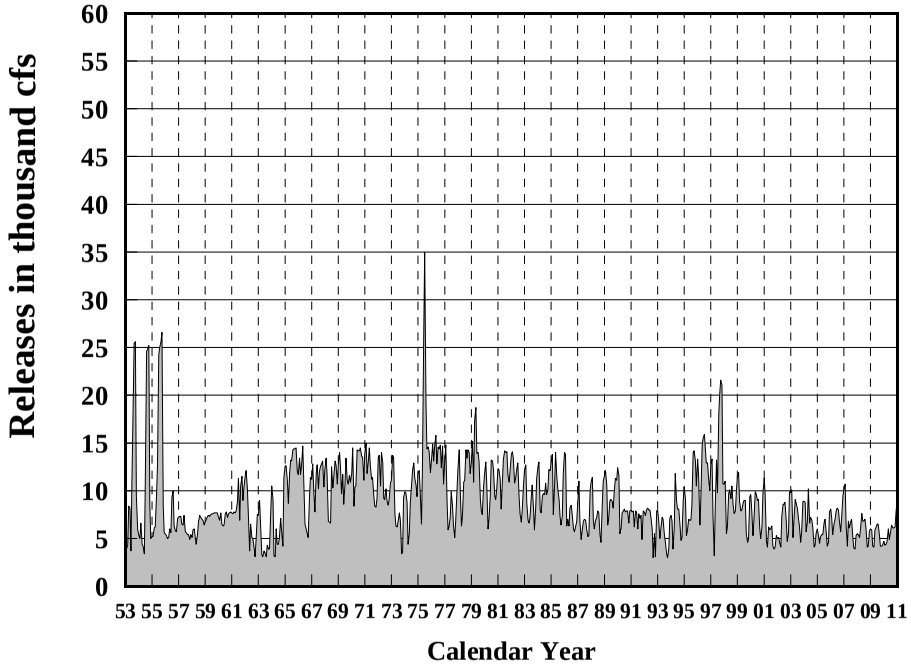


Plate 7

Fort Peck
Elevations and Releases







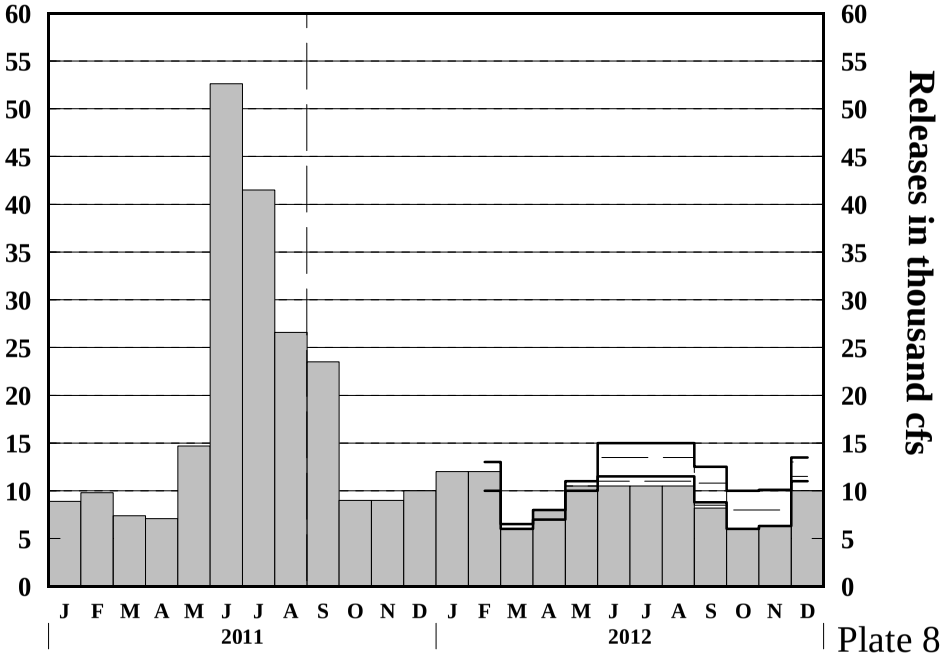
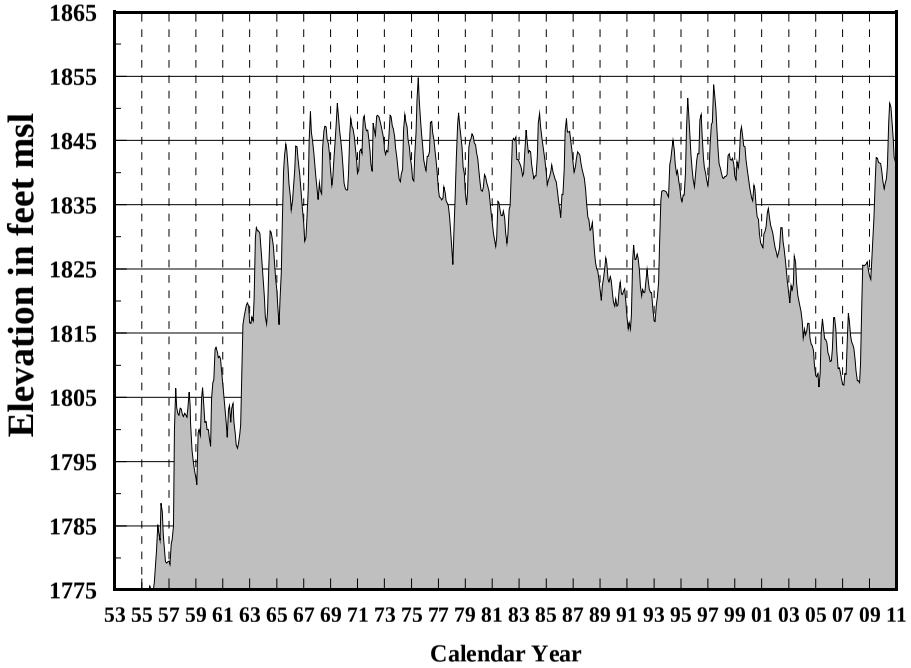
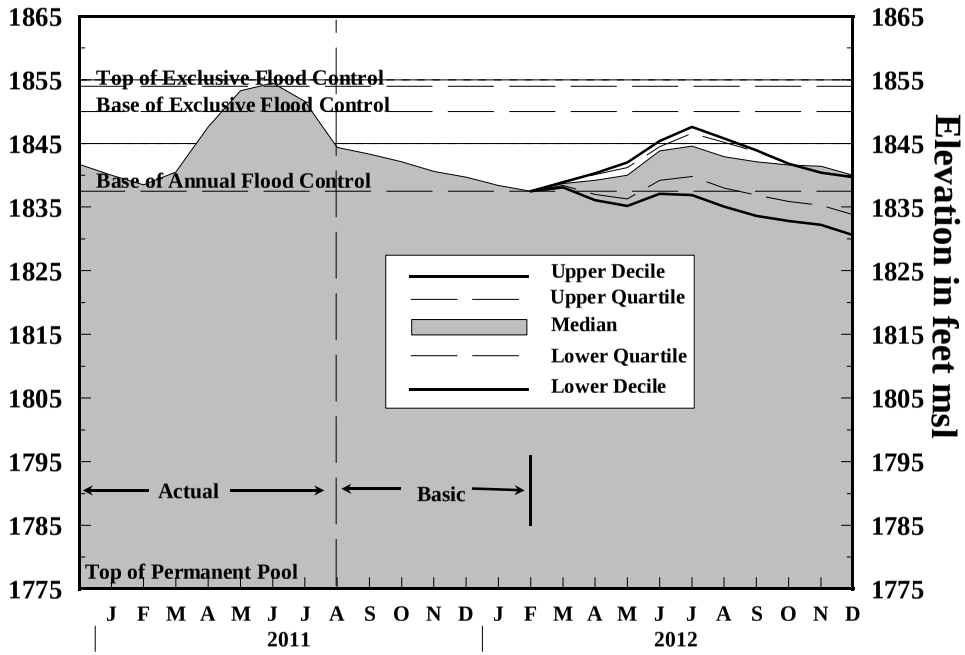
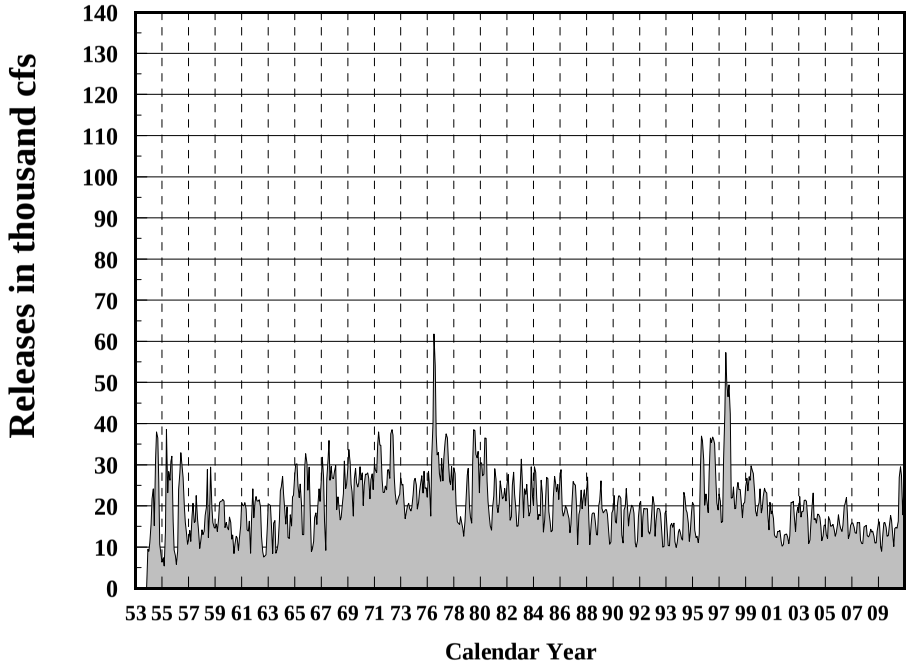


Plate 8

Garrison
Elevations and Releases







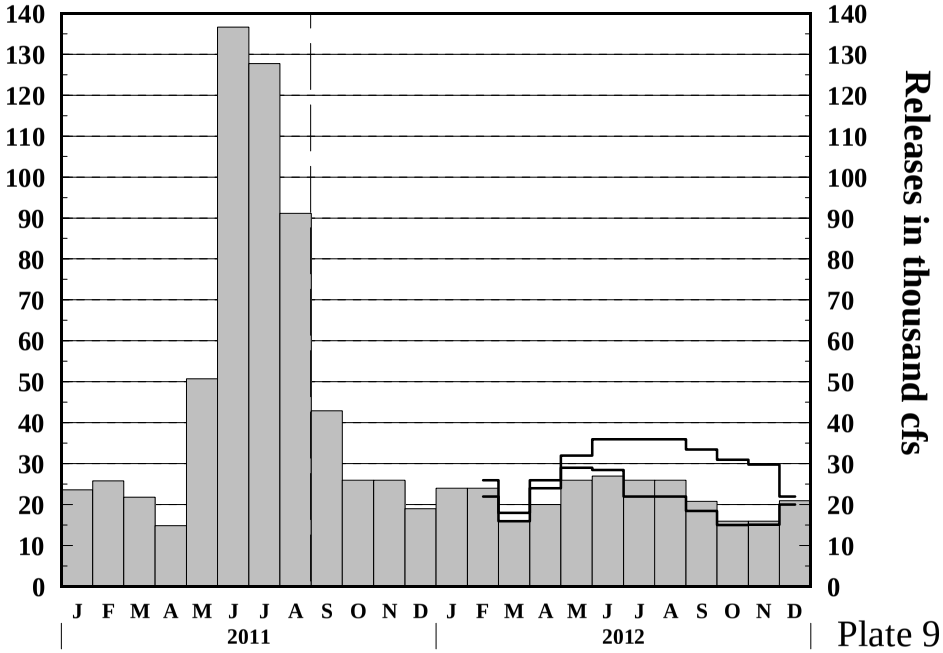
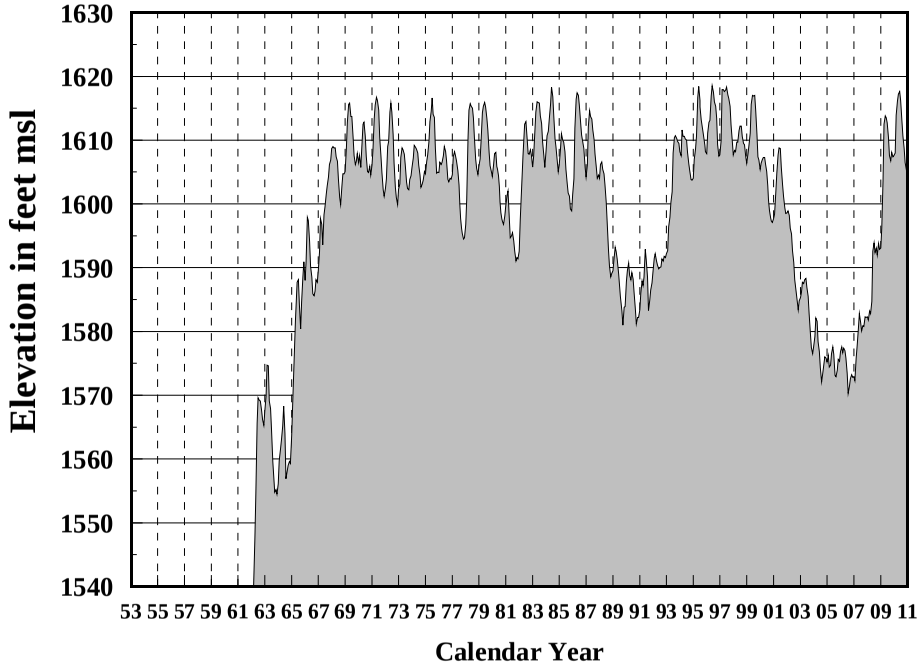
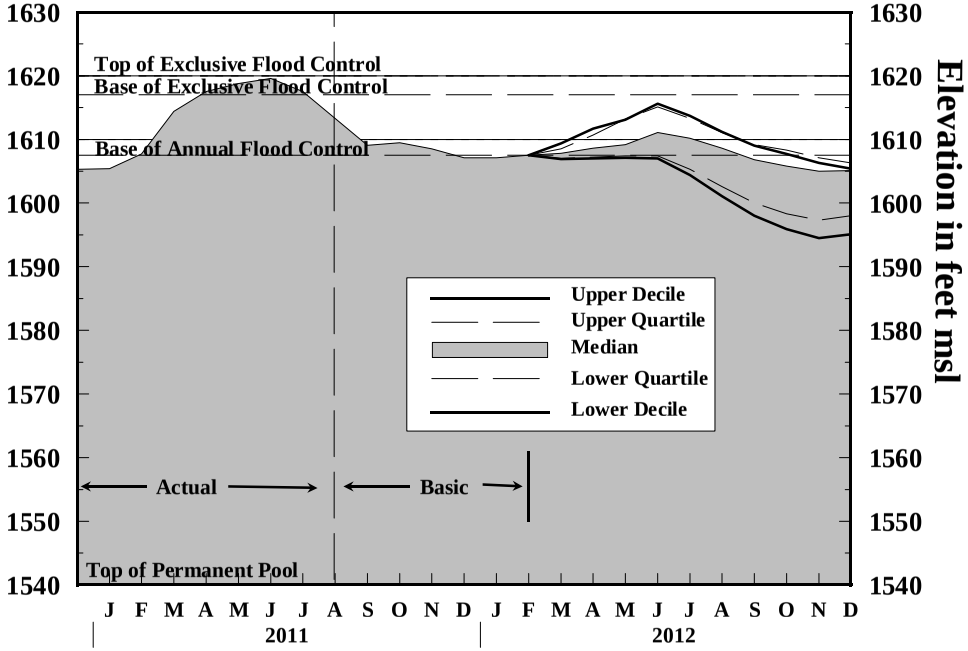


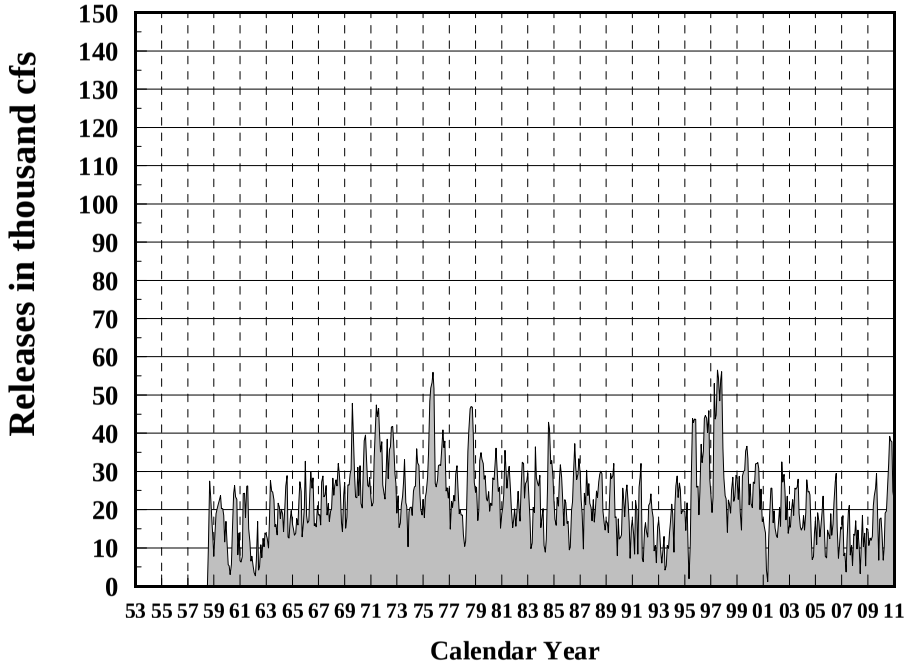
Plate 9

Oahe

Elevations and Releases







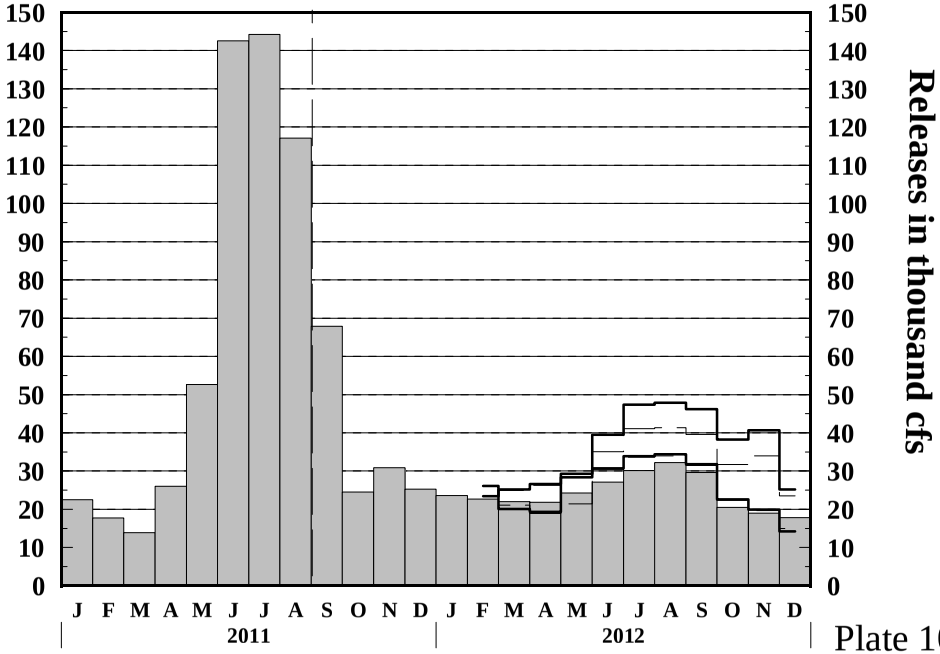
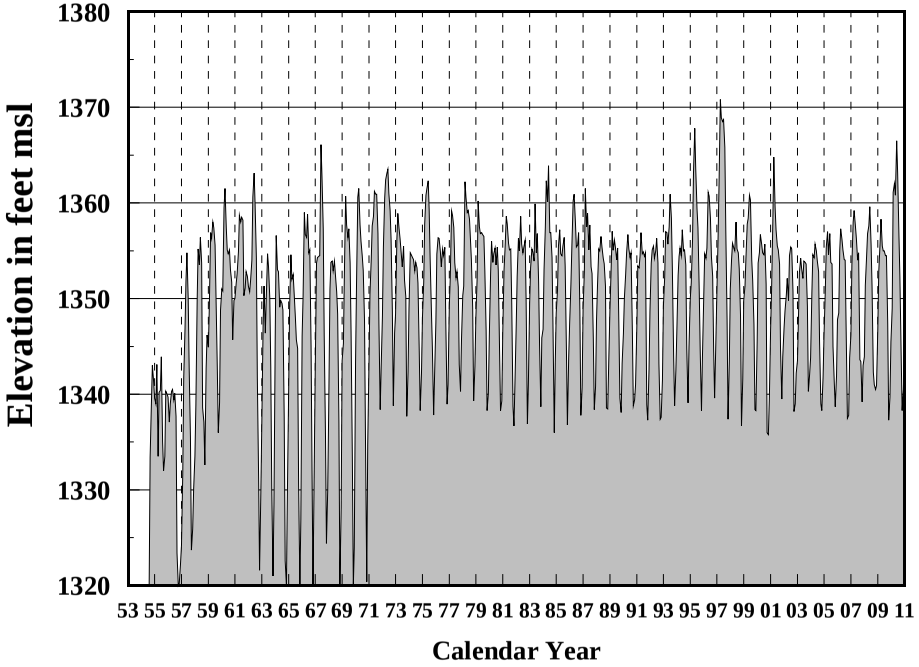
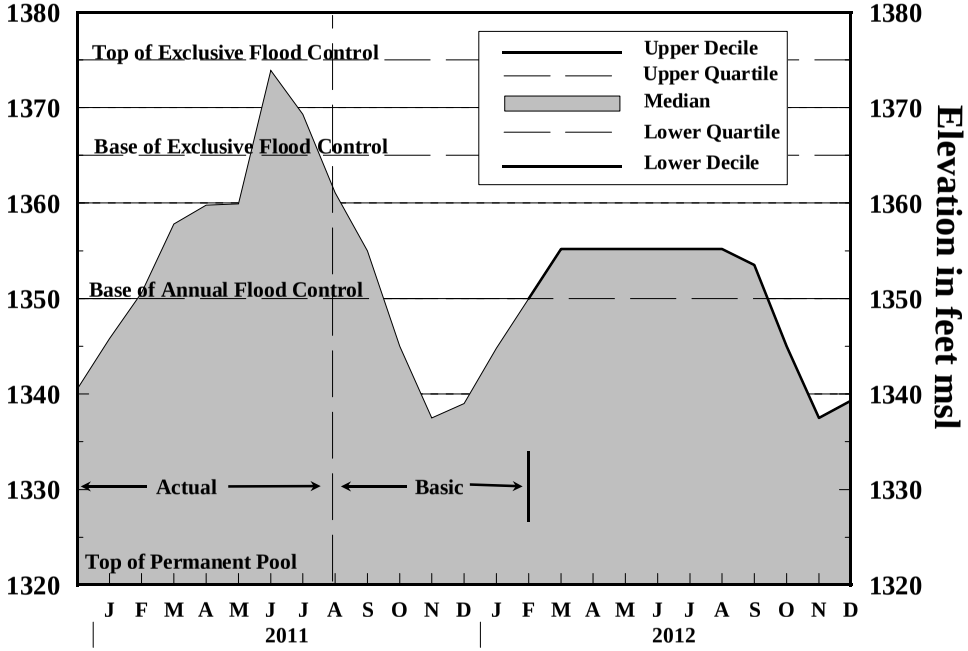
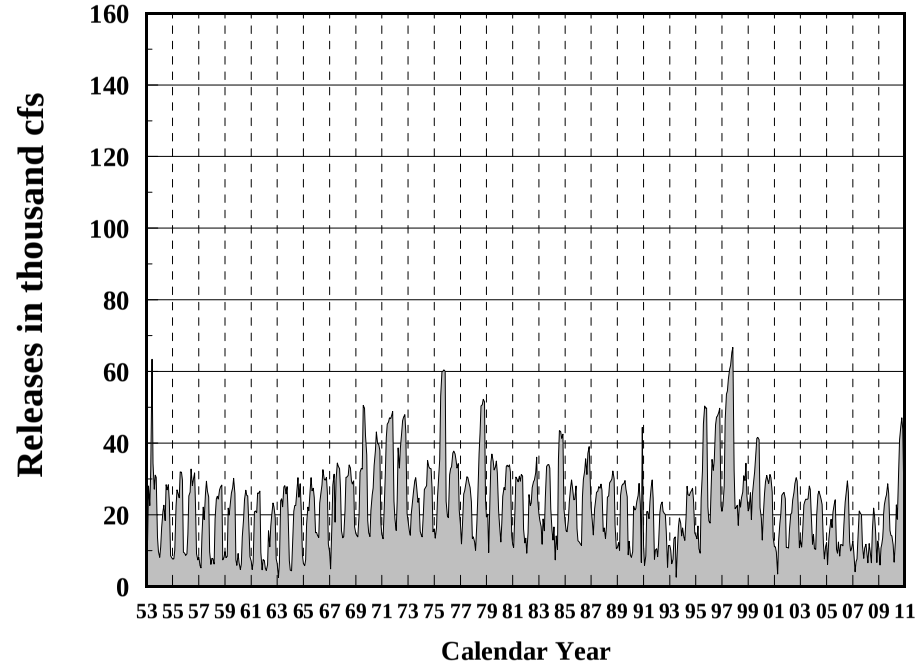


Plate 10

Fort Randall
Elevations and Releases







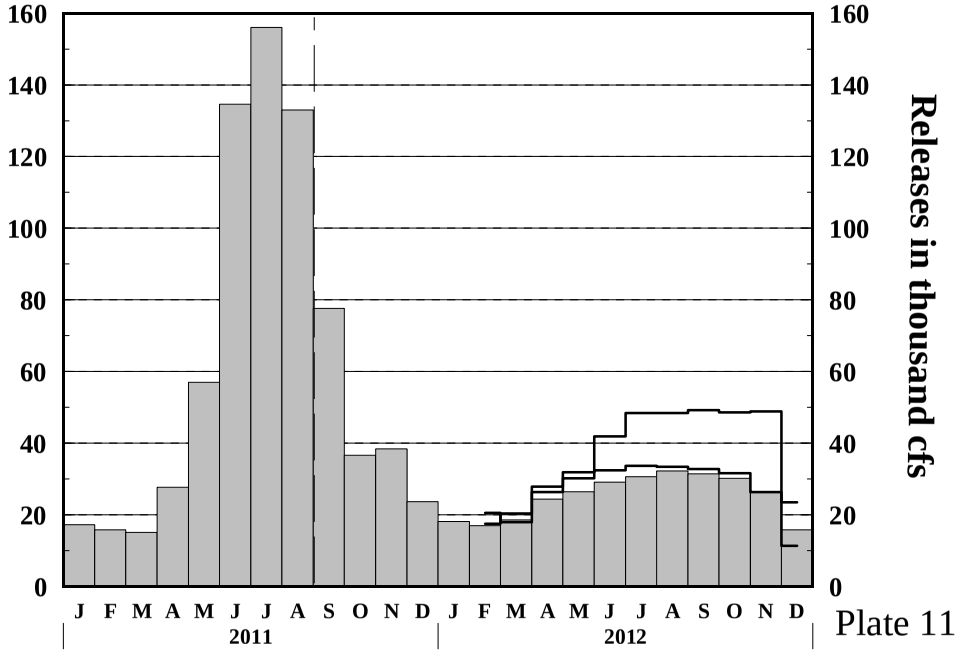
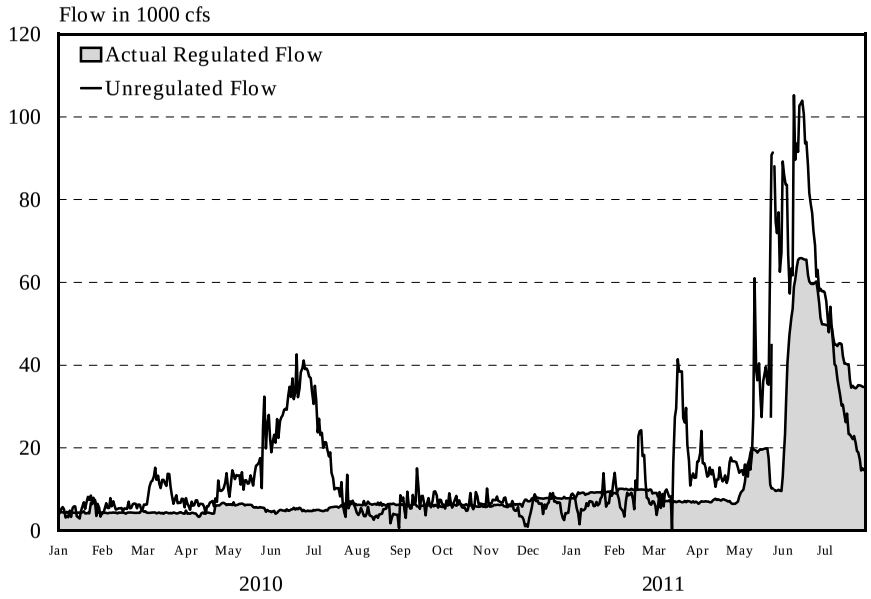


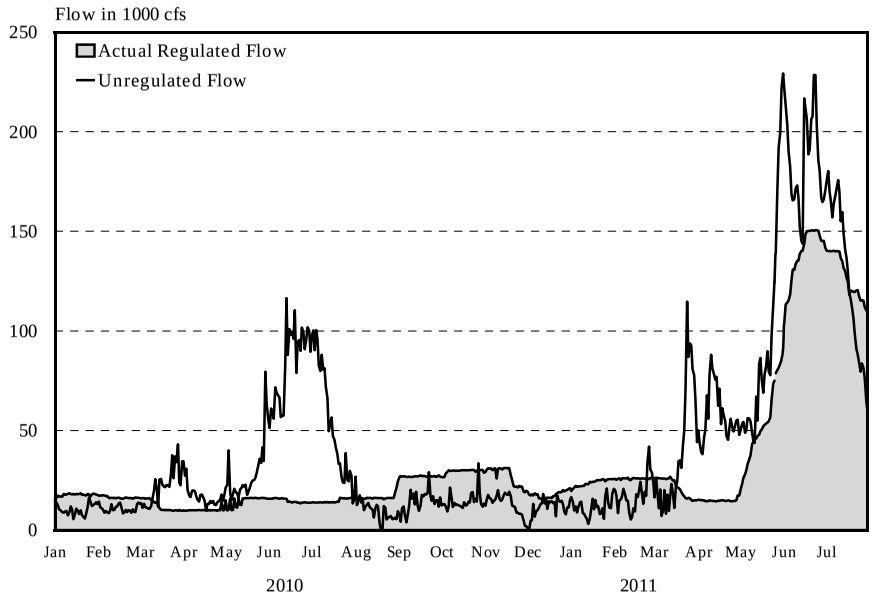
Plate 11

Reservoir Release and Unregulated Flow

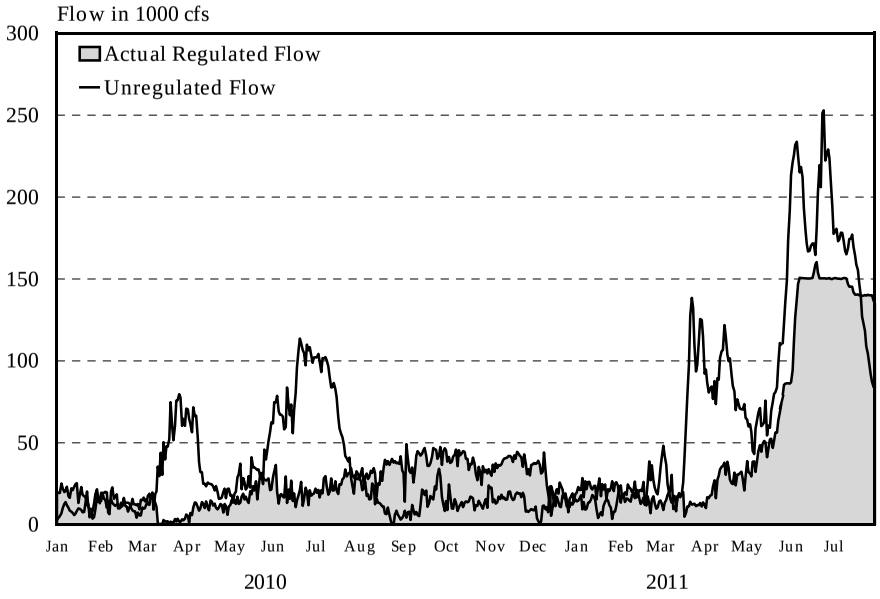
Fort Peck



Garrison



Oahe



Gavins Point

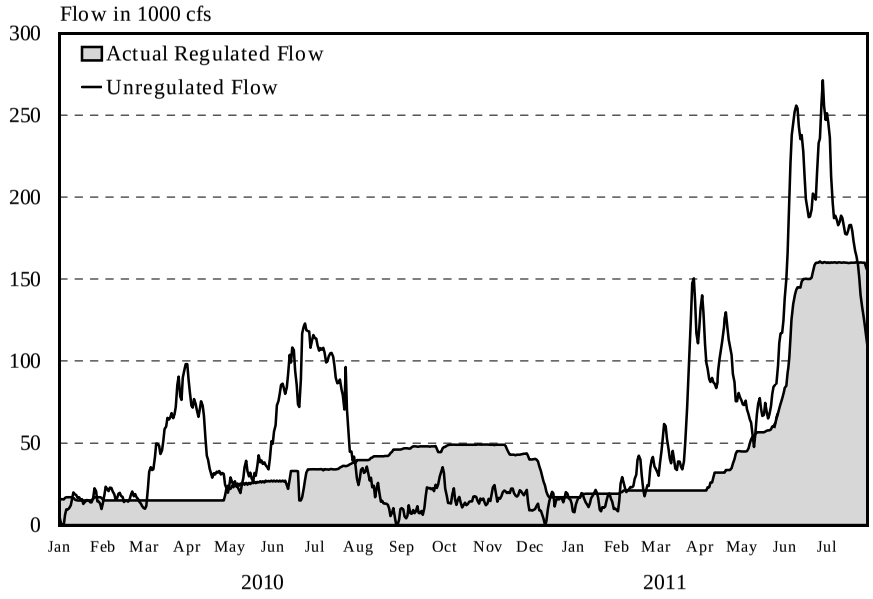


Plate 12

System Gross Capability and Average Monthly Generation

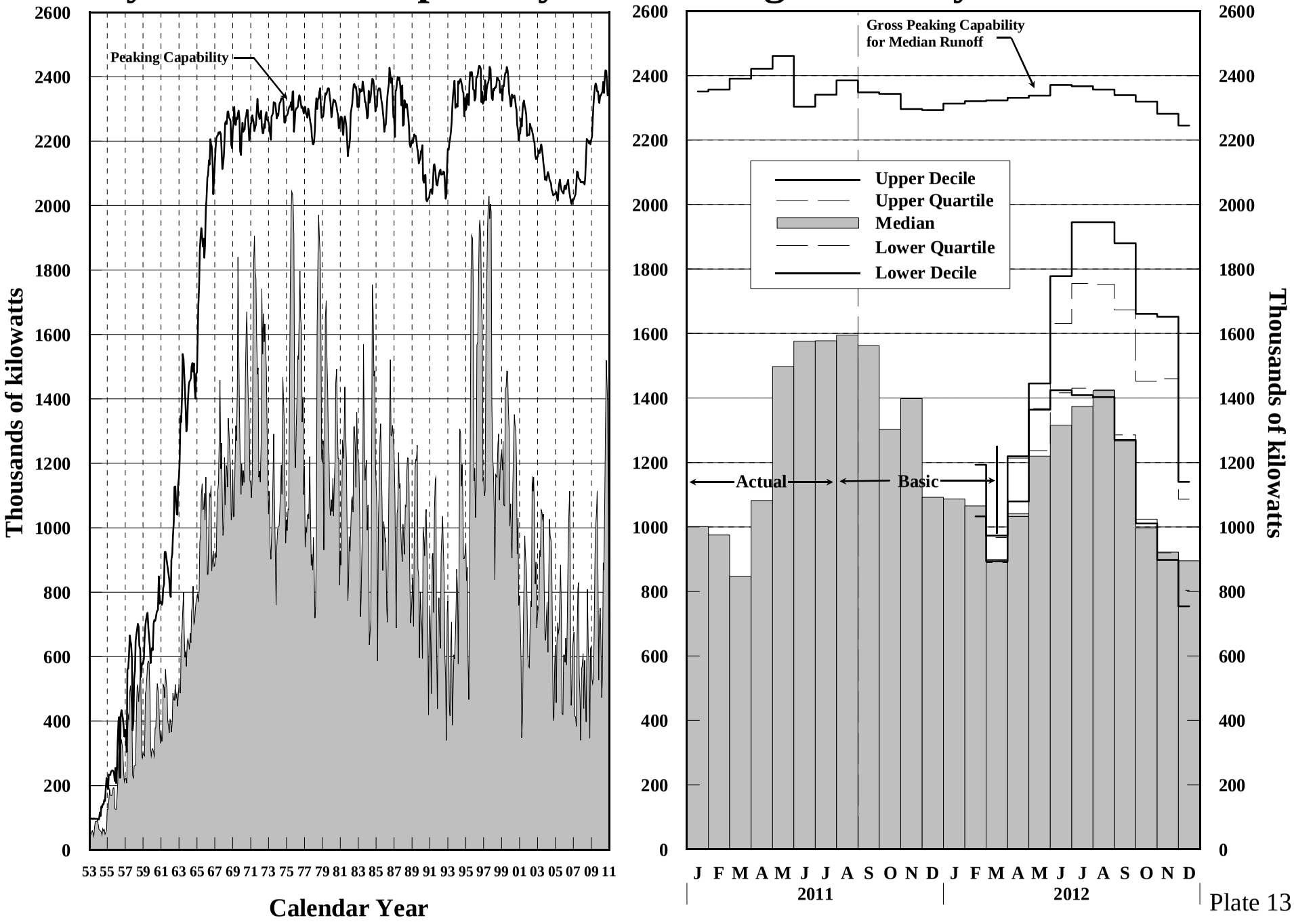
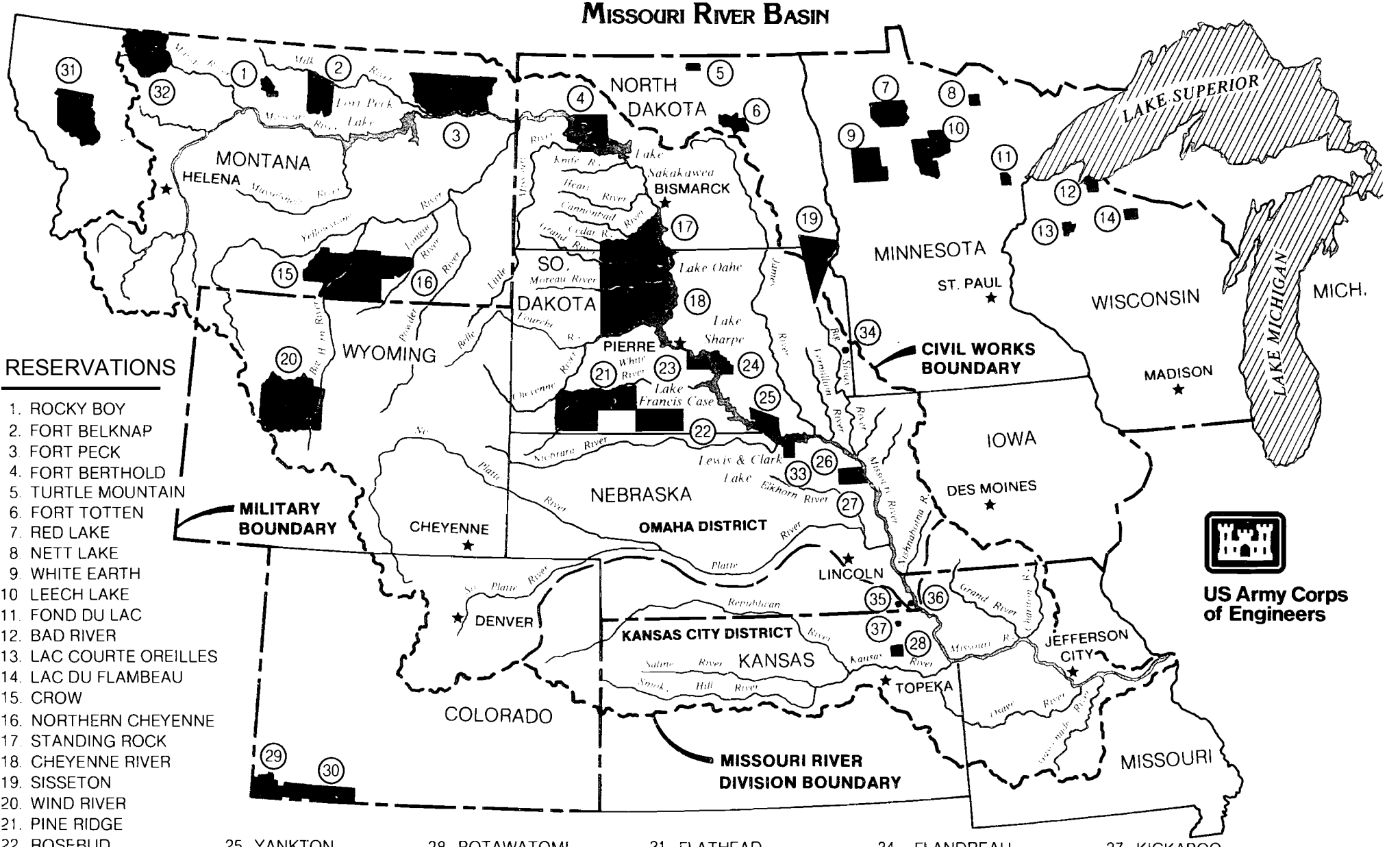


Plate 13

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 14:13:53 NAV SEASON 10-DAY EXTENSION STUDY NO 1

VALUES IN 1000 AF EXCEPT AS INDICATED

	31AUG11	2011						2012	
	INI-SUM	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--									
NAT INFLOW	2235	450	400	192	90	102	329	312	360
DEPLETION	-903	-177	-130	-67	-31	-36	-151	-166	-145
EVAPORATION	352	115	98	44	21	23	51		
MOD INFLOW	2786	512	432	215	100	115	429	478	505
RELEASE	4530	1398	553	268	125	143	615	738	690
STOR CHANGE	-1744	-886	-121	-53	-25	-28	-186	-260	-185
STORAGE	16537	15651	15529	15476	15452	15424	15238	14978	14793
ELEV FTMSL	2241.9	2238.0	2237.4	2237.2	2237.1	2237.0	2236.1	2234.9	2234.0
DISCH KCFS	24.5	23.5	9.0	9.0	9.0	9.0	10.0	12.0	12.0
POWER									
AVE POWER MW		166	124	124	124	124	137	160	159
PEAK POW MW		164	165	165	164	164	164	163	162
ENERGY GWH	632.1	119.2	92.3	44.6	20.8	23.8	101.9	118.9	110.7
--GARRISON--									
NAT INFLOW	2512	700	550	199	93	106	247	261	356
DEPLETION	-731	-219	-48	-112	-52	-60	-108	-77	-55
CHAN STOR	120	10	140				-10	-20	
EVAPORATION	404	132	114	51	23	27	57		
REG INFLOW	7489	2195	1178	528	247	282	903	1056	1101
RELEASE	9723	2552	1599	774	361	413	1168	1476	1381
STOR CHANGE	-2233	-357	-421	-245	-114	-131	-266	-420	-279
STORAGE	20348	19991	19570	19324	19210	19079	18814	18394	18115
ELEV FTMSL	1844.4	1843.3	1842.1	1841.3	1841.0	1840.6	1839.7	1838.4	1837.5
DISCH KCFS	74.0	42.9	26.0	26.0	26.0	26.0	19.0	24.0	24.0
POWER									
AVE POWER MW		499	331	329	329	328	240	300	298
PEAK POW MW		498	486	482	481	479	476	472	468
ENERGY GWH	1451.2	359.0	245.9	118.4	55.2	63.0	178.5	223.5	207.6
--OAHE--									
NAT INFLOW	372	130	70	35	16	19		12	90
DEPLETION	92	28	-9	2	1	1	15	21	33
CHAN STOR	189	115	66				27	-20	
EVAPORATION	396	130	110	50	23	26	56		
REG INFLOW	9796	2640	1633	757	353	404	1124	1447	1438
RELEASE	11701	4041	1507	830	420	589	1556	1449	1308
STOR CHANGE	-1905	-1401	126	-74	-67	-185	-432	-2	129
STORAGE	20744	19343	19469	19395	19328	19143	18712	18710	18839
ELEV FTMSL	1613.3	1609.1	1609.5	1609.3	1609.1	1608.5	1607.1	1607.1	1607.5
DISCH KCFS	80.0	67.9	24.5	27.9	30.3	37.1	25.3	23.6	22.7
POWER									
AVE POWER MW		725	319	363	393	480	327	303	293
PEAK POW MW		714	719	717	716	713	706	706	708
ENERGY GWH	1721.5	522.0	237.5	130.7	66.0	92.2	243.2	225.7	204.1
--BIG BEND--									
EVAPORATION	77	25	22	10	5	5	11		
REG INFLOW	11624	4016	1486	821	415	584	1545	1449	1308
RELEASE	11583	3975	1486	821	415	584	1545	1449	1308
STORAGE	1580	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1419.3	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	80.0	66.8	24.2	27.6	29.9	36.8	25.1	23.6	22.7
POWER									
AVE POWER MW		311	118	138	149	183	126	116	109
PEAK POW MW		511	538	538	538	538	538	538	529
ENERGY GWH	677.0	223.8	88.0	49.6	25.1	35.0	93.5	86.0	75.9
--FORT RANDALL--									
NAT INFLOW	262	140	18	9	4	5	12	25	49
DEPLETION	19	7	1	1	0	1	3	3	3
EVAPORATION	85	33	25	9	4	4	10		
REG INFLOW	11742	4075	1478	820	415	583	1546	1471	1354
RELEASE	12709	4619	2253	1142	531	607	1455	1121	980
STOR CHANGE	-967	-544	-776	-322	-116	-24	91	350	374
STORAGE	4074	3530	2755	2433	2317	2292	2383	2733	3107
ELEV FTMSL	1361.1	1355.0	1344.9	1339.9	1337.9	1337.4	1339.0	1344.6	1349.8
DISCH KCFS	87.0	77.6	36.6	38.4	38.3	38.3	23.7	18.2	17.0
POWER									
AVE POWER MW		361	294	283	271	267	172	138	135
PEAK POW MW		350	319	296	287	285	292	318	338
ENERGY GWH	1002.0	259.7	218.9	101.8	45.5	51.2	128.3	102.5	94.1
--GAVINS POINT--									
NAT INFLOW	740	150	140	60	28	32	100	100	130
DEPLETION	18	-5	2	5	2	3	10	1	
CHAN STOR	130	18	76	-3	0	0	27	10	2
EVAPORATION	27	9	8	3	2	2	4		
REG INFLOW	13533	4783	2460	1190	555	635	1568	1230	1112
RELEASE	13548	4760	2460	1190	555	635	1568	1230	1150
STOR CHANGE	-15	23							-38
STORAGE	357	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.6	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	90.0	80.0	40.0	40.0	40.0	40.0	25.5	20.0	20.0
POWER									
AVE POWER MW		109	116	116	116	116	89	71	70
PEAK POW MW		111	116	116	116	116	117	117	114
ENERGY GWH	416.6	78.4	86.7	41.9	19.6	22.4	66.6	52.5	48.7
--GAVINS POINT - SIOUX CITY--									
NAT INFLOW	1182	400	300	100	47	53	150	40	92
DEPLETION	88	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY									
KAF	14642	5136	2749	1284	599	685	1705	1256	1228
KCFS		86.3	44.7	43.2	43.2	43.2	27.7	20.4	21.4
--TOTAL--									
NAT INFLOW	7303	1970	1478	595	278	317	838	750	1077
DEPLETION	-1417	-342	-173	-165	-77	-88	-218	-204	-150
CHAN STOR	440	143	282	-2	0	-1	46	-29	2
EVAPORATION	1341	443	376	168	77	88	189		
STORAGE	63640	60516	59323	58629	58307	57939	57147	56816	56817
SYSTEM POWER									
AVE POWER MW		2169	1303	1353	1382	1498	1092	1087	1065
PEAK POW MW		2348	2343	2314	2303	2296	2293	2313	2320
ENERGY GWH	5900.5	1562.0	969.3	487.1	232.1	287.6	812.1	809.1	741.2
DAILY GWH		52.1	31.3	32.5	33.2	35.9	26.2	26.1	25.6

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31AUG11		2011						2012
	INI-SUM	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--									
NAT INFLOW	2682	540	480	231	108	123	395	374	432
DEPLETION	-935	-194	-176	-74	-34	-39	-141	-163	-114
EVAPORATION	234	87	74	18	8	9	38		
MOD INFLOW	3383	647	582	286	134	153	498	537	546
RELEASE	5133	1405	769	372	174	190	676	799	748
STOR CHANGE	-1750	-758	-187	-85	-40	-38	-178	-262	-202
STORAGE	16537	15779	15592	15507	15467	15429	15251	14988	14787
ELEV FTMSL	2241.9	2238.6	2237.7	2237.3	2237.2	2237.0	2236.2	2234.9	2234.0
DISCH KCFS	24.5	23.6	12.5	12.5	12.5	12.0	11.0	13.0	13.0
POWER									
AVE POWER MW		166	165	165	165	161	149	163	162
PEAK POW MW		165	165	165	165	164	164	163	162
ENERGY GWH	705.6	119.3	122.9	59.3	27.7	30.9	110.9	121.5	113.1
--GARRISON--									
NAT INFLOW	3014	840	660	239	112	127	296	313	427
DEPLETION	-697	-220	-31	-110	-51	-58	-107	-74	-46
CHAN STOR	111	8	107			5	10	-20	
EVAPORATION	268	100	86	20	9	11	43		
REG INFLOW	8687	2374	1481	700	327	371	1046	1167	1221
RELEASE	10926	2655	1968	952	444	460	1353	1599	1496
STOR CHANGE	-2239	-281	-486	-252	-117	-90	-307	-432	-275
STORAGE	20348	20067	19581	19329	19212	19122	18815	18383	18109
ELEV FTMSL	1844.4	1843.6	1842.1	1841.3	1841.0	1840.7	1839.8	1838.4	1837.5
DISCH KCFS	74.0	44.6	32.0	32.0	32.0	29.0	22.0	26.0	26.0
POWER									
AVE POWER MW		499	406	405	404	366	277	325	323
PEAK POW MW		498	486	482	481	480	476	471	468
ENERGY GWH	1617.8	359.0	302.1	145.6	67.9	70.2	206.5	241.9	224.7
--OAHE--									
NAT INFLOW	446	156	84	42	20	22		14	108
DEPLETION	92	28	-9	2	1	1	15	21	33
CHAN STOR	181	109	49			12	27	-16	
EVAPORATION	265	99	84	20	9	10	43		
REG INFLOW	11196	2793	2025	972	454	483	1323	1576	1571
RELEASE	13108	3965	2035	1070	532	717	1611	1675	1502
STOR CHANGE	-1911	-1172	-10	-98	-79	-234	-288	-99	69
STORAGE	20744	19572	19563	19465	19386	19151	18863	18764	18833
ELEV FTMSL	1613.3	1609.8	1609.8	1609.5	1609.2	1608.5	1607.6	1607.3	1607.5
DISCH KCFS	80.0	66.6	33.1	36.0	38.4	45.2	26.2	27.2	26.1
POWER									
AVE POWER MW		727	431	468	497	583	339	351	336
PEAK POW MW		718	720	718	717	713	708	707	708
ENERGY GWH	1955.2	523.5	320.5	168.3	83.5	112.0	252.0	261.1	234.2
--BIG BEND--									
EVAPORATION	51	18	16	4	2	2	9		
REG INFLOW	13057	3947	2019	1067	531	715	1602	1675	1502
RELEASE	13016	3906	2019	1067	531	715	1602	1675	1502
STORAGE	1580	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1419.3	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	80.0	65.6	32.8	35.8	38.2	45.1	26.1	27.2	26.1
POWER									
AVE POWER MW		305	160	178	189	223	130	133	125
PEAK POW MW		511	538	538	538	538	538	538	529
ENERGY GWH	760.8	219.9	119.1	64.1	31.8	42.7	96.9	99.2	87.0
--FORT RANDALL--									
NAT INFLOW	315	168	22	11	5	6	14	30	59
DEPLETION	19	7	1	1	0	1	3	3	3
EVAPORATION	58	25	19	4	2	2	7		
REG INFLOW	13256	4042	2021	1073	534	718	1608	1702	1558
RELEASE	14214	4586	2794	1394	649	742	1512	1352	1184
STOR CHANGE	-958	-544	-773	-321	-116	-24	96	350	374
STORAGE	4074	3530	2757	2436	2320	2296	2392	2742	3116
ELEV FTMSL	1361.1	1355.0	1344.9	1339.9	1337.9	1337.5	1339.2	1344.7	1349.9
DISCH KCFS	87.0	77.1	45.4	46.9	46.8	46.8	24.6	22.0	20.6
POWER									
AVE POWER MW		361	333	308	292	286	179	166	163
PEAK POW MW		350	319	296	287	285	293	318	339
ENERGY GWH	1092.6	259.7	247.8	110.7	49.0	54.9	133.4	123.5	113.5
--GAVINS POINT--									
NAT INFLOW	889	180	168	73	34	39	120	120	156
DEPLETION	18	-5	2	5	2	3	10	1	
CHAN STOR	123	19	59	-3	0	0	41	5	3
EVAPORATION	18	6	6	1	1	1	3		
REG INFLOW	15191	4783	3013	1458	680	778	1660	1476	1343
RELEASE	15206	4760	3013	1458	680	778	1660	1476	1381
STOR CHANGE	-15	23							-38
STORAGE	357	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.6	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	90.0	80.0	49.0	49.0	49.0	49.0	27.0	24.0	24.0
POWER									
AVE POWER MW		109	116	116	116	116	95	84	83
PEAK POW MW		111	116	116	116	116	117	117	114
ENERGY GWH	438.7	78.4	85.9	41.6	19.4	22.2	70.4	62.7	58.1
--GAVINS POINT - SIOUX CITY--									
NAT INFLOW	1418	480	360	120	56	64	180	48	110
DEPLETION	88	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY									
KAF	16536	5216	3362	1572	734	838	1827	1510	1477
KCFS		87.7	54.7	52.8	52.8	52.8	29.7	24.6	25.7
--TOTAL--									
NAT INFLOW	8764	2364	1774	715	334	381	1005	899	1292
DEPLETION	-1415	-360	-202	-169	-79	-90	-207	-198	-110
CHAN STOR	417	136	215	-2	0	16	80	-31	3
EVAPORATION	894	334	285	67	31	35	143		
STORAGE	63640	60949	59494	58737	58386	58000	57322	56879	56807
SYSTEM POWER									
AVE POWER MW		2166	1611	1638	1662	1734	1170	1223	1193
PEAK POW MW		2353	2344	2315	2303	2296	2296	2314	2320
ENERGY GWH	6570.6	1559.9	1198.4	589.7	279.3	332.9	870.1	909.8	830.5
DAILY GWH		52.0	38.7	39.3	39.9	41.6	28.1	29.3	28.6

VALUES IN 1000 AF EXCEPT AS INDICATED

31AUG11		2011						2012
	INI-SUM	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--									
NAT INFLOW	1788	360	320	154	72	82	263	250	288
DEPLETION	-847	-195	-155	-60	-28	-32	-120	-138	-119
EVAPORATION	439	144	122	55	26	29	63		
MOD INFLOW	2196	411	353	158	74	85	320	388	407
RELEASE	3948	1298	492	238	111	127	492	615	575
STOR CHANGE	-1752	-887	-139	-80	-37	-42	-172	-227	-168
STORAGE	16537	15650	15511	15431	15394	15352	15180	14953	14785
ELEV FTMSL	2241.9	2238.0	2237.4	2237.0	2236.8	2236.6	2235.8	2234.8	2234.0
DISCH KCFS	24.5	21.8	8.0	8.0	8.0	8.0	8.0	10.0	10.0
POWER									
AVE POWER MW		166	110	110	110	110	110	136	136
PEAK POW MW		164	165	164	164	164	164	163	162
ENERGY GWH	558.5	119.3	82.0	39.6	18.5	21.1	81.7	101.5	94.7
--GARRISON--									
NAT INFLOW	2010	560	440	159	74	85	198	209	285
DEPLETION	-752	-202	-54	-117	-55	-62	-115	-84	-63
CHAN STOR	140	26	134					-20	
EVAPORATION	509	166	143	64	30	34	73		
REG INFLOW	6341	1920	977	450	210	240	732	888	923
RELEASE	8582	2437	1230	595	278	317	1107	1353	1265
STOR CHANGE	-2241	-517	-253	-145	-68	-77	-375	-464	-342
STORAGE	20348	19831	19578	19433	19365	19288	18914	18449	18107
ELEV FTMSL	1844.4	1842.9	1842.1	1841.7	1841.4	1841.2	1840.1	1838.6	1837.5
DISCH KCFS	74.0	41.0	20.0	20.0	20.0	20.0	18.0	22.0	22.0
POWER									
AVE POWER MW		499	255	254	253	253	228	276	274
PEAK POW MW		497	487	483	482	481	477	472	468
ENERGY GWH	1296.2	358.9	189.5	91.4	42.6	48.6	169.3	205.3	190.6
--OAHE--									
NAT INFLOW	298	104	56	28	13	15		10	72
DEPLETION	92	28	-9	2	1	1	15	21	33
CHAN STOR	196	123	81			0	8	-16	
EVAPORATION	501	164	140	63	30	34	72		
REG INFLOW	8483	2472	1237	558	260	298	1028	1326	1304
RELEASE	10396	3779	1058	584	305	457	1388	1480	1344
STOR CHANGE	-1913	-1307	178	-26	-45	-159	-360	-154	-40
STORAGE	20744	19437	19615	19589	19544	19385	19025	18871	18831
ELEV FTMSL	1613.3	1609.4	1610.0	1609.9	1609.7	1609.2	1608.1	1607.6	1607.5
DISCH KCFS	80.0	63.5	17.2	19.6	22.0	28.8	22.6	24.1	23.4
POWER									
AVE POWER MW		727	225	257	287	375	293	311	302
PEAK POW MW		717	721	720	720	717	711	708	708
ENERGY GWH	1563.0	523.3	167.5	92.4	48.3	71.9	218.1	231.5	210.0
--BIG BEND--									
EVAPORATION	96	31	27	12	6	7	14		
REG INFLOW	10300	3749	1031	572	300	450	1374	1480	1344
RELEASE	10259	3708	1031	572	300	450	1374	1480	1344
STORAGE	1580	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1419.3	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	80.0	62.3	16.8	19.2	21.6	28.4	22.3	24.1	23.4
POWER									
AVE POWER MW		290	82	97	108	142	112	118	112
PEAK POW MW		511	538	538	538	538	538	538	529
ENERGY GWH	599.4	208.8	61.3	34.8	18.2	27.2	83.3	87.8	78.0
--FORT RANDALL--									
NAT INFLOW	209	112	14	7	3	4	10	20	39
DEPLETION	19	7	1	1	0	1	3	3	3
EVAPORATION	107	41	31	12	5	5	12		
REG INFLOW	10342	3772	1013	566	298	447	1369	1497	1380
RELEASE	11300	4314	1787	888	414	473	1271	1147	1006
STOR CHANGE	-958	-543	-774	-322	-116	-26	99	350	374
STORAGE	4074	3531	2757	2436	2319	2294	2392	2742	3116
ELEV FTMSL	1361.1	1355.0	1344.9	1339.9	1337.9	1337.4	1339.2	1344.7	1349.9
DISCH KCFS	87.0	72.5	29.1	29.8	29.8	29.8	20.7	18.7	17.5
POWER									
AVE POWER MW		362	234	225	218	215	151	141	139
PEAK POW MW		351	319	296	287	285	293	318	339
ENERGY GWH	907.8	260.3	174.3	81.1	36.6	41.3	112.4	105.0	96.7
--GAVINS POINT--									
NAT INFLOW	592	120	112	48	22	26	80	80	104
DEPLETION	18	-5	2	5	2	3	10	1	
CHAN STOR	129	27	80	-1	0	0	17	4	2
EVAPORATION	34	11	10	4	2	2	5		
REG INFLOW	11969	4456	1968	925	432	493	1353	1230	1112
RELEASE	11984	4433	1968	925	432	493	1353	1230	1150
STOR CHANGE	-15	23							-38
STORAGE	357	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.6	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	90.0	74.5	32.0	31.1	31.1	31.1	22.0	20.0	20.0
POWER									
AVE POWER MW		110	108	106	106	106	77	71	70
PEAK POW MW		112	117	117	117	117	117	117	114
ENERGY GWH	395.3	79.4	80.6	38.3	17.9	20.4	57.6	52.5	48.7
--GAVINS POINT - SIOUX CITY--									
NAT INFLOW	946	320	240	80	37	43	120	32	74
DEPLETION	88	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY									
KAF	12842	4729	2197	999	466	533	1460	1248	1210
KCFS		79.5	35.7	33.6	33.6	33.6	23.7	20.3	21.0
--TOTAL--									
NAT INFLOW	5843	1576	1182	476	222	254	671	601	862
DEPLETION	-1382	-343	-204	-163	-76	-87	-194	-183	-132
CHAN STOR	466	176	296	-1	0	-1	25	-32	2
EVAPORATION	1687	556	473	211	98	111	239		
STORAGE	63640	60450	59462	58890	58624	58320	57512	57016	56802
SYSTEM POWER									
AVE POWER MW		2153	1015	1049	1083	1201	971	1053	1033
PEAK POW MW		2351	2346	2319	2308	2302	2300	2317	2320
ENERGY GWH	5320.1	1550.1	755.3	377.6	182.0	230.6	722.5	783.6	718.6
DAILY GWH		51.7	24.4	25.2	26.0	28.8	23.3	25.3	24.8

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VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB12		2012										2013			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	9500	315	147	189	790	1590	2465	1205	450	375	525	208	97	111	345	295	395
DEPLETION	385	-43	-20	-26	-108	313	668	231	-40	-128	-73	-24	-11	-13	-118	-140	-84
EVAPORATION	333							23	71	88	76	18	8	10	39		
MOD INFLOW	8782	357	167	214	898	1277	1797	951	419	415	522	213	100	114	424	435	479
RELEASE	8774	193	90	116	476	676	893	922	922	740	615	298	139	167	830	892	805
STOR CHANGE	8	164	76	98	422	601	904	29	-503	-325	-93	-84	-39	-53	-406	-457	-326
STORAGE	14787	14950	15027	15125	15547	16148	17052	17081	16578	16253	16160	16076	16037	15984	15578	15121	14795
ELEV FTMSL	2234.0	2234.8	2235.1	2235.6	2237.5	2240.2	2244.1	2244.3	2242.1	2240.7	2240.3	2239.9	2239.7	2239.5	2237.7	2235.6	2234.0
DISCH KCFS	13.0	6.5	6.5	6.5	8.0	11.0	15.0	15.0	15.0	12.4	10.0	10.0	10.0	10.5	13.5	14.5	14.5
POWER																	
AVE POWER MW		89	89	89	110	150	168	169	169	168	139	138	138	145	165	164	163
PEAK POW MW		163	163	163	165	167	169	169	168	167	167	167	166	166	165	163	162
ENERGY GWH	1308.6	32.0	14.9	19.2	79.1	111.8	120.9	126.1	125.5	120.7	103.1	49.9	23.2	27.8	123.1	122.0	109.3
--GARRISON--																	
NAT INFLOW	14000	528	246	316	1355	1840	3425	2715	835	570	645	258	120	137	270	325	415
DEPLETION	999	11	5	7	-73	-27	977	633	100	-126	10	-119	-56	-63	-119	-101	-60
CHAN STOR	-15	64			-15	-29	-39			25	23			-5	-29	-10	
EVAPORATION	377							26	82	101	86	20	9	11	43		
REG INFLOW	21384	774	331	426	1889	2514	3302	2979	1576	1360	1188	654	305	352	1147	1308	1280
RELEASE	21375	536	250	321	1428	1968	2142	2214	2214	1994	1906	922	430	421	1353	1722	1555
STOR CHANGE	8	239	81	104	461	546	1160	765	-638	-635	-719	-268	-125	-68	-206	-414	-275
STORAGE	18109	18347	18429	18533	18994	19540	20700	21465	20827	20192	19474	19206	19080	19012	18806	18392	18117
ELEV FTMSL	1837.5	1838.3	1838.5	1838.9	1840.3	1842.0	1845.4	1847.6	1845.8	1843.9	1841.8	1841.0	1840.6	1840.4	1839.7	1838.4	1837.5
DISCH KCFS	26.0	18.0	18.0	18.0	24.0	32.0	36.0	36.0	36.0	33.5	31.0	31.0	31.0	26.5	22.0	28.0	28.0
POWER																	
AVE POWER MW		224	225	225	301	404	451	459	460	428	394	392	391	334	277	350	347
PEAK POW MW		471	472	473	479	487	500	502	500	499	483	481	479	479	476	471	468
ENERGY GWH	3264.4	80.7	37.8	48.7	216.9	300.5	325.0	341.5	341.9	307.9	292.8	141.0	65.6	64.1	206.2	260.2	233.4
--OAHE--																	
NAT INFLOW	3800	358	167	215	545	360	1265	215	110	150	95	108	50	57	-45	25	125
DEPLETION	696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR	-6	32			-23	-30	-15			9	10			18	18	-24	
EVAPORATION	362							26	79	96	82	19	9	10	41		
REG INFLOW	24111	901	406	522	1900	2225	3244	2225	2126	2029	1940	1010	471	485	1272	1704	1652
RELEASE	24103	617	288	330	1150	1749	2352	2913	2943	2751	2350	1122	557	744	1548	1469	1221
STOR CHANGE	8	285	118	191	750	477	892	-688	-817	-722	-410	-112	-86	-258	-277	235	431
STORAGE	18833	19117	19235	19426	20177	20653	21545	20857	20040	19318	18908	18796	18710	18452	18175	18410	18841
ELEV FTMSL	1607.5	1608.4	1608.8	1609.4	1611.7	1613.1	1615.6	1613.7	1611.2	1609.0	1607.7	1607.4	1607.1	1606.3	1605.4	1606.1	1607.5
DISCH KCFS	26.1	20.7	20.7	18.5	19.3	28.4	39.5	47.4	47.9	46.2	38.2	37.7	40.1	46.9	25.2	23.9	22.0
POWER																	
AVE POWER MW		268	269	241	254	376	525	628	626	600	493	484	514	596	322	305	283
PEAK POW MW		713	715	718	730	737	750	740	728	716	709	707	706	701	696	701	708
ENERGY GWH	3797.6	96.6	45.2	52.1	182.5	279.4	378.3	466.9	465.6	432.2	366.9	174.4	86.3	114.4	239.4	227.1	190.1
--BIG BEND--																	
EVAPORATION	71							5	15	19	16	4	2	2	9		
REG INFLOW	24032	617	288	330	1150	1749	2352	2908	2928	2732	2334	1118	555	742	1540	1469	1221
RELEASE	24032	617	288	330	1150	1749	2352	2908	2928	2732	2334	1118	555	742	1540	1469	1221
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	26.1	20.7	20.7	18.5	19.3	28.4	39.5	47.3	47.6	45.9	38.0	37.6	40.0	46.7	25.0	23.9	22.0
POWER																	
AVE POWER MW		98	97	87	90	133	185	221	223	217	185	186	198	231	125	117	105
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1387.2	35.3	16.3	18.7	65.1	99.0	133.2	164.5	165.6	156.3	137.3	67.1	33.3	44.3	93.2	87.1	70.8
--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	25373	763	356	418	1571	1960	2490	2974	2979	2782	2345	1133	562	749	1547	1466	1278
RELEASE	25365	464	222	418	1571	1960	2490	2974	2979	2928	2988	1454	678	775	1444	1116	904
STOR CHANGE	8	299	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3116	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1349.9	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	20.6	15.6	16.0	23.4	26.4	31.9	41.9	48.4	48.4	49.2	48.6	48.9	48.9	48.9	23.5	18.1	16.3
POWER																	
AVE POWER MW		129	135	198	223	268	336	356	356	353	336	307	291	286	172	138	130
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	284	294	319	339
ENERGY GWH	2278.7	46.4	22.7	42.8	160.3	199.4	241.8	264.9	264.9	254.2	250.1	110.7	48.9	54.8	127.6	102.3	87.0
--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	6	10	-1	-14	-6	-10	-19	-12	0	-1	1	-1	0	0	47	10	3
EVAPORATION	24							2	5	6	6	1	1	1	3		
REG INFLOW	27533	595	278	477	1785	2275	2737	3136	3149	3060	3136	1517	708	809	1568	1230	1073
RELEASE	27533	595	278	477	1785	2275	2737	3136	3136	3035	3136	1517	708	809	1568	1230	1111
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	24.0	20.0	20.0	26.7	30.0	37.0	46.0	51.0	51.0	51.0	51.0	51.0	51.0	51.0	25.5	20.0	20.0
POWER																	
AVE POWER MW		69	69	91	101	114	113	112	113	115	115	115	115	115	79	70	69
PEAK POW MW		114	114	114	114	114	113	112	113	115	115	115	115	115	78	78	76
ENERGY GWH	870.2	24.8	11.6	19.7	72.6	85.0	81.1	83.1	83.7	82.5	85.8	41.5	19.4	22.1	58.6	52.0	46.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	3200	165	77	99	515	915	395	265	210	155	80	48	22	25	60	35	135
DEPLETION	268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	30465	753	351	571	2278	3154	3101	3362	3309	3166	3205	1559	727	831	1615	1251	1231
KCFS		25.3	25.3	32.0	38.3	51.3	52.1	54.7	53.8	53.2	52.1	52.4	52.4	52.4	26.3	20.3	22.2
--TOTAL--																	
NAT INFLOW	34300	1633	762	980	3855	5270	7990	4705	1875	1465	1530	710	331	379	735	785	1295
DEPLETION	2542	0	0	0	-100	422	1860	1138	241	-199	-60	-130	-61	-69	-198	-205	-98
CHAN STOR	-13	106	-1	-14	-44	-70	-73	-12	0	33	34	-1	0	12	38	-24	3
EVAPORATION	1248							86	270	334	284	66	31	35	142		
STORAGE	56807	57793	58203	58596	60230	61853	64809	64916	62970	61168	59303	58517	58151	57745	56960	56674	56840
SYSTEM POWER																	
AVE POWER MW		877	884	931	1079	1445	1778	1945	1945	1880	1661	1624	1648	1706	1140	1143	1097
PEAK POW MW		2328	2329	2334	2353	2370	2397	2388	2374	2365	2331	2304	2292	2284	2247	2270	2282
ENERGY GWH	12906.6	315.8	148.5	201.2	776.6	1075.1	1280.3	1446.9	1447.3	1353.8	1236.1	584.5	276.8	327.5	848.2	850.7	737.2
DAILY GWH		21.1	21.2	22.4	25.9	34.7	42.7	46.7	46.7	45.1	39.9	39.0	39.5	40.9	27.4	27.4	26.3

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB12	2012											2013			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	8650	288	134	173	715	1445	2245	1100	410	340	480	188	88	100	315	270	360
DEPLETION	382	-43	-20	-26	-108	312	669	231	-55	-118	-80	-25	-12	-13	-113	-135	-83
EVAPORATION	328							22	70	86	75	18	8	9	39		
MOD INFLOW	7940	331	154	198	823	1133	1576	847	395	372	485	195	91	104	389	405	443
RELEASE	7945	193	90	116	476	676	803	830	830	641	492	238	111	127	799	799	722
STOR CHANGE	-5	137	64	82	347	457	773	17	-435	-269	-7	-43	-20	-23	-410	-394	-279
STORAGE	14787	14924	14988	15070	15417	15874	16646	16663	16228	15959	15952	15909	15888	15865	15455	15061	14782
ELEV FTMSL	2234.0	2234.6	2234.9	2235.3	2236.9	2239.0	2242.4	2242.5	2240.6	2239.4	2239.4	2239.2	2239.1	2239.0	2237.1	2235.3	2234.0
DISCH KCFS	13.0	6.5	6.5	6.5	8.0	11.0	13.5	13.5	13.5	10.8	8.0	8.0	8.0	8.0	13.0	13.0	13.0
POWER																	
AVE POWER MW		89	89	89	110	150	167	168	168	148	111	111	111	111	165	164	163
PEAK POW MW		163	163	163	164	166	168	168	167	166	166	166	166	166	164	163	162
ENERGY GWH	1249.4	32.0	14.9	19.2	79.0	111.4	120.3	125.2	124.7	106.6	82.4	39.9	18.6	21.3	122.8	121.8	109.3
--GARRISON--																	
NAT INFLOW	12800	484	226	290	1240	1685	3130	2480	760	520	590	235	110	125	245	300	380
DEPLETION	998	11	5	7	-73	9	916	659	93	-129	-1	-120	-56	-64	-114	-93	-53
CHAN STOR	0	64			-15	-29	-24			26	27				-49		
EVAPORATION	375							25	81	100	86	20	9	11	43		
REG INFLOW	19372	731	311	400	1774	2323	2993	2626	1416	1216	1024	573	267	305	1066	1192	1155
RELEASE	19377	476	222	286	1398	1968	1904	1906	1906	1725	1660	803	375	413	1291	1599	1444
STOR CHANGE	-5	255	89	114	376	355	1089	720	-490	-510	-636	-231	-108	-107	-225	-406	-289
STORAGE	18109	18363	18452	18566	18942	19297	20386	21106	20616	20106	19470	19239	19131	19024	18799	18393	18104
ELEV FTMSL	1837.5	1838.3	1838.6	1839.0	1840.1	1841.2	1844.5	1846.6	1845.2	1843.7	1841.8	1841.1	1840.7	1840.4	1839.7	1838.4	1837.5
DISCH KCFS	26.0	16.0	16.0	16.0	23.5	32.0	32.0	31.0	31.0	29.0	27.0	27.0	27.0	26.0	21.0	26.0	26.0
POWER																	
AVE POWER MW		200	200	201	295	403	406	399	400	372	343	341	341	328	265	325	323
PEAK POW MW		471	472	474	478	482	499	501	500	499	483	481	480	479	476	471	468
ENERGY GWH	2969.6	71.9	33.6	43.4	212.3	299.7	292.4	297.0	297.5	267.5	255.3	122.9	57.3	63.0	197.0	241.8	216.9
--OAHE--																	
NAT INFLOW	3100	302	141	181	520	305	1010	185	95	125	65	55	26	29	-65	10	115
DEPLETION	696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR	1	40			-29	-33		4		8	8			4	20	-20	
EVAPORATION	364							26	79	96	82	19	9	10	42		
REG INFLOW	21417	794	352	453	1839	2168	2766	1891	1803	1733	1662	838	391	435	1191	1571	1531
RELEASE	21422	646	301	348	1127	1314	2091	2529	2542	2359	1950	923	464	638	1445	1488	1257
STOR CHANGE	-5	148	51	105	712	854	675	-637	-738	-626	-288	-86	-73	-203	-254	83	274
STORAGE	18833	18980	19031	19136	19847	20702	21377	20739	20001	19375	19086	19001	18927	18725	18471	18554	18828
ELEV FTMSL	1607.5	1608.0	1608.1	1608.5	1610.7	1613.2	1615.1	1613.3	1611.1	1609.2	1608.3	1608.0	1607.8	1607.1	1606.3	1606.6	1607.5
DISCH KCFS	26.1	21.7	21.7	19.5	18.9	21.4	35.1	41.1	41.3	39.6	31.7	31.0	33.4	40.2	23.5	24.2	22.6
POWER																	
AVE POWER MW		281	281	253	247	282	467	546	543	516	411	401	431	516	302	310	291
PEAK POW MW		710	711	713	725	738	748	738	727	717	712	711	709	706	702	703	708
ENERGY GWH	3382.3	101.1	47.2	54.6	178.2	209.9	336.5	406.2	404.2	371.5	305.6	144.3	72.4	99.0	224.8	230.9	195.8
--BIG BEND--																	
EVAPORATION	71							5	15	19	16	4	2	2	9		
REG INFLOW	21352	646	301	348	1127	1314	2091	2524	2527	2340	1934	920	463	636	1437	1488	1257
RELEASE	21352	646	301	348	1127	1314	2091	2524	2527	2340	1934	920	463	636	1437	1488	1257
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	26.1	21.7	21.7	19.5	18.9	21.4	35.1	41.0	41.1	39.3	31.4	30.9	33.3	40.1	23.4	24.2	22.6
POWER																	
AVE POWER MW		103	102	91	89	100	164	192	192	186	153	154	166	198	117	119	108
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1234.1	37.1	17.1	19.7	63.9	74.4	118.4	142.8	143.0	134.1	114.1	55.4	27.8	38.1	87.1	88.2	72.9
--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	22392	776	362	425	1408	1485	2219	2580	2568	2380	1929	930	468	641	1438	1480	1304
RELEASE	22384	477	228	425	1408	1485	2219	2580	2568	2526	2572	1251	584	667	1335	1130	930
STOR CHANGE	8	299	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3116	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1349.9	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	20.6	16.0	16.4	23.8	23.7	24.1	37.3	42.0	41.8	42.4	41.8	42.0	42.0	42.0	21.7	18.4	16.7
POWER																	
AVE POWER MW		132	138	201	200	204	313	336	335	336	318	296	284	279	159	139	133
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	294	319	339
ENERGY GWH	2132.6	47.6	23.2	43.5	144.0	151.7	225.2	250.2	249.6	241.7	236.8	106.7	47.7	53.6	118.1	103.6	89.5
--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	6	9	-1	-14	0	-1	-25	-9	0	-1	1	0	0	0	38	6	3
EVAPORATION	24							2	5	6	6	1	1	1	3		
REG INFLOW	24251	595	278	477	1589	1765	2410	2705	2718	2643	2705	1309	611	698	1445	1230	1073
RELEASE	24251	595	278	477	1589	1765	2410	2705	2705	2618	2705	1309	611	698	1445	1230	1111
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	24.0	20.0	20.0	26.7	26.7	28.7	40.5	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	91	91	98	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	854.9	24.8	11.6	19.7	65.6	72.6	81.9	84.1	84.8	82.9	86.3	41.8	19.5	22.3	58.4	52.0	46.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	2550	145	68	87	410	705	315	215	155	125	65	38	18	20	50	30	105
DEPLETION	268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	26533	733	342	560	1977	2434	2694	2881	2823	2719	2759	1341	626	715	1482	1246	1201
KCFS		24.7	24.7	31.4	33.2	39.6	45.3	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	2538	0	0	0	-100	457	1800	1164	219	-192	-78	-132	-61	-70	-188	-192	-90
CHAN STOR	7	113	-1	-14	-44	-63	-50	-5	0	33	36	-1	0	3	10	-14	3
EVAPORATION	1242							85	268	331	284	66	31	35	142		
STORAGE	56807	57645	57983	58283	59718	61384	63921	64020	62370	60844	59269	58588	58271	57912	57126	56758	56801
SYSTEM POWER																	
AVE POWER MW		874	879	926	1032	1236	1631	1755	1752	1673	1452	1419	1448	1548	1086	1127	1088
PEAK POW MW		2326	2326	2329	2346	2365	2394	2386	2373	2366	2335	2308	2297	2290	2252	2272	2282
ENERGY GWH	11822.9	314.5	147.7	200.1	742.9	919.8	1174.6	1305.6	1303.8	1204.2	1080.6	511.0	243.3	297.2	808.2	838.3	730.9
DAILY GWH		21.0	21.1	22.2	24.8	29.7	39.2	42.1	42.1	40.1	34.9	34.1	34.8	37.2	26.1	27.0	26.1

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB12		2012										2013				
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	7200	230	107	138	600	1180	1810	840	315	295	430	180	84	96	300	250	345
DEPLETION	419	-44	-20	-26	23	308	526	248	8	-69	-48	-43	-20	-23	-136	-157	-109
EVAPORATION	462							29	89	111	96	44	20	23	50		
MOD INFLOW	6319	273	128	164	577	872	1284	563	218	253	382	179	83	95	386	407	454
RELEASE	6487	179	83	107	476	646	625	646	646	487	369	179	83	119	615	646	583
STOR CHANGE	-168	95	44	57	101	226	659	-82	-428	-234	13	0	0	-24	-229	-239	-129
STORAGE	14793	14888	14932	14989	15090	15316	15975	15893	15466	15232	15245	15245	15245	15222	14993	14754	14625
ELEV FTMSL	2234.0	2234.5	2234.7	2234.9	2235.4	2236.5	2239.5	2239.1	2237.2	2236.1	2236.1	2236.1	2236.1	2236.0	2235.0	2233.8	2233.2
DISCH KCFS	12.0	6.0	6.0	6.0	8.0	10.5	10.5	10.5	10.5	8.2	6.0	6.0	6.0	7.5	10.0	10.5	10.5
POWER																	
AVE POWER MW		82	82	82	109	143	144	144	144	112	82	82	82	103	137	142	142
PEAK POW MW		163	163	163	163	164	166	166	165	164	164	164	164	164	163	162	162
ENERGY GWH	1071.8	29.5	13.8	17.7	78.8	106.2	103.5	107.4	107.0	80.9	61.3	29.7	13.8	19.8	101.6	105.6	95.1
--GARRISON--																	
NAT INFLOW	10800	460	214	276	870	1325	3095	1860	595	460	495	195	91	104	180	260	320
DEPLETION	1006	6	3	3	-17	112	860	602	97	-127	-28	-125	-58	-66	-117	-88	-51
CHAN STOR	15	60			-20	-25				22	21			-15	-24	-5	
EVAPORATION	538							33	104	130	112	51	24	27	58		
REG INFLOW	15758	692	295	379	1343	1834	2860	1871	1039	967	801	447	209	248	830	989	954
RELEASE	15965	476	222	286	1190	1599	1607	1599	1599	1235	984	476	222	254	1291	1537	1388
STOR CHANGE	-207	216	73	94	153	235	1253	272	-559	-268	-183	-29	-13	-6	-462	-548	-434
STORAGE	18115	18331	18404	18497	18651	18886	20139	20411	19852	19583	19400	19372	19358	19352	18891	18342	17908
ELEV FTMSL	1837.5	1838.2	1838.4	1838.7	1839.2	1840.0	1843.8	1844.6	1842.9	1842.1	1841.6	1841.5	1841.4	1841.4	1840.0	1838.3	1836.8
DISCH KCFS	24.0	16.0	16.0	16.0	20.0	26.0	27.0	26.0	26.0	20.8	16.0	16.0	16.0	16.0	21.0	25.0	25.0
POWER																	
AVE POWER MW		200	200	200	251	326	342	333	332	264	203	203	203	203	265	313	310
PEAK POW MW		471	472	473	475	477	499	498	487	483	482	482	482	477	471	466	
ENERGY GWH	2439.2	71.8	33.6	43.3	180.4	242.6	246.0	247.9	247.3	190.3	151.4	73.1	34.1	39.0	197.5	232.7	208.2
--OAHE--																	
NAT INFLOW	2300	232	108	139	405	195	780	160	75	95	35	30	14	16	-80		95
DEPLETION	696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR	-5	32			-16	-24	-4	4		21	19				-20	-16	
EVAPORATION	507							32	100	123	105	47	22	25	54		
REG INFLOW	17057	716	319	410	1529	1698	2235	1552	1455	1199	944	458	214	245	1124	1503	1455
RELEASE	17270	680	309	358	1298	1497	1611	1849	1979	1759	1259	562	296	272	1096	1324	1120
STOR CHANGE	-213	36	11	52	231	201	623	-297	-524	-560	-315	-104	-82	-28	28	179	335
STORAGE	18839	18875	18885	18938	19169	19370	19993	19696	19172	18613	18297	18194	18111	18084	18112	18291	18626
ELEV FTMSL	1607.5	1607.6	1607.7	1607.8	1608.6	1609.2	1611.1	1610.2	1608.6	1606.8	1605.8	1605.4	1605.1	1605.0	1605.1	1605.7	1606.8
DISCH KCFS	22.7	22.9	22.2	20.1	21.8	24.3	27.1	30.1	32.2	29.6	20.5	18.9	21.3	17.1	17.8	21.5	20.2
POWER																	
AVE POWER MW		295	287	260	283	316	354	394	418	381	263	242	272	219	227	275	259
PEAK POW MW		708	709	710	713	717	727	722	714	704	699	697	695	695	695	698	704
ENERGY GWH	2700.6	106.3	48.2	56.1	203.6	235.3	254.8	292.8	311.1	274.4	195.5	87.0	45.7	42.0	169.2	204.6	174.0
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	17167	680	309	358	1298	1497	1611	1843	1959	1734	1238	552	292	267	1085	1324	1120
RELEASE	17167	680	309	358	1298	1497	1611	1843	1959	1734	1238	552	292	267	1085	1324	1120
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	22.7	22.9	22.2	20.1	21.8	24.3	27.1	30.0	31.9	29.1	20.1	18.6	21.0	16.8	17.6	21.5	20.2
POWER																	
AVE POWER MW		108	104	94	102	114	127	140	149	138	99	93	105	85	89	106	97
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	991.7	39.0	17.5	20.3	73.5	84.8	91.3	104.4	110.9	99.4	73.5	33.6	17.7	16.3	66.0	78.6	65.0
--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	17870	797	363	428	1449	1628	1734	1887	1984	1726	1212	551	292	268	1077	1311	1162
RELEASE	17854	489	229	428	1449	1628	1734	1887	1984	1872	1855	872	408	294	974	961	788
STOR CHANGE	16	308	134					0	0	-146	-643	-321	-116	-26	102	350	374
STORAGE	3107	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2399	2749	3123
ELEV FTMSL	1349.8	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	17.0	16.4	16.5	24.0	24.4	26.5	29.1	30.7	32.3	31.5	30.2	29.3	29.4	18.5	15.8	15.6	14.2
POWER																	
AVE POWER MW		136	139	203	206	223	246	258	271	263	242	221	215	135	116	119	113
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1762.4	48.8	23.4	43.8	148.1	166.1	176.8	192.1	201.8	189.2	179.7	79.7	36.1	25.9	86.6	88.3	76.0
--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	-14	-1	-4	-5	-3	-3	2	2	2	0	20	5	0	3
EVAPORATION	36							2	6	9	8	3	2	2	4		
REG INFLOW	19208	595	278	477	1589	1765	1880	1943	2054	1965	1968	925	432	341	1045	1045	906
RELEASE	19208	595	278	477	1589	1765	1880	1943	2041	1940	1968	925	432	341	1045	1045	944
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	26.7	26.7	28.7	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	91	91	98	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	787.5	24.8	11.6	19.7	65.6	72.6	75.3	77.8	80.9	78.3	80.6	38.3	17.9	14.5	44.7	44.7	40.1
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1700	138	64	83	325	295	150	180	120	105	55	30	14	16	25	25	75
DEPLETION	268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	20640	726	339	555	1892	2024	1999	2084	2124	2021	2012	949	443	354	1057	1056	1004
KCFS		24.4	24.4	31.1	31.8	32.9	33.6	33.9	34.5	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	2583	-6	-3	-3	87	556	1601	1124	286	-141	-73	-154	-72	-82	-214	-209	-114
CHAN STOR	14	92	0	-14	-36	-52	-9	1	-3	44	43	1	0	6	-40	-21	3
EVAPORATION	1763							110	345	428	368	164	76	86	187		
STORAGE	56817	57471	57733	57936	58421	59084	61620	61513	60015	58832	57703	57250	57039	56956	56396	56137	56245
SYSTEM POWER																	
AVE POWER MW		890	882	930	1042	1220	1316	1374	1423	1267	997	948	984	820	895	1014	980
PEAK POW MW		2324	2323	2325	2331	2338	2371	2367	2357	2339	2319	2294	2284	2281	2245	2266	2275
ENERGY GWH	9753.2	320.3	148.1	200.8	750.0	907.7	947.6	1022.4	1059.1	912.6	742.0	341.3	165.4	157.4	665.7	754.5	658.4
DAILY GWH		21.4	21.2	22.3	25.0	29.3	31.6	33.0	34.2	30.4	23.9	22.8	23.6	19.7	21.5	24.3	23.5
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB12		2012										2013			
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																
NAT INFLOW 6000	203	95	122	485	955	1480	665	285	255	340	165	77	88	260	220	305
DEPLETION 319	-45	-21	-27	55	194	385	188	43	-65	-44	-32	-15	-17	-102	-105	-73
EVAPORATION 553							35	108	133	115	52	24	28	59		
MOD INFLOW 5128	248	116	149	430	761	1095	442	134	187	269	145	68	78	303	325	378
RELEASE 6741	179	83	107	417	646	655	676	676	508	369	179	83	111	707	707	639
STOR CHANGE -1613	70	33	42	13	115	440	-234	-542	-321	-100	-33	-16	-34	-404	-382	-261
STORAGE 14785	14855	14887	14929	14942	15058	15498	15264	14722	14401	14301	14268	14252	14219	13815	13433	13172
ELEV FTMSL 2234.0	2234.3	2234.5	2234.7	2234.7	2235.3	2237.3	2236.2	2233.7	2232.1	2231.7	2231.5	2231.4	2231.2	2229.2	2227.3	2226.0
DISCH KCFS 10.0	6.0	6.0	6.0	7.0	10.5	11.0	11.0	11.0	8.5	6.0	6.0	6.0	7.0	11.5	11.5	11.5
POWER																
AVE POWER MW	82	82	82	96	142	149	149	148	116	81	81	81	95	151	149	148
PEAK POW MW	162	163	163	163	163	165	164	162	161	160	160	160	160	159	157	156
ENERGY GWH 1092.1	29.5	13.8	17.7	68.9	105.9	107.2	110.9	110.2	83.5	60.5	29.3	13.6	18.2	112.1	111.2	99.7
--GARRISON--																
NAT INFLOW 9200	423	198	254	705	1110	2635	1585	505	390	420	165	77	88	150	220	275
DEPLETION 1060	2	1	1	21	134	710	531	161	-89	10	-115	-53	-61	-93	-62	-38
CHAN STOR -15	40			-10	-35	-5			24	25			-10	-45		
EVAPORATION 623							39	122	150	129	58	27	31	66		
REG INFLOW 14243	640	280	360	1091	1587	2575	1691	898	861	675	400	187	219	839	989	952
RELEASE 16220	476	222	286	1547	1783	1696	1476	1476	1191	984	476	222	286	1291	1476	1333
STOR CHANGE -1977	164	58	74	-456	-196	879	216	-577	-330	-309	-76	-35	-66	-452	-487	-381
STORAGE 18107	18271	18328	18403	17946	17750	18628	18844	18267	17937	17628	17552	17516	17450	16998	16511	16130
ELEV FTMSL 1837.5	1838.0	1838.2	1838.4	1837.0	1836.3	1839.2	1839.8	1838.0	1836.9	1835.9	1835.7	1835.5	1835.3	1833.8	1832.1	1830.8
DISCH KCFS 22.0	16.0	16.0	16.0	26.0	29.0	28.5	24.0	24.0	20.0	16.0	16.0	16.0	18.0	21.0	24.0	24.0
POWER																
AVE POWER MW	199	200	200	322	357	353	301	300	249	198	197	197	221	256	289	286
PEAK POW MW	470	471	472	466	464	474	477	470	466	462	461	461	460	454	448	443
ENERGY GWH 2417.6	71.8	33.6	43.2	232.1	265.3	254.1	224.0	223.3	178.9	147.2	70.9	33.1	42.4	190.4	215.0	192.3
--OAHE--																
NAT INFLOW 1300	203	95	122	180	130	275	140	65	75	15	13	6	7	-90	-10	75
DEPLETION 696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR -9	24			-40	-12	2	18		17	17			-9	-13	-13	
EVAPORATION 579							38	115	141	119	53	25	28	61		
REG INFLOW 16235	679	306	393	1637	1829	1825	1418	1306	1113	908	435	203	255	1114	1435	1380
RELEASE 18262	734	338	458	1567	1789	1806	2069	2092	1874	1371	594	312	266	923	1124	946
STOR CHANGE -2027	-55	-32	-65	71	40	19	-651	-786	-761	-463	-159	-109	-11	191	311	434
STORAGE 18831	18776	18744	18679	18749	18790	18808	18157	17372	16611	16148	15989	15880	15868	16060	16370	16804
ELEV FTMSL 1607.5	1607.3	1607.2	1607.0	1607.2	1607.4	1607.4	1605.3	1602.6	1600.0	1598.3	1597.7	1597.3	1597.3	1598.0	1599.1	1600.7
DISCH KCFS 23.4	24.7	24.3	25.6	26.3	29.1	30.4	33.6	34.0	31.5	22.3	20.0	22.5	16.8	15.0	18.3	17.0
POWER																
AVE POWER MW	318	314	330	339	374	391	430	429	392	275	245	275	205	184	225	211
PEAK POW MW	707	706	705	706	707	707	696	682	668	659	657	655	654	658	664	672
ENERGY GWH 2787.8	114.5	52.7	71.3	243.9	278.5	281.2	319.9	319.3	282.1	204.5	88.1	46.1	39.4	136.9	167.4	142.1
--BIG BEND--																
EVAPORATION 129							8	24	31	27	12	6	7	14		
REG INFLOW 18133	734	338	458	1567	1789	1806	2061	2068	1843	1344	582	306	260	908	1124	946
RELEASE 18133	734	338	458	1567	1789	1806	2061	2068	1843	1344	582	306	260	908	1124	946
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 23.4	24.7	24.3	25.6	26.3	29.1	30.4	33.5	33.6	31.0	21.8	19.5	22.1	16.4	14.8	18.3	17.0
POWER																
AVE POWER MW	117	114	120	123	136	142	157	157	147	107	98	111	82	75	90	82
PEAK POW MW	517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH 1045.5	42.1	19.1	25.9	88.7	101.3	102.3	116.7	117.1	105.7	79.7	35.3	18.6	15.8	55.4	66.8	54.9
--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 18357	805	371	501	1653	1845	1919	2068	2046	1797	1292	561	297	250	864	1106	983
RELEASE 18350	506	237	501	1653	1845	1919	2068	2046	1943	1935	882	413	276	761	756	609
STOR CHANGE 7	299	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE 3116	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL 1349.9	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 17.5	17.0	17.1	28.0	27.8	30.0	32.3	33.6	33.3	32.7	31.5	29.6	29.8	17.4	12.4	12.3	11.0
POWER																
AVE POWER MW	140	144	236	234	253	271	283	280	273	252	224	218	127	91	94	88
PEAK POW MW	351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH 1817.1	50.6	24.2	51.0	168.5	187.9	195.3	210.3	208.1	196.2	187.3	80.5	36.6	24.4	67.8	69.6	58.9
--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	1	0	-21	1	-4	-4	-3	1	1	2	3	0	23	9	0	2
EVAPORATION 45							3	8	11	10	4	2	2	5		
REG INFLOW 19502	595	278	532	1773	1962	2041	2109	2104	2018	2035	928	433	322	830	830	712
RELEASE 19502	595	278	532	1773	1962	2041	2109	2091	1993	2035	928	433	322	830	830	750
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	29.8	29.8	31.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.3	13.5	13.5	13.5
POWER																
AVE POWER MW	69	69	100	100	105	111	111	110	111	111	107	107	72	48	48	48
PEAK POW MW	114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH 788.2	24.8	11.6	21.7	72.3	78.3	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.7	35.7	35.7	32.0
--GAVINS POINT - SIOUX CITY--																
NAT INFLOW 1050	121	56	73	140	170	90	105	75	60	35	25	12	13	10	20	45
DEPLETION 268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																
KAF 20284	709	331	601	1891	2096	2100	2175	2129	2029	2059	947	442	332	827	836	780
KCFS	23.8	23.9	33.6	31.8	34.1	35.3	35.4	34.6	34.1	33.5	31.8	31.8	20.9	13.5	13.6	14.0
--TOTAL--																
NAT INFLOW 19300	1111	518	666	1725	2570	4755	2615	1030	860	900	413	193	220	375	510	840
DEPLETION 2537	-11	-5	-7	157	464	1310	993	385	-99	-31	-134	-62	-71	-156	-131	-65
CHAN STOR -14	64	0	-21	-49	-51	-7	15	1	42	45	3	0	5	-49	-13	2
EVAPORATION 2074							132	409	505	431	191	88	101	217		
STORAGE 56802	57279	57471	57522	57150	57109	58447	57778	55886	54352	52838	52248	51972	51835	51273	51065	51192
SYSTEM POWER																
AVE POWER MW	926	922	1069	1214	1367	1416	1430	1425	1286	1024	951	987	802	804	895	863
PEAK POW MW	2321	2319	2319	2315	2314	2326	2316	2295	2280	2256	2230	2218	2215	2181	2204	2215
ENERGY GWH 9948.3	333.2	155.0	230.9	874.4	1017.2	1019.6	1064.0	1060.0	926.2	761.7	342.5	165.9	154.0	598.2	665.7	579.8
DAILY GWH	22.2	22.1	25.7	29.1	32.8	34.0	34.3	34.2	30.9	24.6	22.8	23.7	19.2	19.3	21.5	20.7

INI-SUM 15MAR 22MAR 31MAR 30APR 31MAY 30JUN 31JUL 31AUG 30SEP 31OCT 15NOV 22NOV 30NOV 31DEC 31JAN 28FEB

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB12			2012								2013					
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
--FORT PECK--																	
NAT INFLOW	5400	194	90	116	470	845	1195	610	270	245	320	158	74	84	230	210	290
DEPLETION	311	-45	-21	-27	55	194	385	188	7	-105	-88	-23	-11	-12	-77	-66	-43
EVAPORATION	537							34	105	129	112	50	23	27	57		
MOD INFLOW	4552	239	111	143	415	651	810	388	158	221	296	130	61	70	250	276	333
RELEASE	6844	179	83	107	417	615	684	707	707	523	369	179	83	111	676	738	666
STOR CHANGE	-2292	60	28	36	-2	36	126	-319	-549	-302	-72	-48	-22	-42	-426	-462	-333
STORAGE	14785	14845	14873	14909	14907	14943	15069	14750	14201	13900	13827	13779	13756	13715	13288	12826	12493
ELEV FTMSL	2234.0	2234.3	2234.4	2234.6	2234.6	2234.7	2235.3	2233.8	2231.2	2229.7	2229.3	2229.1	2228.9	2228.7	2226.6	2224.1	2222.3
DISCH KCFS	10.0	6.0	6.0	6.0	7.0	10.0	11.5	11.5	11.5	8.8	6.0	6.0	6.0	7.0	11.0	12.0	12.0
POWER																	
AVE POWER MW		82	82	82	96	136	154	154	152	118	81	81	81	94	144	152	151
PEAK POW MW		162	163	163	163	163	163	162	160	159	159	159	159	158	157	155	153
ENERGY GWH	1096.9	29.5	13.8	17.7	68.9	101.3	110.8	114.2	113.2	85.2	60.1	29.0	13.5	18.0	107.1	113.3	101.2
--GARRISON--																	
NAT INFLOW	7400	365	170	219	575	1055	2205	1080	360	160	390	148	69	79	135	135	255
DEPLETION	934	2	1	1	21	134	609	467	127	-107	-7	-101	-47	-54	-63	-32	-17
CHAN STOR	-21	40			-10	-30	-15			27	28			-10	-41	-10	
EVAPORATION	597							37	116	144	124	56	26	30	64		
REG INFLOW	12692	582	253	325	961	1506	2265	1283	824	673	670	371	173	204	770	895	938
RELEASE	15504	476	222	286	1547	1783	1696	1353	1353	1103	922	446	208	246	1230	1383	1250
STOR CHANGE	-2812	106	31	39	-586	-277	569	-70	-529	-430	-252	-75	-35	-42	-460	-489	-311
STORAGE	18107	18212	18243	18283	17696	17419	17988	17918	17389	16959	16707	16632	16597	16555	16095	15606	15295
ELEV FTMSL	1837.5	1837.8	1837.9	1838.1	1836.1	1835.2	1837.1	1836.9	1835.1	1833.6	1832.8	1832.5	1832.4	1832.2	1830.6	1828.9	1827.8
DISCH KCFS	22.0	16.0	16.0	16.0	26.0	29.0	28.5	22.0	22.0	18.5	15.0	15.0	15.0	15.5	20.0	22.5	22.5
POWER																	
AVE POWER MW		199	200	200	321	354	349	272	270	226	182	181	181	187	239	266	263
PEAK POW MW		469	470	470	463	460	467	466	459	454	451	450	449	449	443	437	432
ENERGY GWH	2280.1	71.8	33.5	43.1	231.2	263.7	251.6	202.4	201.1	162.7	135.3	65.2	30.4	35.9	177.8	197.6	176.8
--OAHE--																	
NAT INFLOW	1150	196	91	118	170	115	255	125	50	65	5	8	4	4	-100	-20	65
DEPLETION	696	24	11	15	50	72	148	178	119	29	-11	1	0	1	13	18	28
CHAN STOR	-4	24			-40	-12	2	26		15	16			-2	-20	-11	
EVAPORATION	563							37	113	137	115	51	24	27	59		
REG INFLOW	15391	672	302	389	1627	1814	1805	1288	1170	1017	839	402	188	220	1038	1334	1287
RELEASE	18273	744	342	464	1582	1804	1826	2084	2112	1894	1391	601	315	267	875	1073	901
STOR CHANGE	-2882	-72	-40	-75	46	10	-21	-795	-942	-877	-552	-199	-128	-46	163	262	386
STORAGE	18831	18759	18718	18643	18689	18699	18678	17883	16941	16063	15511	15312	15185	15138	15301	15563	15949
ELEV FTMSL	1607.5	1607.3	1607.1	1606.9	1607.0	1607.1	1607.0	1604.4	1601.1	1598.0	1595.9	1595.2	1594.7	1594.5	1595.1	1596.1	1597.6
DISCH KCFS	23.4	25.0	24.7	26.0	26.6	29.3	30.7	33.9	34.4	31.8	22.6	20.2	22.7	16.8	14.2	17.4	16.2
POWER																	
AVE POWER MW		322	318	334	342	377	394	431	430	392	275	244	273	202	172	211	198
PEAK POW MW		706	706	705	705	706	705	691	674	658	648	644	642	641	644	649	656
ENERGY GWH	2770.9	116.0	53.4	72.1	246.0	280.4	283.8	321.0	320.2	282.3	204.9	87.9	45.9	38.9	127.8	157.2	133.0
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	18144	744	342	464	1582	1804	1826	2076	2088	1863	1364	588	310	260	861	1073	901
RELEASE	18144	744	342	464	1582	1804	1826	2076	2088	1863	1364	588	310	260	861	1073	901
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	23.4	25.0	24.7	26.0	26.6	29.3	30.7	33.8	34.0	31.3	22.2	19.8	22.3	16.4	14.0	17.4	16.2
POWER																	
AVE POWER MW		118	115	122	124	137	144	158	159	148	109	99	112	83	71	86	78
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1045.8	42.6	19.4	26.3	89.6	102.1	103.4	117.5	118.2	106.8	80.9	35.8	18.8	15.8	52.5	63.8	52.3
--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	18268	810	373	503	1663	1855	1929	2073	2056	1807	1302	563	298	248	806	1050	933
RELEASE	18261	512	239	503	1663	1855	1929	2073	2056	1953	1945	884	414	274	703	700	559
STOR CHANGE	7	299	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3116	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1349.9	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	17.5	17.2	17.2	28.2	27.9	30.2	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		142	145	238	235	254	273	283	281	274	253	224	218	126	84	87	80
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1809.5	51.1	24.4	51.3	169.5	188.9	196.3	210.8	209.1	197.2	188.3	80.7	36.7	24.1	62.7	64.5	54.0
--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	13	1	0	-21	0	-4	-4	-2	1	1	2	4	0	23	11	0	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	19315	595	278	532	1773	1962	2041	2109	2104	2018	2035	925	432	317	769	769	656
RELEASE	19315	595	278	532	1773	1962	2041	2109	2091	1993	2035	925	432	317	769	769	694
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	29.8	29.8	31.9	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		69	69	100	100	105	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	780.3	24.8	11.6	21.7	72.3	78.3	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	33.0	33.0	29.6
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	700	87	41	52	90	120	65	70	40	35	25	18	8	9	5	15	20
DEPLETION	268	7	3	4	22	36	31	39	37	24	11	6	3	3	13	14	15
REGULATED FLOW AT SIOUX CITY																	
KAF	19747	675	315	580	1841	2046	2075	2140	2094	2004	2049	937	437	324	761	770	699
KCFS		22.7	22.7	32.5	30.9	33.3	34.9	34.8	34.0	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	2403	-11	-5	-7	157	464	1209	929	315	-157	-92	-111	-52	-59	-101	-62	-14
CHAN STOR	-12	64	0	-21	-49	-46	-17	23	1	43	46	3	0	11	-50	-21	2
EVAPORATION	2017							129	399	491	419	186	86	98	211		
STORAGE	56802	57194	57346	57347	56805	56574	57247	56063	54056	52326	50806	50163	49862	49706	49086	48746	48824
SYSTEM POWER																	
AVE POWER MW		933	929	1075	1219	1364	1424	1409	1403	1270	1011	936	971	762	754	846	814
PEAK POW MW		2320	2318	2317	2311	2308	2315	2299	2274	2256	2231	2204	2192	2188	2153	2175	2185
ENERGY GWH	9783.6	335.8	156.1	232.3	877.4	1014.8	1025.4	1048.2	1044.0	914.1	751.9	336.9	163.2	146.3	560.9	629.4	546.9
DAILY GWH		22.4	22.3	25.8	29.2	32.7	34.2	33.8	33.7	30.5	24.3	22.5	23.3	18.3	18.1	20.3	19.5