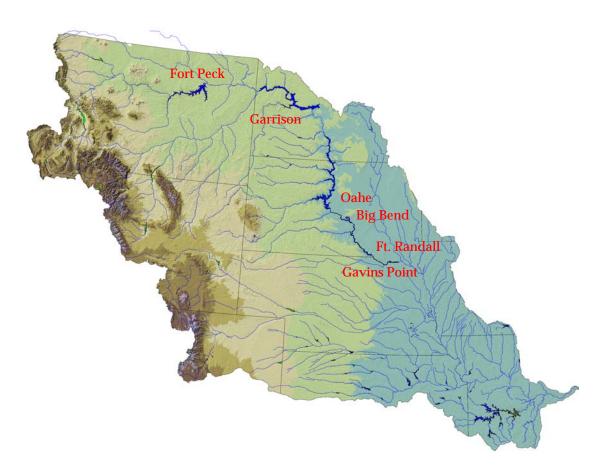




Northwestern Division Missouri River Basin Water Management Division

# Missouri River Mainstem System 2005-2006 Annual Operating Plan



Annual Operating Plan Process 53 Years Serving the Missouri River Basin



January 2006



#### DEPARTMENT OF THE ARMY NORTHWESTERN DIVISION, CORPS OF ENGINEERS 12565 WEST CENTER ROAD OMAHA, NEBRASKA 68144-3869

January 31, 2006

This Annual Operating Plan (AOP) presents information regarding the Corps of Engineers' regulation of the Missouri River Mainstem Reservoir System (System) through December 2006. The information provided in this AOP is based on water management guidelines designed to meet the regulation objectives of the Missouri River Master Water Control Manual (Master Manual). These guidelines are applied to computer simulations of System regulation assuming inflow scenarios based on water supply records from 1898 to 1997. This approach provides a wide range of water management simulations for dry, average, and wet conditions.

The AOP provides a framework for the development of detailed monthly, weekly, and daily regulation schedules for the System's six individual dams during the upcoming year to serve its Congressionally authorized project purposes, comply with the Endangered Species Act, and fulfill the Corps Tribal trust and treaty responsibilities. In addition, 5-year extensions to the AOP water management simulations, through March 2012, are presented to serve as guides for longer range planning. System water management is provided by my staff at the Missouri River Basin Water Management Division, Northwestern Division, U.S. Army Corps of Engineers located in Omaha, Nebraska.

On December 16, 2003, and in response to the Corps's request for the reinitiation of consultation, the U.S. Fish and Wildlife Service (USFWS) issued an amendment to its 2000 Biological Opinion (2003 Amended BiOp). The 2003 Amended BiOp included a "reasonable and prudent alternative" (RPA) that called for a two "spring pulses" and a low summer release from the System. The 2003 Amended BiOp allowed a two-year period of study prior to implementing the spring pulses to establish an acceptable flow management plan, which will likely avoid jeopardy to the continued existence of the pallid sturgeon and will not result in the destruction, or adverse modification of critical habitat in the Missouri River. This AOP includes the potential for two spring pulses, which could be implemented in March and again in May of 2006, depending on hydrologic conditions. Revision of the Missouri River Master Manual addressing the spring pulse technical criteria is expected to be complete by the end of February. The 2003 Amended BiOp also called for a 'low summer release', below what would normally be required for navigation support. The 2003 Amended BiOp also included a provision that the low summer release may be modified, in consultation with the USFWS, if 1200 acres of shallow water habitat (SWH) for the endangered pallid sturgeon was constructed. This SWH was constructed in 2004, therefore, this AOP does not include provisions for summer flows below minimum service. The Corps will continue to construct new SWH habitat as required by the 2003 Amended BiOp, and monitor all of the constructed SWH to confirm that it is providing the anticipated biological benefits to the pallid sturgeon and ecosystem upon which it depends.

A draft of this AOP along with draft Master Manual spring pulse technical criteria was made available to the public in October 2005. Eight public meetings on the Draft 2005-2006 AOP and the draft Master Manual spring pulse technical criteria were held as follows: November 14, 2005 in Omaha and Nebraska City, Nebraska; November 15, 2005 in Kansas City, Missouri; November 16, 2005 in St. Louis and Jefferson City, Missouri; November 17, 2005 in Pierre, South Dakota and Bismarck, North Dakota; and November 18, 2005 in Glasgow, Montana. The primary purposes of these meetings were to present a synopsis of the Draft AOP, describe and explain the draft Master Manual spring pulse technical criteria, and to allow those in attendance to make comments in person to Corps of Engineers' staff. Attendees

included representatives from the Tribes, Missouri River basin states, public and industry interest groups and private citizens. In addition, Government-to-Government consultation / meetings between the basin Tribes and the Corps of Engineers was conducted on the Draft 2005-2006 AOP and draft Master Manual spring pulse technical criteria in on January 11, 12, 2006 in Rapid City, South Dakota and on January 26' 2006 in Pierre, South Dakota. Copies of the comment letters received on the Draft AOP and the notes from the Tribal and public meetings are available upon request, as outlined below.

In addition to the AOP, two separate documents are also available entitled: "System Description and Operation" and "Summary of Actual Calendar Year 2005 Operations." To receive copies of those documents you may contact the Water Management Division at 12565 West Center Road, Omaha, Nebraska 68144-3869, phone (402) 697-2676. The System Description and Operation document is now available at the "Reports and Publications" link on our web site at: <u>www.nwd.usace.army.mil/rcc</u> while the Summary of Actual Calendar Year 2005 Operations will be available in May 2006 at the same site.

We thank you for your interest in the regulation of the System. During this extended drought, the Corps is attempting to balance the needs of the entire basin. We believe our recently revised Master Manual and this AOP provide an appropriate balance of benefits to the various Congressionally authorized System project purposes. The basin should work together as a team – Federal, Tribal, State, local agencies, and stakeholders, to ensure the preservation of the Missouri River as a National treasure.

Gregg F. Martin Brigadier General, US Army Division Engineer

#### MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM

#### Annual Operating Plan 2005 - 2006

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#### **ABBREVIATIONS**

		1 (* 1
AOP	-	annual operating plan
ac.ft.	-	acre-feet
ACHP	-	Advisory Council on Historic Preservation
AF	-	acre-feet
B	-	Billion
BiOp	-	Biological Opinion
BOR	-	Bureau of Reclamation
cfs	-	cubic feet per second
COE	-	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)
GIS	-	Geographic Information System
GWh	-	gigawatt hour
ISP	-	initial starting point
KAF	-	1,000 acre-feet
Kcfs	-	1,000 cubic feet per second
kW	-	kilowatt
kWh	-	kilowatt hour
М	-	million
MAF	-	million acre-feet
MRBA	-	Missouri River Basin Association
MRNRC	-	Missouri River Natural Resources Committee
msl	-	mean sea level
MW	-	megawatt
MWh	-	megawatt hour
NEPA	-	National Environmental Policy Act
plover	_	piping plover
pp	_	
PA	_	Programmatic Agreement
P-S MBP	_	Pick-Sloan Missouri Basin Program
RCC	_	Reservoir Control Center
RM	_	1
RPA	_	Reasonable and Prudent Alternative
SHPO	_	State Historic Preservation Officers
SR	_	Steady Release
tern	_	interior least tern
w111	_	

T&E	-	Threatened and Endangered
THPO	-	Tribal Historic Preservation Officers
tw	-	tailwater
USFWS	-	United States Fish and Wildlife Service
USGS	-	United States Geological Survey
WY	-	water year
yr	-	year

#### **DEFINITION OF TERMS**

<u>Acre-foot (AF, ac-ft)</u> 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.

<u>Cubic foot per second</u> (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.

<u>Discharge</u> 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.

<u>Drainage basin</u> 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.

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

<u>Runoff in inches</u> 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.

<u>Streamflow</u> 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.

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#### MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM

Annual Operating Plan 2005 - 2006

#### I. FOREWORD

This Annual Operating Plan (AOP) presents pertinent information and plans for regulating the Missouri River Mainstem Reservoir System (System) through December 2006 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 Reservoir Control Center in the Missouri River Basin Water Management Division, Northwestern Division, U. S. Army Corps of Engineers (Corps). 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.

Prior to the 1998-1999 AOP, a System description and discussion of the typical System regulation, a historic summary of the previous year's regulation, and the plan for future System regulation was included in one document. Since the 1998-1999 AOP, this information has been published in separate reports available upon request. This document provides the plan for future regulation of the System. To receive a copy of either the updated version of the "System Description and Operation," dated Spring 2002, or the "Summary of Actual Calendar Year 2004 Operations," dated April 2005, contact the Missouri River Basin Water Management Division at 12565 West Center Road, Omaha, Nebraska 68144-3869, phone (402) 697-2676. Both reports are currently available at the "Reports and Publications" link on our web site at: www.nwd-

**mr.usace.army.mil/rcc**. The "Summary of Actual Calendar Year 2005 Regulation" will be available at the same site in the May of 2006.

#### **II. PURPOSE AND SCOPE**

Beginning in 1953, projected System reservoir regulation for the year ahead was developed annually as a basis for advance coordination with the various interested Federal, State, and local agencies and private citizens. Also beginning in 1953, a coordinating committee was organized to make recommendations on each upcoming year's System regulation. The Coordinating Committee on Missouri River Mainstem Reservoir Operations held meetings semiannually until 1981 and provided recommendations to the Corps. In 1982, the Committee was dissolved because it did not conform to the provisions of the Federal Advisory Committee Act. Since 1982, to continue providing a forum for public participation, one or more open public meetings are held semiannually in the spring and fall. The fall public meeting is conducted to take public input on a draft of the AOP, which typically is published in early October 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 invited 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 to consult/meet 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 shall work with the affected Tribes to establish processes for consultation on AOP's under 36 CFR Part 800, the PA, and Executive Order 13175.

Last spring's public meetings were held at the following locations and dates: April 11, 2005 at Glasgow, Montana; April 12, 2005 at Bismarck, North Dakota and Pierre, South Dakota; April 13, 2005 at St. Louis and Kansas City, Missouri; and April 14, 2005 at Omaha, Nebraska. The attendees were given an update regarding the outlook for 2005 runoff and projected Mainstem reservoir regulation for the remainder of 2005. Eight 2005 fall public meetings on the Draft 2005-2006 AOP and draft spring pulse technical criteria for the Master Manual Revision were held: November 14 in Omaha and Nebraska City, Nebraska; November 15 in Kansas City, Missouri; November 16 in

St Louis and Jefferson City, Missouri; November 17 in Pierre, South Dakota and Bismarck, North Dakota; and November 18 in Glasgow, Montana. The meetings were all well attended, unfortunately the St. Louis meeting was conducted via telephone conference because of transportation problems.

The Corps invited affected Tribes to consult/meet on the 2005-2006 Draft AOP and the draft spring pulse technical criteria for the Master Manual revision. These meetings were held on January 11 and 12, 2006 in Rapid City, South Dakota and on January 26 in Pierre, South Dakota.

Numerous comments were received at the Tribal consultations/meetings and public meetings regarding the draft AOP and the spring rise component scheduled to be implemented for the first time in March of 2006. The 2005-2006 AOP includes the implementation of a spring pulse, as required by the U.S. Fish and Wildlife Service's (USFWS) 2003 Amended Biological Opinion on the Operation of the Missouri River Mainstem System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Channel, and Operation of the Kansas River Reservoir System (2003 Amended BiOp). In the spring of 2006, public and Tribal 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 2005-2006 Final AOP.

#### **III. MAINSTEM MASTER MANUAL AND ESA CONSULTATIONS**

The Missouri River Master Water Control Manual (Master Manual) presents the water control plan and operational objectives for the integrated regulation of the System. First published in 1960 and subsequently revised during the 1970's, the Master Manual was revised again in March 2004 to include more stringent drought conservation measures. The 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.

The 2003 Amended BiOp states:

"The Corps shall develop and complete studies to establish a long-term flow management plan for flow releases from Gavins Point Dam that will be implemented under the Master Manual. This study will establish, as minimum criteria, flows that provide sufficient magnitude, duration, frequency, and rate of change. The spring pulse shall be a bimodal release from Gavins Pont Dam that provides for spawning cues and floodplain connectivity in the later spring and early summer...This flow plan shall be responsive to the hydrologic conditions in the basin based on system storage, winter precipitation based on probabilities from historic records."

The RPA also included 'adaptive management' as an approach to preclude jeopardy to pallid sturgeon. The 2003 Amended BiOp states:

"The Corps shall adopt adaptive management as one tool to preclude jeopardy to pallid sturgeon. Adaptive management is a process that allows regular modification of management actions in response to new information and changing environmental conditions."

The 2003 Amended BiOp recommended the implementation of a long-term spring pulse plan by 2006. It presented an 'initial starting point' (ISP) spring pulse for the 2006 water year if an alternate plan that would meet the life-cycle needs of the pallid sturgeon could not be identified. The ISP spring pulse was to be implemented assuming near 'median hydroclimatic conditions' and allowed adjustments if conditions were not near 'median'. The 2003 Amended BiOp states:

"If the Corps, with the review and approval of the Service, is unable to determine a suitable flow management plan that incorporates the life history needs of the pallid sturgeon over all relevant flow frequencies within 2 years the Corps shall operate in the following manner in the operating year that begins on March 1, 2006. This initial starting point shall be subject to annual review and modification based on data collected and evaluated under the adaptive management program. This assumes a median hydroclimatic condition in the basin based on system storage, past precipitation, and projections of future precipitation based on historical probabilities."

In an attempt to develop a spring pulse plan as required by the 2003 Amended BiOp, the Corps enlisted the assistance of the U.S. Institute for Environmental Conflict Resolution (Institute), a Federal agency with a great amount of experience in similar endeavors. The Institute then invited Tribal representatives and Tribal members, State representatives, and a wide range of stakeholders to participate in the collaborative spring pulse identification process. However, these meetings did not constitute

consultation under 36 CFR Part 800, the PA, or Executive Order 13175 with the 28 affected Tribes. A first step in that process was to select a contractor to facilitate the discussions and lead the participants to develop a recommendation for the Corps to use in the establishment of a spring pulse plan. The Institute invited a representative number of participants to help select the facilitators for the process. They unanimously recommended selection of CDR Associates to fill that role. CDR subsequently established a 'Plenary Group' that was comprised of more than 50 stakeholders, Tribal representatives and Tribal members and State representatives. The Plenary Group chose to establish four technical working groups to provide technical assistance in Socio-Economic; Historical/Cultural/Burial support of its efforts: Site: Hydrology/Water Quality; Pallid Sturgeon/Fish and Wildlife. The Plenary Group met four times over a 3-month period in June through August 2005. Meetings of the technical working groups were also held periodically during this period. Issues considered by the plenary and technical working groups included, but were not limited to the following: water intakes, and water quality; human health issues; the biological needs of the species; impacts of a spring pulse on historic and cultural resources, interior drainage, groundwater, flood risk, erosion; and the need for monitoring historic and cultural resources, biological response and socio-economic impacts of the spring pulse. Even though the Plenary Group was unable to reach consensus on a total spring pulse plan, it and the technical working groups provided valuable input through CDR and the Institute to the Corps related to many of the factors that could comprise a total spring pulse plan.

The water control plan (WCP) in the current Master Manual does not contain any technical criteria for a spring pulse. Therefore, implementation of the spring pulse elements in 2006 is contingent upon the successful supplementation of the Master Manual for the spring pulse WCP technical criteria. The proposed spring pulse technical criteria was published as a separate document accompanying the 2005-2006 Draft AOP. That spring pulse technical criteria formed the basis for the reservoir regulation computer simulation modeling data related to the spring pulses presented in this Final 2005-2006 AOP. Computer simulation data without the spring pulse components are also presented to allow comparison of effects with and without the pulses.

All comments mailed by, or received by email, or in person as of January 26, 2006 were fully considered prior to the decision on the Final 2005-2006 AOP. A revision to the Missouri River Master Manual addressing the spring pulse technical criteria is expected to be completed by the end of February.

#### IV. FUTURE WATER SUPPLY: AUGUST 2005 - DECEMBER 2006

Water supply (runoff) into the six System reservoirs is typically low and relatively stable during the August-to-February period. The August 1 calendar year runoff forecast is used as input to the Basic reservoir regulation simulation (Simulation) in the AOP studies for the period August 2005 to February 2006. The August 1 runoff forecast for 2005 used was 19.8 million acre-feet (MAF). The actual runoff for Calendar Year 2005 was 20.4 MAF, very close to the August estimate. Two other runoff scenarios based on the August 1 runoff forecast were developed for the same period. These are the 80 percent and 120 percent of the August 1 runoff forecast scenarios, which are input to the 80 percent and 120 percent of Basic Simulations for the August 2005 to February 2006 period.

Simulations for the March 1, 2006 to February 28, 2007 time period use five statistically derived inflow scenarios based on an analysis of historic water supply records from 1898 to 1997. This approach 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 (34.5 MAF) has a 1 in 10 chance of being exceeded, Upper Quartile (30.6 MAF) has a 1 in 4 chance of being exceeded, and Median (24.6 MAF) has a 1 in 2 chance of being exceeded. Lower Quartile runoff (19.5 MAF) has a 1 in 4 chance of the occurrence of less runoff, and Lower Decile (15.5 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 120 percent of Basic simulation through February 2007. 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 80 percent of Basic simulation through February 2007.

The estimated natural flow at Sioux City, the corresponding post-1949 water use effects, and the net flow available above Sioux City are shown in *Table I*, where water supply conditions are quantified for the period August 2005 through February 2007. The natural water supply for calendar year (CY) 2004 totaled 16.2 MAF.

#### TABLE I NATURAL AND GROSS WATER SUPPLY AT SIOUX CITY (Volumes in 1,000 Acre-Feet)

	<u>Natural 1</u> /	<b>Post-1949 Depletions</b>	<u>Net 2/</u>
	(Volt	umes in 1,000 Acre-Feet)	
August 2005 through February 2006	6 (Basic Runoff S	Scenario)	
Basic	5,800	500	6,300
120% Basic	7,000	800	7,800
80% Basic	4,700	500	5,200
Runoff Year March 2006 through Fe	ebruary 2007 (Sta	atistical Analysis of Past Re	ecords)
Upper Decile	34,500	-2,400	32,100
Upper Quartile	30,600	-2,400	28,200
Median	24,600	-2,200	22,400
Lower Quartile	19,500	-2,300	17,200
Lower Decile	15,500	-2,200	13,300

1/ The word "Natural" is used to designate flows 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 streamflow after deduction of the post-1949 irrigation, upstream storage, and other use effects.

#### V. ANNUAL OPERATING PLAN FOR 2005-2006

A. <u>General</u>. The anticipated regulation described in this AOP is designed to meet the regulation objectives presented in the March 2004 Master Manual and is contingent upon the successful supplementation of the Master Manual for the Gavins Point Dam spring pulse elements. 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. The paragraphs below summarize some of the specific technical criteria included in the Master Manual. 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 plan relies on a wealth of regulation experience. Reservoir regulation experience available for preparation of the 2005-2006 AOP includes 13 years of regulation at Fort Peck (1940) by itself, plus 52 years of System experience as Fort Randall (1953), Garrison (1955), Gavins Point (1955), Oahe (1962), and Big Bend (1964) have been brought progressively into System regulation. This regulation experience includes lessons learned during the six consecutive years of drought from 1987 through 1992, the high runoff period that followed, and the current six-year drought that began in 2000. Runoff during the period 1993 to 1999 was greater than the Upper Quartile level in five of those seven years, including the record 49.0 MAF of runoff in 1997. In addition to the long period of actual System reservoir regulation experience, many background regulation studies for the completed System are available for reference.

As described in the Master Manual, flow support for navigation and other downstream purposes is defined based on service level. A "full-service" level of 35,000 cfs results in target flows of 31,000 cfs at Sioux City and Omaha, 37,000 cfs at Nebraska City and 41,000 cfs at Kansas City. Similarly, a "minimum service" level of 29,000 cfs results in target values of 6,000 cfs less than the full service levels. Selection of the appropriate service level is based on the actual volume of water-in-storage (storage) in the System on March 15 and July 1.

The relation of System storage to navigation service level is presented in *Table II*. The volumes presented in *Table II* were derived from long-range model simulations that helped identify how the System should be regulated to meet authorized purposes during significant multi-year droughts. Straight-line interpolation defines intermediate service levels between full and minimum service. These service level determinations are for conservation and normal System regulation. During years when flood evacuation is required, the service level is calculated monthly or more frequently if required to facilitate a smooth transition in System release.

As shown in *Table II*, the water control plan calls for suspension of navigation service if System storage is at or below 31 MAF on March 15 of any year. It should be noted that the occurrence of System storage at or below 31 MAF would likely coincide with a national drought emergency. If any of the reservoir regulation studies performed for the development of an AOP indicate that System storage will be at or below 31 MAF by the upcoming March 15, the Corps will notify the Secretary of the Army. Per the revised Master Manual, the Corps will obtain approval from the Secretary of the Army prior to implementation of back-to-back non-navigation years.

### TABLE IIRELATION 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)

The System storage check for navigation season length is made on July 1 of each year. Assuming the System storage is above 31 MAF on March 15, a navigation season will be supported. A full 8-month navigation season will be provided if System storage is 51.5 MAF or above on July 1, unless the navigation season is extended to evacuate flood control storage. However, if System storage falls below 51.5 MAF on July 1, a shortened navigation season will be provided to conserve water. The specific technical criteria for season length are shown in *Table III*. Straight-line interpolation between 51.5 and 46.8 MAF of storage on July 1 provides the closure date for a season length between 8 and 7 months. If System storage on July 1 is between 46.8 and 41.0 MAF, a 7-month navigation season is provided. A straight-line interpolation is again used between 41.0 and 36.5 MAF, providing for a season length between 7 and 6 months. For System storage on July 1 below 36.5 MAF, a 6-month season is provided.

## TABLE III RELATION OF SYSTEM STORAGE TO NAVIGATION SEASON LENGTH

Date	System Storage (MAF)	Final Day of Navigation Support <u>at Mouth of the Missouri River</u>
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)

The System release required to meet minimum and full service target flows varies by month in response to downstream tributary flows. An analysis of the average monthly Gavins Point release needed to meet flow targets was completed in 1999. As part of that study, the relationship between annual runoff upstream of Sioux City and

the average Gavins Point release required for the navigation season was analyzed. The study showed that generally more water was needed downstream to meet flow targets during years with below normal upper basin runoff than during years with higher upper basin runoff. Therefore, regulation studies performed since 1999 use two levels of System release requirements; one for Median, Upper Quartile, and Upper Decile runoff scenarios, and another for Lower Quartile and Lower Decile scenarios. The updated release requirements for full and minimum service flow support are given in *Table IV*. Releases required for minimum service flow support are 6,000 cfs less than full service support. A final report detailing the procedures used in this study is available on our web site.

An examination of the data presented in *Table IV* reflects that, early in the season, the target location is generally at Sioux City with adequate tributary flows meeting the other downstream flow targets. As the runoff season progresses, tributary flows normally recede during the summer, and the target location moves from Sioux City to Nebraska City and then to Kansas City. This requires higher flow support from the System as the season progresses through summer. Often the target moves upstream during the fall when higher downstream tributary flows return. This seasonal tributary flow pattern is reflected in the Gavins Point release data presented below.

The releases presented in *Table IV* are average monthly values during the period studied for various runoff conditions and do not reflect the range of daily releases that may be required during any given month to meet flow targets. Actual regulation, therefore, requires daily adjustments to fully serve the Congressionally authorized project purpose of navigation.

In general, releases from Gavins Point are adjusted as needed to meet target flow levels on the lower Missouri River. However, during the nesting season of the endangered interior least tern (tern) and the threatened piping plover (plover), care must be taken to avoid impacts to nesting areas. These two bird species are listed as threatened and endangered under the ESA and are protected under that Act. Several scenarios have been used in past years to regulate the System during the nesting season. Under the Steady-Release (SR) scenario, when the birds begin to initiate nesting activities in early to mid-May, the release from Gavins Point is set to the level expected to be required to meet downstream flow targets through August and maintained at that level until the end of the nesting season. This regulation results in releases that exceed the amount necessary to meet downstream flow targets during the early portion of the nesting season, and may result in targets being missed if basin conditions are drier than expected during the summer.

#### TABLE IV GAVINS POINT RELEASES NEEDED TO MEET TARGET FLOWS FOR INDICATED SERVICE LEVEL 1950 to 1996 Data (Discharges in 1,000 cfs)

<u>Median, Upper Quartile, Upper Decile Runoff</u>								
	Āpr	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
Low	er Qua	rtile, L	ower I	Decile I	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

25.2

28.3

28.0

27.5

27.1

25.2

23.8

25.3

Minimum Service

Gavins Point releases, under the Flow-to-Target (FTT) scenario, are adjusted as needed throughout the nesting season to meet downstream flow targets and would typically result in increasing releases as the nesting season progresses. This is due to reduced tributary inflows downstream as the summer heat builds, evaporation increases, and precipitation wanes. Increasing releases as the nesting season progresses can inundate nests and chicks on low-lying emergent sandbar habitat. Compared to the SR scenario, this scenario conserves more water in the System, which keeps the pool levels at the upper three System projects at relatively higher levels. However, this scenario also increases the risk of inundating nests. The FTT scenario also ensures that targets on the lower river are met throughout the nesting season.

A third scenario for Gavins Point releases combines features of the other two options. This scenario, called the Steady Release – Flow-to-Target (SR-FTT) scenario, sets Gavins Point releases at an initial steady rate, and then allows releases to be adjusted upward or downward during the nesting season to meet downstream flow targets, if necessary. Depending on where the initial steady release is set, this regulation makes a larger amount of habitat available early in the nesting season and saves additional water in the upper three reservoirs when compared to the SR scenario. The SR-FTT scenario also reduces the potential for flooding nests when compared to the FTT scenario. The SR-FTT regulation also provides certainty for downstream users that releases could be increased if needed to meet Missouri River flow targets.

The 2003 Amended BiOp recommended the implementation of a Gavins Point spring pulse plan by 2006. The 'initial starting point' presented in the 2003 Amended BiOp called for a bimodal spring pulse in March and May. The March rise was assumed to follow a winter release of 16,000 cfs or less and was to be at least 31,000 cfs

for no less than 7 days. Each of the ascending and descending limbs of the March spring pulse was to be 7 days in duration. The May rise was to be no less than 16,000 cfs above existing releases for at least 14 days. The ascending limb of the pulse was to be no less than 7 days and no more than 10 days. The descending limb was to be no less than 7 days but could extend longer as required by other project purposes.

The spring pulse plan presented in this AOP was developed based on the ISP presented in the 2003 Amended BiOp, input from the spring pulse Plenary Group and its technical working groups, and Tribal consultations/meetings and public comments received on the draft AOP. The Missouri River Basin is currently in the sixth year of an extended drought, and System storage is near-record low levels. The spring pulse elements of this AOP comply with the provisions of the ISP presented in the 2003 Amended BiOp while being responsive to the hydroclimatic conditions in the basin. The potential volume of System storage used for the 2006 spring pulses included in this AOP is much less than the ISP presented in the 2003 Amended BiOp, primarily through a reduction in the magnitude and duration of peak releases. The 2006 spring pulses would use approximately 160,000 acre-feet versus over 800,000 acre-feet with the BiOp ISP. The 2006 spring pulses would result in a 0.1 foot to 0.3 foot pool elevation decrease in each of the upper three reservoirs, or a 2 foot pool elevation decrease in Fort Randall reservoir. This reduces the adverse impacts associated with low reservoir storage levels such as water intakes located in reservoir pools and dewatering historic and cultural resource sites over the plan set forth in the 2003 Amended BiOp. The shorter duration and reduced magnitude of the spring pulses also reduce the risk of interior drainage problems, groundwater level increases and direct flooding below Gavins Point Dam. For the 2005-2006 AOP, a 36.5 MAF preclude has been selected. This will provide approximately the same likelihood of implementing a spring rise in 2006 as provided for under the ISP set forth in the 2003 Amended BiOp.

Primary consideration is being given to withdrawing the water needed for the May spring pulse from Fort Randall reservoir rather than one or more of the upper three reservoirs. This would avoid increasing the impacts due to the May pulse at Fort Peck, Garrison and Oahe reservoirs, which are already drawn down substantially due to the ongoing drought. If using Fort Randall in this manner is not feasible, the Corps would then give consideration to distributing the upstream storage reductions due to the May pulse equally among the upper three reservoirs. Prior to implementing the May pulse, the Corps will coordinate with the affected Tribes and States to evaluate the options and determine the best course of action to minimize adverse impacts, including those associated with water quality due to low reservoir levels, water intakes, historic and cultural sites and reservoir fisheries.

*Table V* summarizes the spring pulse technical criteria for the 2005-2006 AOP.

## TABLE VTECHNICAL CRITERIA FOR THE 2006 SPRING PULSESFROM GAVINS POINT DAM

Criteria Applicable to Both the March and May Spring PulsesFlood Control ConstraintsNo change from current levels						
<u>Criteria Ap</u> Drought Preclude	<u>plicable to the March Spring Pulse</u> 36.5 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.					
<u>Criteria Applicable t</u> Release	<u>o Time Period Between the Bimodal Pulses</u> Existing Master Manual Criteria					
<u>Criteria Ar</u>	pplicable to the May Spring Pulse					
Drought Preclude	36.5 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 magnitudes will be determined by taking the difference between prepulse Gavins Point releases and the peak pulse Missouri River flows measured just downstream of the mouth of the James River.

В. **2005-2006 AOP Simulations.** AOP simulations for the five runoff scenarios without a spring pulse are shown in the final section of this AOP as studies 4 through 8. Simulations which include spring pulses are shown for the Upper Decile, Upper Quartile, and Median runoff conditions as studies 9 through 11. The System storage checks are below the 36.5 MAF spring pulse drought preclude for 2006 for the two lowest runoff scenarios, so spring pulses are not shown for those runoff levels. Results of the simulations are shown in *Plates 3 and 4* for the System storage and the Fort Peck, Garrison and Oahe pool elevations. The March 15 and July 1 System storage checks from *Tables II* and *III* were used to determine the level of downstream flow support for navigation and other purposes as well as the navigation season length. For modeling purposes in this AOP, the SR-FTT regulation scenario with an initial steady release of 25,000 cfs is shown during the 2006 nesting season for Median runoff or above. The May minimum service release of 22,000 cfs was used for two-thirds of the days in May and 25,000 cfs was used for the other third to reflect every third day peaking cycle from Gavins Point. The June release was modeled as a steady 25,000 cfs due to the presence of chicks along the river at that time, and the *Table IV* releases were used for July and August to indicate flowing to target. For the two lower runoff conditions, Lower Quartile and Lower Decile, *Table IV* values were used for the period May though August because the May and June table values for those runoff conditions are slightly

greater than the planned initial steady release of 25,000 cfs. However, if actual release requirements are less than the *Table IV* values, releases will follow a pattern similar to that described earlier (cycling to 25,000 cfs every third day in May and a 25,000 cfs steady release in June). Although these modeled Gavins Point releases represent our best estimate of required releases during 2006, actual releases will be based on hydrologic conditions and the availability of habitat at that time. Once the majority of the birds have nested on the newly constructed, high elevation habitat, releases will be made to meet downstream targets. 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. Water conservation benefits all uses of the System (except flood control) through higher reservoir levels which result in increased service to authorized purposes. More normal reservoir levels also reduce potential impacts to water intakes, reduce exposure of some historic and cultural resources and provide better access to recreation sites.

*Table IV* values were used in all the AOP studies for navigation support during the spring and fall months. Winter 2005-2006 and winter 2006-2007 Gavins Point releases of 12,500 cfs are shown in the simulations. This is lower than actual winter releases required for downstream powerplants and water supply intakes prior to 2004, but completed and on-going modification of intakes will permit lower winter releases as a conservation measure when System storage is low. These modifications, along with favorable weather conditions last winter, allowed releases to average 12,400 cfs in December 2004 and 9,900 cfs in February 2005. January 2005 releases were slightly higher, at 13,700 cfs due to the formation of river ice. Non-winter, non-navigation Gavins Point releases were modeled at 9,000 cfs as a further water conservation measure as described in the 2004 Mainstem Master Manual, provided downstream tributary flows are adequate to serve water supply requirements. Adequate tributary flows in the Missouri River reach below the System allowed this goal to be achieved in the fall of 2004 and spring of 2005.

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 to meet the Missouri River target flows presented in the Master Manual.

Application of the July 1 System storage check shown on *Table III* indicates that without the spring pulses the navigation season will be shortened 14 days for Upper Decile, 27 days for Upper Quartile, 31 days for Median, 44 days for Lower Quartile, and 58 days for Lower Decile runoff. With the spring pulses, the navigation season is shortened 15 days for Upper Decile, 28 days for Upper Quartile, and 31 days for Median. System storage is below the spring pulse drought preclude for the two lowest runoff scenarios. Minimum service navigation flows are provided for all runoff

conditions due to low System storage. None of the simulations reach the desired 57.0 MAF System storage level on March 1, 2007.

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. During the late 1980 to early 1990 drought years, a two-day-down, one-day-up peaking cycle from Gavins Point was utilized during the nesting season. This regulation provided for lower flows for two out of three days to conserve water in the System while ensuring that T&E bird species did not nest on low-lying habitat. This cycling was successfully utilized both in May 2004 and May 2005 during nest initiation as a water conserve water at the beginning of the nesting season in 2006. It may also be necessary to cycle releases for flood control regulation during the T&E species' nesting season.

The Median, Upper Quartile, and Upper Decile simulations include releases that provide a steady to rising pool level in the three large upper reservoirs during the spring forage fish spawn period. The Lower Quartile and Lower Decile simulations are based on favoring a steady to rising Garrison reservoir during the spring forage fish spawn as part of the overall plan to rotate emphasis among the upper three reservoirs during low runoff years. This regulation is discussed in more detail later in this report.

Actual System regulation from January 1 through July 31, 2005 and the regulating plans for each project for CY 2006 using the five runoff scenarios described on Page 5 are presented on *Plates 5 through 10*, inclusive. Data is included with and without the spring pulse for the Median, Upper Quartile and Upper Decile runoff scenarios. 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 11* 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 2004 through July 2005. *Plate 12* presents past and simulated gross average monthly power generation and gross peaking capability for the System.

C. <u>Regulation for the Balance of the 2005 Navigation Season and Fall of 2005.</u> The regulation of the System for the period of August though November 2005 is presented in the following paragraphs.

<u>Fort Peck Dam</u>. Releases averaged near 7,000 cfs during August and the first half of September. In mid-September they were gradually reduced to 4,000 cfs. The releases

were held near that level until late November. The Fort Peck pool rose slightly through the period to end at 2202.9 on the last day of November. The record low pool is 2198.3 feet msl set in January 2005. The record low elevation during the previous drought was 2208.7 feet msl set in April 1991.

<u>Garrison Dam</u>. Releases continued at 15,500 cfs until mid-September when irrigation ceased, then were reduced to 12,500 cfs and generally were held at that rate until late November as a water conservation measure. The Garrison pool level declined to 1813.5 feet msl by the end of November. The record low pool is 1805.8 feet msl set in May 2005. The record low during the previous drought was 1815.0 feet msl in May 1991.

<u>Oahe Dam</u>. Releases averaged 23,500 cfs in August, and were reduced in September to initiate an early fall drawdown of the Fort Randall pool as the navigation season closed early in 2005. Low releases continued in October and November to complete the annual fall draw of Fort Randall. Releases were increased in late November for winter power production. The Oahe pool ended the period at elevation 1575.6 feet msl. The record low Oahe pool is 1572.0 feet msl set in August 2004. The record low during the previous drought was 1580.7 feet msl set in November 1989.

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

<u>Fort Randall Dam</u>. Releases averaged 23,100 cfs in August and were scheduled in September to back up the releases from Gavins Point Dam. When the navigation season ended in early October, releases were gradually lowered to as low as 7,000 cfs in October and ranged from 7,000 to 9000 cfs through late November. The majority of the Fort Randall fall pool draw down occurred in September with the remaining drawdown accomplished gradually from October through early December. The pool reached a minimum level of 1437.8 on December 7, 2005.

<u>Gavins Point Dam</u>. Releases from Gavins Point Dam averaged 23,400 cfs in August. Releases were scheduled to support downstream minimum service flows until the first week of October when they were reduced by 3,000 cfs per day until they reached 10,000 cfs. The 10,000 cfs release was maintained for 5 days to allow sufficient travel time for the release changes to reach the critical downstream locations and then the release was stepped down to the fall non-navigation season rate of 9,000 cfs on October 15, 2005. Intakes were closely monitored during this period to ensure their operability. Releases were increased in November due to unusually low tributary inflows. The 9,000 cfs fall non-navigation season release rate is based on sufficient incremental downstream tributary flows. Downstream tributary flow was adequate in 2004 to allow a reduction to the 9,000 cfs level. In the fall of 2005 from mid-October

through the first week in November the 9,000 cfs rate was also adequate to meet downstream water supply requirements. We believe that this 9,000 cfs minimum spring-fall release represents a reasonable long-term goal for water intake owners to strive for as they make improvements to their facilities. The navigation season was shortened 48 days in 2005 in accordance with the July 1 System storage check given in the Master Manual. The Gavins Point pool level was raised 1.5 feet to elevation 1207.5 feet msl in August when it was determined that T&E species were not nesting along the reservoir. The pool level will remain near that elevation during the fall and winter months.

Regulation Plan for Winter 2005-2006. The September 1 System storage D. check is used to determine the amount of the winter System release. During the winter of 2005-2006, we will strive to average a 12,000 cfs System release. If mild weather conditions prevail, System releases may be set lower than 12,000 cfs, but only if downstream water supply intakes can remain operable at those levels. Conversely, 12,000 cfs may be less than is required for downstream water supply intakes without sufficient incremental tributary inflow below the System, and therefore, releases may need to be set at levels higher than 12,000 cfs at times to ensure downstream water supply intakes are operable. However, we believe that this minimum winter flow represents a reasonable long-term goal for water intake 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 if ice jams or blockages form which temporarily restrict flows, therefore the model results indicate an average winter System release of 12,500 cfs to allow for these increases. Based on past experiences, these events are expected to occur infrequently and be of short duration. It is anticipated that this year's winter release will be adequate to serve all downstream water intakes except for very short periods during significant river ice formation or ice jamming.

<u>Fort Peck Dam</u>. Releases are expected to average between 6,000 and 8,000 cfs, well below the 1967-2004 average, to serve winter power loads and balance System storage from December through January,. The Basic simulation shows that the Fort Peck pool level remains near elevation 2201 feet msl during the winter period, ending February 33 feet below the base of the annual flood control storage zone. Carryover multiple purpose storage in the three large upper reservoirs will be near a balanced condition on March 1, 2006. The pool level is expected to rise during March to near elevation 2202 feet msl, ending the month 29 feet below normal.

<u>Garrison Dam</u>. Releases will be adjusted to serve winter power loads and balance System storage. Releases were scheduled at 15,000 cfs at the time of freeze-in and then were increased back to the 18,000 to 18,500 cfs range as conditions improved. Releases may have to be reduced for a short period during any re-freeze-in in the Bismarck area since warmer temperatures have melted a significant portion of the downstream ice cover as of mid-January. This reduction in releases is scheduled to prevent exceeding a targeted 13-foot stage at the Bismarck gage. Flood stage is 16 feet. Garrison releases are expected to average 18,000 to 18,500 cfs during the remaining winter period, 3,000 to 7,000 cfs less than normal. The Garrison pool level is expected to fall from near elevation 1815 feet msl to elevation 1810 feet msl by March 1, 27.5 feet below the base of the annual flood control storage zone. The Median simulation indicates the pool level will rise to elevation 1812 feet msl by March 31, which would be 22.5 feet below normal.

<u>Oahe Dam</u>. 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 15,000 cfs. Daily releases will vary widely to best meet power loads. Peak hourly releases, as well as daily energy generation, will be constrained to prevent urban flooding in the Pierre and Fort Pierre areas if severe ice problems develop downstream of Oahe Dam. This potential reduction has been coordinated with the Western Area Power Administration.

The Oahe pool level is expected to gradually rise from elevation 1576 feet msl at the end of November to elevation 1579 feet msl by March 1, 28.5 feet below the base of the annual flood control storage zone. The pool is expected to rise to elevation 1582 feet msl by the end of March, 23 feet below normal.

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

<u>Fort Randall Dam</u>. Releases will average near 11,000 cfs. The Fort Randall pool level is expected to rise from a low elevation of 1337.5 feet msl to near elevation 1350.0 feet msl, the seasonal base of flood control, by March 1. However, if the plains snowpack flood potential downstream of Oahe Dam remains quite low, measures will be taken to raise the Fort Randall pool level to near elevation 1353.0 feet msl by March 1. It is likely that a pool level above elevation 1353.0 feet msl, to as high as 1355.2 feet msl, will 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 likely 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.

<u>Gavins Point Dam</u>. 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, primarily from the Niobrara River along the Fort Randall to Gavins Point reach. System storage for all five runoff conditions will be substantially below the base of the annual flood control zone by March 1, 2006, the beginning of next year's runoff season.

E. Regulation During the 2006 Navigation Season. The Upper Decile, Upper Quartile, Median, Lower Quartile, and Lower Decile runoff scenarios modeled for this year's AOP follow the specific technical criteria presented in the March 2004 Master Manual for downstream flow support. The normal 8-month navigation season is shortened as a water conservation measure for all runoff scenarios as shown in Table VI. 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. As previously stated, the model runs included in this AOP have a Gavins Point release peaking cycle of two days down and one day up during May to keep birds from nesting at low elevations, then increasing on June 1 to the release required to meet downstream minimum service support to navigation flows through August. The planned regulation for the 2006 nesting season will be SR-FTT. The initial steady release, which is estimated to be 25,000 cfs, will be based on hydrologic conditions and the availability of habitat at that time. Once the majority of the birds have nested, releases will be adjusted to meet downstream targets. 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.

	Runoff Scenario <u>(MAF)</u>	System S March 15 <u>(</u> MAF)	torage July 1 (MAF)	Flow Lev Below Fr	Season Shortening <u>(Days)</u>	
				<u>Spring</u>	Summer/Fal	1
Witho	ut Spring Pulse	<u>,</u>				
U.D.	34.5	39.7	49.4	-6,000	-6,000	14
U.Q.	30.6	39.4	47.4	-6,000	-6,000	27
Med	24.6	37.5	43.2	-6,000	-6,000	31
L.Q.	19.5	35.8	39.1	-6,000	-6,000	44
L.D.	15.5	35.7	36.9	-6,000	-6,000	58
<u>With S</u>	pring Pulse					
U.D.	34.5	39.7	49.2	-6,000	-6,000	15
U.Q.	30.6	39.4	47.2	-6,000	-6,000	28
Med	24.6	37.5	43.0	-6,000	-6,000	31

#### TABLE VI NAVIGATION SERVICE SUPPORT FOR THE 2006 SEASON

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. The studies show that inflows are sufficient to maintain steady to rising pools at Fort Peck and Garrison in April and May for Lower Quartile and Lower Decile runoff scenarios, however Oahe would fall during this period. 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. If runoff is not sufficient to keep all the pool levels rising during the fish spawn in 2006, the Corps will, to the extent reasonably possible, set releases to result in a steady to rising pool at Garrison during April and May. This will be accomplished through a combination of increased releases from Fort Peck and reduced releases from Garrison, but no less than the minimum required to meet downstream water supply needs. Adjustments to Garrison's releases, however, may be necessary when the terns and plovers begin nesting in May. If the drought continues, emphasis during the fish spawn will be rotated between Garrison and Oahe. In years when Oahe is favored, Fort Peck releases will be set at a level that would maintain the rising pool, but no less than the minimum required to supply downstream irrigation. Management of the reservoirs during the fish spawn will continue with consideration of other Congressionally authorized project purposes, be opportunistic with regard to runoff potential, and will continue to evolve as additional information becomes available.

All five runoff scenarios studied for this year's AOP provide gradually increasing Gavins Point releases to provide Missouri River navigation season flow support at the mouth of the Missouri near St. Louis on April 1, 2006, 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 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, as was done in 2004 and 2005. The studies illustrated on *Plates 5 through 10* and summarized in *Table VI* are based on providing minimum service flows (except May through July when flows may exceed minimum service) and a shortened navigation season for all runoff scenarios. For the no spring pulse scenario, navigation season shortening is shown as 14 days from the normal 8month season for Upper Decile, 27 days for Upper Quartile, 31 days for Median, 44 days for Lower Quartile, and 58 days for Lower Decile. One additional day of shortening is required for Upper Decile and Upper Quartile runoff with the spring pulse regulation included. The navigation season shortening is the same with or without the spring rise for Median runoff

Navigation flow support for the 2006 season will be determined by actual System storage on March 15 and July 1. Although all runoff scenarios modeled indicate minimum service flow support throughout the navigation season, if the July 1 System

storage check indicates an increase in service level, any increase may be delayed until the end of the T&E bird species' nesting season, depending on the potential for 'take' of those species. Gavins Point releases may be quite variable during the 2006 navigation season but are expected to range from 22,000 to 28,000 cfs. Release reductions necessary to minimize downstream flooding are not reflected in these monthly averages but will be instituted as conditions warrant. Simulated storages and releases for the System and individual reservoirs within the System are shown on *Plates 5 through 10.* Ample storage space exists in the System to control flood inflows under all scenarios simulated for this AOP.

Two modified reservoir regulation plans shown in previous AOPs, the Fort Peck "mini-test" and unbalancing the upper three reservoirs, will not be implemented under most runoff scenarios in 2006 due to low System storage. Intrasystem unbalancing is shown on March 1, 2007 in the Upper Decile runoff scenario. When System storage recovers sufficiently, the Corps anticipates that both these plans will be implemented.

The first of these two modified plans is a test of flow modifications for the endangered pallid sturgeon. When Fort Peck has adequate water above the spillway crest by mid to late-May of any year, a flow modification "mini-test" will be conducted in early June to monitor effects of higher spring releases and warmer water released from the spillway. The purposes of the "mini-test" are to allow for an evaluation of the integrity of the spillway structure, to test data collection methodology, and to gather information on river water temperatures with various combinations of flow from the spillway and powerhouse. Streambank erosion and fishing impacts will also be monitored. Stop protocol for the "mini-test" is identified in the Fort Peck Flow Modification Mini-Test Environmental Assessment, dated March 2004. Before either test is run, the Corps will fully coordinate with the Assiniboine and Sioux Tribes of the Fort Peck Reservation, the State of Montana, and potentially affected stakeholders.

During the Fort Peck "mini-test," which will last about four weeks, flows will vary from 8,000 to 15,000 cfs as various combinations of spillway and powerplant releases are monitored. The maximum spillway release of 11,000 cfs will combine with a minimum powerplant release of 4,000 cfs for six days. This test will be timed to avoid lowering the pool level during the forage fish spawn. The "mini-test" will not be conducted if sufficient flows will not pass over the spillway crest (elevation 2225 feet msl). A minimum pool level of about 2229 feet msl is needed during the test to avoid unstable flows over the spillway. Results of the AOP simulations show that this elevation will not be achieved in 2006 for any of the five runoff scenarios. A more extensive test with a combined 23,000 cfs release from Fort Peck is scheduled to be conducted beginning in early June in the year following the "mini-test" to allow further tests of the integrity of the spillway and to determine if warm water releases will benefit the native river fishery. Peak outflows during the full test would be maintained for two weeks within the four-week test period. The second modified regulation plan involves unbalancing the three large upper reservoirs as shown on *Table VII* to benefit reservoir fishery and the three protected species. Reservoir unbalancing is computed based on the percentage of the carryover multiple purpose pool that remains in Fort Peck, Garrison and Oahe Reservoirs. The unbalancing would alternate at each project; high one year, float (normal regulation) the next year, and low the third year, as shown on *Table VII*. *Table VIII* shows the pool levels proposed by the MRNRC below which unbalancing would not be implemented. *Table VIII* indicates that the upper three projects should be balanced on March 1, 2006; however, with Upper Decile runoff in 2006, reservoir unbalancing is indicated for March 1, 2007. Therefore the Upper Decile study shows an unbalanced System on March 1, 2007. Due to the need to conduct the Fort Peck mini-test as soon as possible, the Upper Decile study shows unbalancing approximately 4 feet in favor of Fort Peck by March 2007. As indicated in *Table VII*, when Fort Peck is high, Garrison is low (approximately 3 feet) and Oahe is at the balanced elevation.

	Fort 1	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

TABLE VII RESERVOIR UNBALANCING SCHEDULE

**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.

#### TABLE VIII MRNRC RECOMMENDED RESERVOIR ELEVATION GUIDELINES FOR UNBALANCING

	Fort Peck	Garrison	Oahe
Implement unbalancing			
if March 1 pool is above	2234	1837.5	1607.5
this level.	feet msl	feet msl	feet msl
Implement unbalancing if March 1 pool level is in this range <b>and</b> 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

**F.** <u>Regulation Activities for T&E Species and Fish Propagation Enhancement.</u> As discussed in the previous section, the 2005-2006 AOP includes no provisions for unbalancing the Fort Peck, Garrison, and Oahe reservoirs on March 1, 2006 for any of the runoff scenarios. The criteria for unbalancing are based on recommendations provided by the MRNRC and the USFWS. However the Upper Decile runoff scenario does show unbalancing in favor of Fort Peck on March 1, 2007. Under all simulations except Upper Decile, System storage will be below the minimum levels under which unbalancing is recommended by either the MRNRC or the USFWS.</u>

<u>Fort Peck Dam</u>. Unlike previous years, the repetitive daily pattern of releases from Fort Peck Dam was not implemented during the 2005 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 habitat, and thus were not expected to be impacted by the potential range of releases from Fort Peck during the summer of 2005. Releases during the 2006 nesting season will not be restricted by the repetitive daily pattern unless habitat conditions or nesting patterns change. This regulation should result in habitat conditions for nesting terns and plovers, similar to what was available in 2005.

If flood flows enter the Missouri River below the project during the nesting season, hourly releases will 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. April releases should be adequate for trout spawning below the project. A rising pool during the fish spawn in May and June will be dependent upon the daily inflow pattern to the reservoir but appears possible with all runoff simulations. However, because Garrison will be favored during the fish spawn in 2006, it may be necessary to adjust Fort Peck releases to ensure a steady to rising pool at Garrison in the event of very low runoff. The T&E flow modification "mini-test" will not be run under any runoff scenario. The Fort Peck pool level must be at elevation 2229 feet msl to allow releases required for the "mini-test" through the spillway.

<u>Garrison Dam</u>. Daily average releases from Garrison will be much less than full powerplant capacity during the tern and plover nesting season under all runoff scenarios. Monthly average releases will decline 500 to 1,000 cfs during the summer nesting season. Hourly peaking will be restricted during the nesting season to limit peak stages below the project for nesting birds.

The Garrison pool level may again approach a level that jeopardizes the volume of cold-water habitat in 2006. If runoff is not sufficient to keep all the pool levels rising during the fish spawn in 2006, the Corps will, to the extent reasonably possible, set releases to result in a steady to rising pool at Garrison during April and May. This will be accomplished through a combination of increased releases from Fort Peck and reduced releases from Garrison, but no less than the minimum required to meet downstream water supply needs. Adjustments to Garrison's releases, however, may be necessary when the terns and plovers begin nesting in May. A rising pool during the fish spawn in April and May will be dependent upon the daily inflow pattern to the reservoir but appears possible with all runoff simulations.

<u>Oahe Dam</u>. Releases in the spring and summer will back up those from Gavins Point Dam. Given Median or higher runoff, the pool level should be steady to rising in the spring. If runoff is not sufficient to keep all the pool levels rising during the fish spawn in 2006, the Corps will, to the extent reasonably possible, set releases to result in a steady to rising pool at Garrison during April and May. Oahe pool levels may fall during April and May if runoff is low and/or releases from Garrison are reduced to ensure a rising pool level at that reservoir. Under all AOP simulations, the Oahe pool will fall during the summer.

<u>Fort Randall Dam</u>. Primary consideration is being given to staging or storing extra water in Fort Randall reservoir prior to the May Gavins Point spring pulse to avoid increasing the risk of potential impacts at the upper three reservoirs including those associated with water quality due to lower reservoir levels, water intake access problems and historic and cultural site exposure.

To the extent 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. Hourly releases from Fort Randall during the 2006 nesting season will be restricted 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 if conditions turn dry.

<u>Gavins Point Dam</u>. Assuming System storage is above the spring pulse precludes, March and May spring pulses will be made from Gavins Point Dam for the benefit of the endangered pallid sturgeon. Details related to the spring pulses, including the specific technical criteria for the 2006 pulses, are presented in *Table V*.

Based on 2003 through 2005 nesting season results with the SR-FTT regulation and planned habitat development activities, it is anticipated that sufficient habitat will be available above the planned release rates to provide for successful nesting. All reasonable measures to minimize the loss of nesting T&E bird species will be used. These measures include, but are not limited to, such things as a relatively high initial SR 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 tows and river conditions at intakes would also be monitored to determine if an increase could be temporarily delayed with little or no 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 day-to-day variations due to rainfall runoff. Greater fluctuations occur in the river, increasing the risk of nest inundation in the upper end of the Gavins Point pool. Several factors contribute to the increased risk of nest 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, Gavins Point releases are restricted during the nesting season to minimize loss of nests or chicks. Second, rainfall runoff between Fort Randall Dam and Gavins Point Dam can result in sudden pool rises because the Gavins Point project has a smaller storage capacity than the other System reservoirs. Third, the regulation of Gavins Point for downstream flood control may necessitate sudden release reductions to prevent downstream T&E bird species losses. And finally, high releases required in wet years make nest inundation more likely. 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. It is anticipated that planned habitat creation projects in Lewis and Clark Lake may reduce these risks to T&E bird species by providing higher secure habitat for nesting. 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.

**Regulation Activities for Historic and Cultural Properties.** As acknowledged in G. the 2004 Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System (PA), the fluctuation of the water has erosion affects under normal operating conditions. With the recent drought conditions additional sites have become exposed as the waters have receded. 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 writing 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 System regulation. Under all simulations System storage will be below normal levels and pool elevation at the upper three reservoirs will remain low, continuing to expose cultural sites along the shorelines. Actions to avoid, minimize or mitigate adverse impacts and expected results of the actions are covered under Chapter VI of this AOP. *Plate 15* shows the locations of the Tribal Reservations.

<u>Fort Peck Dam</u>. Depending on runoff in the Missouri River basin, System regulation during 2006 could result in a Fort Peck pool elevation variation from a high of 2231 feet msl to a low of 2193 feet msl. This is based on the upper and lower decile runoff scenarios (see *Plate* 7 and the studies included at the end of this report). Based on a review of existing information, approximately 25 to 50 known sites could be affected during this period.

<u>Garrison Dam</u>. Based on the upper and lower decile runoff scenarios (see *Plate 8* and the studies included at the end of this report), Garrison pool elevations could range between 1832 and 1804 feet msl during 2006. Based on a review of existing information, approximately 100 to 150 known sites could be affected during this period.

<u>Oahe Dam</u>. At the Oahe reservoir, the System regulation under the upper and lower decile runoff scenarios could result in pool elevations between 1601 and 1566 feet msl (see *Plate 9* and the studies included at the end of this report). Based on a review of existing information, approximately 200 to 250 known sites could be affected during this period.

<u>Big Bend Dam</u>. System regulation will be adjusted to maintain the Big Bend pool level in the normal 1420 to 1421 feet msl range during 2006. Short-term increases above 1421 due to local rainfall may also occur. Based on a review of existing information, approximately 40 to 80 known sites could be affected during this period.

<u>Fort Randall Dam</u>. 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

2006. 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 refill during the winter to elevation 1350 feet msl. Based on a review of existing information, approximately 75 to 100 known sites could be affected during this period.

<u>Gavins Point Dam</u>. System regulation will be adjusted to maintain the Gavins Point pool level in the normal 1206 to 1207.5 feet msl range during 2006. Short -term increases above 1207.5 feet msl may occur due to local rainfall. Based on a review of existing information, approximately 25 to 50 known sites could be affected during this period.

### VI. SUMMARY OF RESULTS EXPECTED IN 2006

With regulation of the System in accordance with the 2005-2006 AOP outlined in the preceding pages, the following results can be expected.

**A.** <u>Flood Control</u>. All runoff scenarios studied will begin the March 1, 2006 runoff season substantially below the desired 57.0 MAF base of annual flood control and multiple use zone. Therefore, the entire System flood control zone, plus an additional 5.7 to 23.9 MAF of the carryover multiple use zone, will be available to store 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.

Remaining storage in the carryover multiple use zone will be adequate to provide support for all of the other multiple purposes of the System, though at reduced levels.

**B.** <u>Water Supply and Water Quality Control</u>. 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 current drought have contributed to both intake access and water quality problems for intakes on Garrison and Oahe reservoirs, including several Tribal intakes. The Standing Rock Sioux Tribe's intake at Fort Yates failed in November 2003 leaving the community without water for several days. The intake, which under normal circumstances is in Oahe reservoir, is presently in an open river situation due to Oahe reservoir receding as the pool level declined. The Bureau of Reclamation (BOR) has installed a temporary intake and drilled a well to ensure continued water supply for that community. The BOR has also lowered the intake at Wakpala on Oahe reservoir. The Corps has used its emergency authority to lower the intake at Parshall on Garrison reservoir. Other intakes that have been identified as having problems or potential problems include Mandaree and Twin Buttes on Garrison reservoir, and the Mni Waste' intake on Oahe reservoir. The Corps is working with the Cheyenne River Sioux Tribe to relocate the Mni Waste' water intake which serves over 14,000 residents of and near the Cheyenne River Indian Reservation in Dewey, Ziebach, and Meade Counties in South Dakota. If the drought continues, reservoir pool levels and releases may continue to fall below their previous historic lows creating the potential for additional intake access and water quality problems at both river and reservoir intakes.

Although below normal winter releases are being provided for all five 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. It is possible with the low winter releases that ice formation or ice jams may temporarily reduce river stages to levels below which some intakes can draw water. Therefore, during severe cold spells, experience has shown that for brief periods it may be necessary to increase Gavins Point releases to help alleviate downstream water supply problems.

During the non-navigation periods in the spring and fall, System releases as low as 9,000 cfs are possible with adequate downstream tributary flow, as was provided in the fall of 2004 and the spring and fall of 2005, to conserve water in the System for future use by all authorized purposes. If a non-navigation year would occur, summer releases as low as 18,000 cfs from the System are possible during the summer months. These lower release rates are expected to result in reduced river levels that may impact some downstream intakes that have marginal access to the Missouri River. Historically, water access problems have been associated with several of these intakes; however, in most cases the problems have been a matter of restricted access to the river or reservoir rather than insufficient water supply. 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.

**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 drought conditions persist. Tributary irrigation water usage is fully accounted for in the estimates of water supply.

**D.** <u>Navigation</u>. Service to navigation in 2006 will be scheduled at minimum service flow support for all runoff scenarios. Although the AOP simulations provide a comparison of typical flow support under varying runoff conditions, the actual rate of flow support for the 2006 navigation season will be based on actual System storage on March 15 and July 1, 2006.

All simulations have a shortened navigation season. The anticipated service level and season length for all runoff conditions simulated are shown in *Table VI*.

E. <u>Power</u>. *Tables IX and X* give the estimated monthly System load requirements and hydropower supply of the Eastern Division, Pick-Sloan Missouri Basin Program (P-S MBP), from August 2005 through December 2006. 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.

**F.** <u>Recreation, Fish and Wildlife</u>. 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. As a result of the drought, the upper three reservoir levels will remain well below normal and recreation access will be limited at several locations. Special regulation adjustments incorporating specific objectives for these purposes will be accomplished whenever possible. Conditions in the lower three reservoirs 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.

Boat ramps that were lowered and low water ramps that were constructed during the drought of the late 1980's to early 1990's and the further improvements made in 2003 through 2005 should provide adequate reservoir access this year even under the Lower Decile runoff scenario. However, boat ramps in some areas where the ramps cannot be extended may become unusable. This will affect the normal use patterns as visitors will have to seek out areas with usable boat ramps. Boat ramp elevations for Fort Peck, Garrison, Oahe and Fort Randall reservoirs are available on the Missouri River Basin Water Management Division web site at <u>www.nwd-mr.usace.army.mil/rcc</u>.

The effects of the simulated System regulation during 2006 on fish and wildlife, including the spring pulse from Gavins Point Dam for the benefit of the endangered pallid sturgeon, are included in Chapter V, Section F, entitled, "Regulation Activities for T&E Species and Fish Propagation Enhancement."

**G.** <u>Historic and Cultural Properties</u>. As mentioned in Chapter V of this AOP, the regulation of the System during 2005 and 2006 will expose cultural sites due to erosion from the normal fluctuation of pool elevations as well as the recent drought conditions which has exposed previously inundated sites as the waters have receded. 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 writing a PA is to deal "…with the potential adverse effects of complex projects or multiple undertakings…" The PA objective was

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

	Estimated Committed												Exp	ected To	otal	
	Sales*	Ex	pected	C of E C	apability	/	Exp	ected I	Bureau (	Capabili	ty		Syste	m Capa	bility	
2005	5		120%	Basic	80%			<u>120%</u>	Basic	80%			120%	Basic	80%	
Aug	2261		2039	2035	2032			211	210	207			2250	2245	2239	
Sep	1844		2009	2001	1994			209	207	206			2218	2208	2200	
Oct	1808		2007	1996	1984			209	207	205			2216	2203	2189	
Nov	1889		2018	2000	1986			208	206	203			2226	2206	2189	
Dec	2055		2039	2011	1993			202	202	198			2241	2213	2191	
2006	6															
Jan	2240		2058	2028	2004			195	196	194			2253	2224	2198	
Feb	1993		2066	2038	2013			187	193	190			2253	2231	2203	
		<u>U.D.</u>	<u>U.Q.</u>	Med	<u>L.Q.</u>	<u>L.D.</u>	<u>U.D.</u>	<u>U.Q.</u>	Med	<u>L.Q.</u>	<u>L.D.</u>	<u>U.D.</u>	<u>U.Q.</u>	Med	<u>L.Q.</u>	<u>L.D.</u>
Mar	1903	2106	2097	2060	2021	2016	190	190	193	180	189	2296	2287	2253	2201	2205
Apr	1778	2134	2121	2072	2021	2012	194	194	196	178	189	2328	2315	2268	2199	2201
May	1815	2163	2145	2088	2025	2007	199	200	204	182	193	2362	2345	2292	2207	2200
Jun	1934	2216	2190	2131	2059	2021	213	213	213	188	199	2429	2403	2344	2247	2220
Jul	2346	2236	2206	2136	2051	2004	213	213	213	186	196	2449	2419	2349	2237	2200
Aug	2259	2230	2204	2126	2033	1981	209	210	210	184	193	2439	2414	2336	2217	2174
Sep	1844	2234	2196	2115	2030	1942	208	209	208	185	192	2442	2405	2323	2215	2134
Oct	1808	2198	2164	2080	2026	1945	205	207	206	187	193	2403	2371	2286	2213	2138
Nov	1889	2205	2175	2087	2029	1947	202	204	203	187	194	2407	2379	2290	2216	2141
Dec	2055	2191	2161	2063	2004	1915	196	198	199	186	192	2387	2359	2262	2190	2107

\* Estimated sales, including system reserves. Power in addition to hydro production needed for these load requirements wil 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 X ENERGY GENERATION AND SALES (Million kWh at plant)

	stimated ommitted													ected T		
_	Sales*	Exp	ected (	C of E G	eneratic	n	Expe	ected Bu	ureau G	eneratio	n **		Syster	m Gene	ration	
2005			<u>120%</u>	Basic	<u>80%</u>			<u>120%</u>	Basic	<u>80%</u>			<u>120%</u>	Basic	<u>80%</u>	
Aug	842		655	662	669			72	66	56			727	727	725	
Sep	713		460	462	488			64	62	52			524	524	540	
Oct	721		347	346	359			64	63	52			411	408	411	
Nov	779		290	289	289			74	63	56			364	352	345	
Dec	887		497	466	465			87	71	57			584	536	522	
2006																
Jan	899		474	465	450			84	69	57			558	534	507	
Feb	868		387	417	428			74	61	50			461	478	477	
		<u>U.D.</u>	<u>U.Q.</u>	Med	<u>L.Q.</u>	<u>L.D.</u>	<u>U.D.</u>	<u>U.Q.</u>	Med	<u>L.Q.</u>	<u>L.D.</u>	<u>U.D.</u>	<u>U.Q.</u>	Med	<u>L.Q.</u>	<u>L.D.</u>
Mar	793	409	441	432	478	473	80	80	67	47	48	489	521	499	525	521
Apr	742	465	501	516	601	589	71	71	60	38	40	537	572	577	639	629
May	687	578	618	637	685	676	81	78	66	43	44	659	696	703	728	720
Jun	749	625	652	670	658	655	107	101	75	44	45	732	753	745	701	700
Jul	831	724	741	759	797	785	148	138	89	56	47	872	879	848	853	832
Aug	846	780	756	748	750	729	99	92	81	56	46	879	848	828	806	775
Sep	718	631	576	568	331	484	94	89	85	54	45	725	665	653	385	529
Oct	722	475	527	486	353	287	94	89	85	57	49	569	615	570	410	336
Nov	783	429	339	331	321	306	87	88	80	55	47	517	427	411	375	353
Dec	890	<u>559</u>	<u>575</u>	<u>523</u>	<u>528</u>	<u>485</u>	<u>89</u>	<u>90</u>	<u>81</u>	<u>56</u>	<u>48</u>	<u>648</u>	<u>664</u>	<u>604</u>	<u>584</u>	<u>533</u>
CY TOT	9528	6536	6586	6552	6382	6346	1109	1073	900	612	565	7646	7658	7451	6990	6911

\* 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.

to collaboratively develop a preservation program that would avoid, minimize and/or mitigate the adverse affects of the System operation.

The planned preservation program for this AOP is outlined by multiple stipulations in the PA. One of the stipulations, or program components, is the five-year plan. This plan outlines how the Corps will accomplish its responsibilities under the PA and the National Historic Preservation Act. The "Draft Five Year Plan, dated February 2005" (see <a href="https://www.nwo.usace.army.mil/CR/">https://www.nwo.usace.army.mil/CR/</a>) 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 2005-2006. 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 <u>https://www.nwo.usace.army.mil/CR/</u>) is in place. This monitoring plan outlines the sites that require monitoring and specifies a frequency for monitoring. The Corps plans to strategically monitor sites, those sites within the potential operating pool elevations, to document the effects of the implementation of the 2005-2006 Annual Operating Plan, which includes the Spring Pulse technical criteria. 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 will result in more accurate data on the current impacts to sites along the river plus it will assist in the identification of sites for mitigation. Training for the monitoring team is currently scheduled for March 2006.

Secondly, it is expected that the monitoring of the implementation of the Annual Operating Plan, which includes the Spring Pulse technical criteria, will identify sites that will require immediate mitigation. The Corps plans to compile the data from the monitoring efforts and determine which sites will require immediate mitigation, most likely stabilization, during the implementation of this AOP. It is expected that there will be more sites than funding will allow, so the Corps will work with the affected Tribes, Tribal Historic Preservation Officers, the Advisory Council on Historic Preservation, State Historic Preservation Officers, and other consulting parties in the prioritization of those sites that need stabilization.

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 2006 on cultural sites are included in the Chapter V, section G., entitled, "Regulation Activities for Historic and Cultural Properties."

**H.** <u>System Storage</u>. If presently anticipated runoff estimates based upon the August 1, 2005 Basic runoff forecast materialize, System storage will total about 36.1 MAF by the close of CY 2005, 0.9 MAF higher than the record low end-of-year storage of 35.2 MAF set in 2004. This end-of-year storage is 17.9 MAF less than the 1967 to 2004 average. The record low storage during the 1988-1992 drought was 40.8 MAF in January 1991. The end-of-year System storages have ranged from a maximum of 60.9 MAF, in 1975, to the 2004 minimum of 35.2 MAF. Forecasted System storage on December 31, 2006 is presented in *Table XI* for the runoff scenarios simulated.

I. <u>Summary of Water Use by Functions</u>. Anticipated water use in CY 2005, under the regulation plan with the Basic Forecast of water supply is shown in *Table XII*. Actual water use data for CY 2004 are included for information and comparison. Under the reservoir regulation simulations in this AOP, estimated water use in CY 2006 also is shown in *Table XII*.

Water Supply Condition	Total <u>(12/31/06)</u> (Volumes	Carryover Storage <u>Remaining 1/</u> s in 1,000 Acre-Fee	Unfilled Carryover <u>Storage 2/</u> et)	Total Change CY 2006
Without Spring Pulse	2			
Upper Decile	51,100	33,100	5,900	13,800
Upper Quartile	48,300	30,300	8,700	11,000
Median	42,000	24,000	15,000	5,900
Lower Quartile	37,000	19,000	20,000	1,900
Lower Decile	33,100	15,100	23,900	-2,000
With Spring Pulse				
Upper Decile	50,900	32,900	6,100	13,600
Upper Quartile	48,200	30,200	8,800	10,900
Median	41,800	23,800	15,200	5,700

# TABLE XIANTICIPATED DECEMBER 31, 2006 SYSTEM STORAGE

- 1/ Net usable storage above 18.0 MAF System minimum pool level established for power, recreation, irrigation diversions, and other purposes.
- <u>2</u>/ System base of annual flood control zone containing 57.0 MAF.

#### TABLE XII MISSOURI RIVER MAINSTEM SYSTEM WATER USE FOR CALENDAR YEARS 2004, 2005, AND 2006 ABOVE SIOUX CITY, IOWA in Million Acre-Feet (MAF)

				-	mulations f	-	1 (0)
	CY 2004	CY 2005		ndar Year 2	006 Withou		
	Actual	Basic	Upper	Upper Quartile	Madian	Lower	Lower
		Simulation	Decile	Quartile	Median	Quartile	Deche
Upstream Depletions (1)							
Irrigation, Tributary Reservoir							
Evaporation & Other Uses	2.1	2.2					
Tributary Reservoir Storage Change	0.0	0.4		• •	• •		2.0
Total Upstream Depletions	2.1	2.6	2.5	2.3	2.3	2.2	2.0
System Reservoir Evaporation (2)	2.4	1.9	1.2	1.1	1.3	1.6	1.4
Sioux City Flows							
Navigation Season							
Unregulated Flood Inflows Between							
Gavins Point & Sioux City (3)	0.0	0.0					
Navigation Service Requirement (4)	10.2	10.5	13.5	12.5	11.3	10.0	9.9
Supplementary Releases							
T&E Species (5)	1.0	0.3	0.2	0.2	0.2	0.0	0.0
Flood Evacuation (6)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-navigation Season							
Flows	4.1	3.6	3.3	3.5	3.6	3.8	4.1
Flood Evacuation Releases (7)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
System Storage Change	- 3.5	0.9	<u>13.8</u>	11.0	<u>5.9</u>	<u>1.9</u>	<u>-1.9</u>
Total	16.2	19.8	34.5	30.6	24.6	19.5	15.5
Project Releases							
Fort Peck	4.9	5.5	4.2	5.0	4.9	4.8	4.9
Garrison	12.0	14.5	12.9	12.8	12.6	12.2	11.7
Oahe	12.7	14.8	11.2	11.3	12.0	12.5	12.7
Big Bend	11.8	14.0	11.1	11.3	11.9	12.4	12.6
Fort Randall	12.8	15.3	12.0	12.3	12.7	12.2	12.7
Gavins Point	14.0	17.3	14.5	14.1	14.0	13.3	13.8

(1) Tributary uses above the 1949 level of development including agricultural depletions and tributary storage effects.

(2) Net evaporation is shown for 2006.

(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 in 2006 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 15,000 cfs Fort Randall release.

(8) Spring pulse increases the Supplementary Releases for T&E Species by 0.2 MAF in the 2006 Upper Decile, Upper Quartile, and Median runoff scenarios. This volume is offset by slight reductions (0.0 to 0.2 MAF) in the Navigation Service Requirement and System Storage change.

### VII. TENTATIVE PROJECTION OF REGULATION THROUGH MARCH 2012

The five-year extensions to the AOP (March 2007 to March 2012) have been prepared to serve as a guide for the Western Area Power Administration's marketing activities and to provide data to allow basin interests to conduct long term planning. The three runoff conditions are modeled in the extension studies: Median, Lower Quartile and Lower Decile.

The navigation service level and season length criteria described in Section V, Chapter A were applied to the extensions. The March 15 and July 1 System storage checks shown in *Tables II and III* were used to determine the flow support for navigation and other downstream uses, and the navigation season length. A steady release – flow to target (SR-FTT) regulation with cycling in May was modeled during the T&E species' nesting season. *Table IV* releases, as computed by the March 15 and July 1 System storage checks, were used prior to and following the nesting season. The September 1 System storage check was used to determine the winter System release. Navigation service support and season length, magnitudes of March and May spring pulses, March 1 reservoir unbalancing, end of year System storage, and the winter release rate for the extensions are shown on *Table XIII*.

Median Runoff. Studies 12 through 16 present the results of simulating Α. Median runoff (24.6 MAF) from 2007 through 2011. The March 1, 2007 System storage would be 42.1 MAF and would rise to 53.0 MAF by March 1, 2012, 4.0 MAF below the desired March 1 storage of 57.0 MAF, the base of the annual flood control and multiple use pool. The navigation service level would gradually increase from minimum service in 2007 to full service after the July 1 storage check in 2010 and 2011. The 2007 navigation season would be shortened 20 days; a full 8-month navigation season would be supported in 2008 through 2011. Winter System releases would increase slightly from an average of the minimum 12,500 cfs to 13,000 cfs beginning the winter of 2010-2011. The winter of 2011-2012 releases would be 14,200 cfs. March and May spring pulses would occur each year, with the magnitude of the May pulse increasing from 13,300 cfs in 2007 to 16,000 cfs in 2011. Fort Peck, Garrison, and Oahe pools rise to the elevations described in Table VII that permit unbalancing by March 1, 2010. The Fort Peck "mini-test" could be conducted in 2010 by unbalancing the upper three reservoirs as shown in *Table XIII*. The Fort Peck release would average 12,800 cfs in June of 2010. Fort Peck would be favored again in 2011 to accommodate the full test.

### TABLE XIII NAVIGATION SERVICE SUPPORT, SPRING PULSES, UNBALANCING AOP EXTENSION STUDIES

	2007	2008	2009	2010	2011
MEDIAN					
Spring Pulse					
March (kcfs)	5.0	5.0	5.0	5.0	5.0
May (kcfs)	13.3	14.6	15.4	15.9	16.0
Flow Level Below Full Service					
Spring (kcfs)	-6.0	-6.0	-3.7	-1.7	-0.9
Summer/Fall (kcfs)	-6.0	-3.8	-3.8	0.0	0.0
Season Length (Months)	8-20 days	8	8	8	8
Reservoir Unbalancing (ft)					
Fort Peck	0	0	0	+4.3	+4.2
Garrison	0	0	0	-3.0	-3.0
Oahe	0	0	0	0	0
Dec 31 Storage (MAF)	46.7	49.8	51.6	52.6	53.0
Winter Release (kcfs)	12.5	12.5	12.5	13.0	14.2
LOWER QUARTILE					
Spring Pulse					
March (kcfs)	5.0	0	0	5.0	5.0
May (kcfs)	9.0	0	9.4	9.8	10.1
Flow Level Below Full Service					
Spring (kcfs)	-6.0	-6.0	-6.0	-6.0	-6.0
Summer/Fall (kcfs)	-6.0	-6.0	-6.0	-6.0	-6.0
Season Length (Months)	8-33 days	8-31 days	8-31days	8-31 days	8-20 days
Reservoir Unbalancing (ft)					
Fort Peck	0	0	0	0	0
Garrison	0	0	0	0	0
Oahe	0	0	0	0	0
Dec 31 Storage (MAF)	38.0	39.7	41.5	43.4	45.5
Winter Release (kcfs)	12.5	12.5	12.5	12.5	12.5
LOWER DECILE					
Spring Pulse					
March (kcfs)	0	0	0	0	0
May (kcfs)	0	0	0	0	0
Flow Level Below Full Service					
Spring (kcfs)	-6.0	-6.0	-6.0	-6.0	-6.0
Summer/Fall (kcfs)	-6.0	-6.0	-6.0	-6.0	-6.0
Season Length (Months)	6	6	6	6	6
Reservoir Unbalancing (ft)			_		
Fort Peck	0	0	0	0	0
Garrison	0	0	0	0	0
Oahe	0	0	0	0	0
Dec 31 Storage (MAF)	31.7	31.1	31.2	31.9	32.9
Winter Release (kcfs)	12.5	12.5	12.5	12.5	12.5

**B.** <u>Lower Quartile Runoff</u>. Studies 17 through 21 show the results of Lower Quartile runoff extensions. System storage on March 1, 2007 is 36.7 MAF and rises to 45.5 MAF by March of 2012 with navigation service levels remaining at minimum service during the simulation period. The navigation season is shortened 33 days in 2007, 31 days in 2008 through 2010, and 20 days in 2011 as System storage increases. A 12,500 cfs average winter release is shown for the entire study period. Spring pulses would occur in 2007, and again in 2009 through 2011. Since the upper three reservoirs do not refill under Lower Quartile runoff, their percent of remaining carryover multiple use storage is balanced each March 1.</u>

C. <u>Lower Decile Runoff</u>. Studies 22 through 26 show the results of Lower Decile runoff extensions. System storage is 32.8 MAF on March 1, 2007, reaching a low of 31.0 MAF on February 1, 2009, and then rising to 32.9 MAF by March of 2012. The navigation service level remains at minimum service during the simulation period and the navigation season is shortened two months each year. A 12,500 cfs average winter release is shown for the entire study period. No spring pulses or intrasystem unbalancing are shown due to the low system storage.

*Plate* **13** presents System storage, Gavins Point, and System peaking capability for Median, Lower Quartile, and Lower Decile runoff for the period 2007 through March of 2012. Peak power, or peaking capability, is the amount of power available when all powerplants are operating at maximum.

*Plate* 14 presents reservoir pool elevations for Fort Peck, Garrison, Oahe, and Fort Randall for Median, Lower Quartile, and Lower Decile runoff for the period 2007 through March of 2012.

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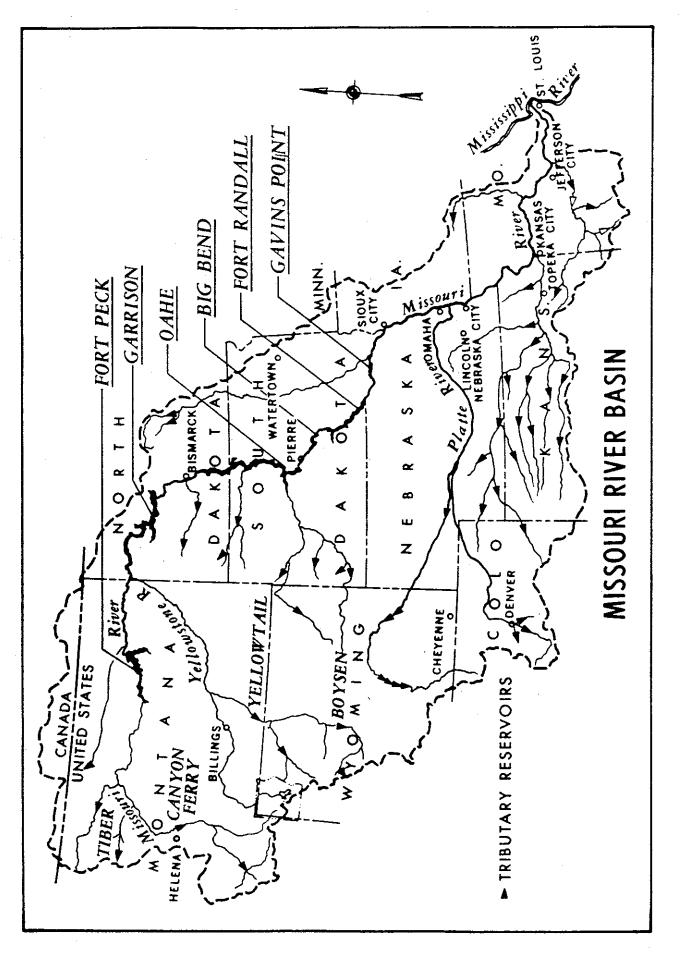
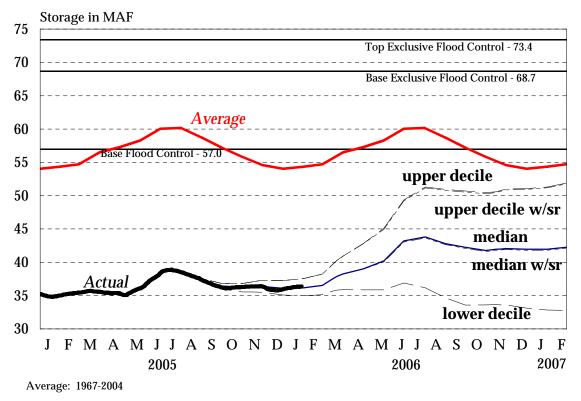


PLATE 1

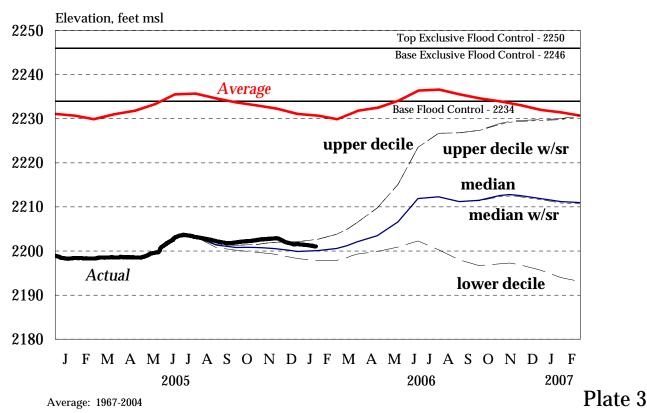
		ary of Engineering Data		-
Item No.	Subject	Fort Peck Dam - Fort Peck Lake	Garrison Dam - Lake Sakakawea	Oahe Dam - Lake Oahe
1	Location of Dam	Near Glasgow, Montana	Near Garrison, ND	Near Pierre, SD
2	River Mile - 1960 Mileage	Mile 1771.5	Mile 1389.9	Mile 1072.3
3	Total & incremental drainage areas 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) 10,200	1340 (elevation 1837.5)	2250 (elevation 1607.5) 28,900 3,300
6	Average total & incremental inflow in cfs	,		
7	Max. discharge of record near damsite in cfs	137,000 (June 1953)	348,000 (April 1952)	440,000 (April 1952)
8 9	Construction started - calendar yr. In operation (4) calendar yr.	1933 1940	1946 1955	1948 1962
10	Dam and Embankment	2280.5	1875	1660
10 11	Top of dam, elevation in feet msl Length of dam in feet	2280.5 21,026 (excluding spillway)	1875 11,300 (including spillway)	9,300 (excluding spillway)
11	Damming height in feet (5)	21,020 (excluding spinway) 220	11,500 (including spinway) 180	200 (excluding spinway)
12	Maximum height in feet (5)	250.5	210	245
13	Max. base width, total & w/o	3500, 2700	3400, 2050	3500, 1500
14	berms in feet	3500, 2700	5400, 2050	5500, 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	230,000	660,000	80,000
	operating pool in cfs			
	Reservoir Data (6)			
26	Max. operating pool elev. & area	2250 msl 246,000 acres		
27	Max. normal op. pool elev. & area	2246 msl 240,000 acres		
28	Base flood control elev & area	2234 msl 212,000 acres		
29	Min. operating pool elev. & area	2160 msl 90,000 acres	1775 msl 128,000 acres	1540 msl 117,000 acres
20	Storage allocation & capacity	075 000 5	1054 1050 1 400 000 6	1 (20, 1 (17, 1, 102, 000, 1
30	Exclusive flood control		1854-1850 1,489,000 a.f.	
31	Flood control & multiple use		. 1850-1837.5 4,222,000 a.f.	
32	Carryover multiple use	2234-2160 10,785,000 a.f.		
33	Permanent	2160-2030 4,211,000 a.f.		
34 35	Gross	2250-2030 18,688,000 a.f.	. 1854-1673 23,821,000 a.f. December 1953	
	Reservoir filling initiated Initially reached min. operating pool	November 1937		August 1958 3 April 1962
36 37	Estimated annual sediment inflow	27 May 1942 18.100 a.f. 1030 vrs.	7 August 1955 25,900 a.f. 920 yrs.	19,800 a.f. 1170 yrs.
37	Outlet Works Data	18,100 a.i. 1050 yis.	25,900 a.i. 920 yis.	19,800 a.i. 1170 yis.
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	1 - 18' x 24.5' Tainter gate per	1 - 13' x 22' per conduit, vertical
		6 ports, 7.6' x 8.5' high (net	conduit for fine regulation	lift, 4 cable suspension and
		opening) in each control shaft		2 hydraulic suspension (fine
10		2005	1.670	regulation)
42	Entrance invert elevation (msl)	2095 Else 2250	1672 Else 1854	1425 Elem 1620
43	Avg. discharge capacity per conduit	Elev. 2250	Elev. 1854	Elev. 1620
44	& total Present tailwater elevation (ft msl)	22,500 cfs - 45,000 cfs 2032-2036 5,000 - 35,000 cfs		
	Power Facilities and Data	2032-2030 - 35,000 CIS	15,000-00,000 CIS	1725-1720 20,000-55,000 CIS
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		3 - 109,250, 2 - 95,000	112,290
52	Plant capacity in kW	185,250	517,750	786,030
53	Dependable capacity in kW (9)	181,000	388,000	534,000
54	Avg. annual energy, million kWh (12)	1,111	2,365	2,787
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

 S	Summary of Engineering I	Data Missouri River Ma	instem System		
 Big Bend Dam - Lake Sharpe	Fort Randall Dam - Lake Francis Case	Gavins Point Dam - Lewis & Clark Lake	Total	Item No.	Remarks
Mile 987.4	Near Lake Andes, SD Mile 880.0 263,480 (1) 14,150	Near Yankton, SD Mile 811.1 279,480 (1) 16,000		1 2 3	(1) Includes 4,280 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	(2) Includes 1,350 square miles of non-contributing
200 (elevation 1420) 28,900	540 (elevation 1350) 30,000 1,100	90 (elevation 1204.5) 32,000 2,000	5,940 miles	5 6	<ul><li>areas.</li><li>(3) With pool at base of flood control.</li><li>(4) Storage first available for</li></ul>
440,000 (April 1952)	447,000 (April 1952)	480,000 (April 1952)		7	<ul><li>(4) Storage first available for regulation of flows.</li><li>(5) Damming height is height</li></ul>
 1959 1964	1946 1953	1952 1955		8 9	from low water to maximum operating pool. Maximum
1440 10,570 (including spillway) 78 95 1200, 700	1395 10,700 (including spillway) 140 165 4300, 1250	1234 8,700 (including spillway) 45 74 850, 450	71,596 863 feet	10 11 12 13 14	<ul> <li>height is from average streambed to top of dam.</li> <li>(6) Based on latest available storage data.</li> <li>(7) River regulation is attained by flows over low-crested spillway and through</li> </ul>
Pierre shale & Niobrara chalk	Niobrara chalk	Niobrara chalk & Carlile shale		15	(8) Length from upstream face
Rolled earth, shale, chalk fill 17,000,000 540,000 24 July 1963	Rolled earth fill & chalk berms 28,000,000 & 22,000,000 961,000 20 July 1952	Rolled earth & chalk fill 7,000,000 308,000 31 July 1955	358,128,000 cu. yds 5,554,000 cu. yds.	16 17 18 19	of outlet or to spiral case. (9) Based on 8th year (1961) of drought drawdown (From study 8-83-1985).
Left bank - adjacent 1385 376 gated 8 - 40' x 38' Tainter 390,000 at elev 1433.6 270,000	Left bank - adjacent 1346 1000 gated 21 - 40' x 29' Tainter 620,000 at elev 1379.3 508,000	Right bank - adjacent 1180 664 gated 14 - 40' x 30' Tainter 584,000 at elev 1221.4 345,000		23	<ul> <li>(10) Affected by level of Lake Francis case. Applicable to pool at elevation 1350.</li> <li>(11) Spillway crest.</li> <li>(12) 1967-2003 Average</li> <li>(13) Source: Annual Report on Civil Works Activities of the Corps of Engineers. Extract</li> </ul>
1423 msl         61,000 acres           1422 msl         60,000 acres           1420 msl         57,000 acres           1415 msl         51,000 acres	1365 msl         95,000 acres           1350 msl         77,000 acres	1208 msl         28,000 acres           1204.5 msl         24,000 acres	· · ·	26 27 28 29	Report Fiscal Year 1999. (14) Based on Study 8-83-1985
1423-1422         60,000 a.f.           1422-1420         117,000 a.f.           1420-1345         1,621,000 a.f.           1423-1345         1,798,000 a.f.           November 1963         25           25 March 1964         430 yrs.	1365-1350 1,309,000 a.f. 1350-1320 1,607,000 a.f. 1320-1240 1,517,000 a.f. 1375-1240 5,418,000 a.f. January 1953 24 November 1953	1208-1204.590,000 a.f.1204.5-1160321,000 a.f.	4,670,000 a.f. 11,656,000 a.f. 38,983,000 a.f. 18,023,000 a.f. 73,332,000 a.f. 92,500 a.f.	30 31 32 33 34 35 36 37	
None (7)	Left Bank 4 - 22' diameter	None (7)		38 39	
	1013 2 - 11' x 23' per conduit, vertical lift, cable suspension			40 41	
1385 (11)	1229 Elev 1375 32,000 cfs - 128,000 cfs	1180 (11)		42 43	
 1351-1355(10) 25,000-100,000 cfs		1155-1163 15,000-60,000 cfs		44	
70 None: direct intake	117 8 - 28' dia., 22' penstocks 1.074	48 None: direct intake	764 feet 55,083	45 46 47	
None 8 Fixed blade, 81.8 rpm	59' dia, 2 per alternate penstock 8 Francis, 85.7 rpm	None 3 Kaplan, 75 rpm	36 units	48 49	
67' 103,000 cfs	112' 44,500 cfs	48' 36,000 cfs		50	
3 - 67,276, 5 - 58,500 494,320 497,000 1,021 October 1964 - July 1966	40,000 320,000 293,000 1,810 March 1954 - January 1956	44,100 132,300 74,000 748 September 1956 - January 1957	2,435,650 kw 1,967,000 kw 9,842 million kWh July 1943 - July 1966	54	Corps of Engineers, U.S. Army Compiled by Northwestern Division
\$107,498,000	\$199,066,000	\$49,617,000	\$1,166,404,000	56	Missouri River Region January 2006
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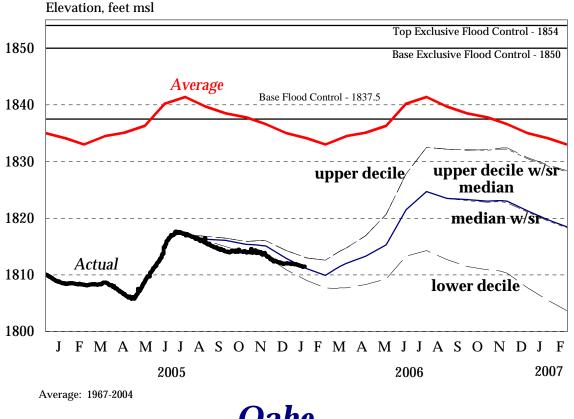
## System Storage 2005-2006 Final AOP



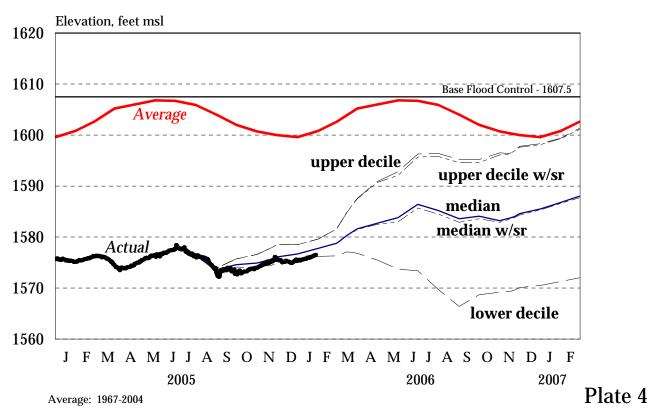
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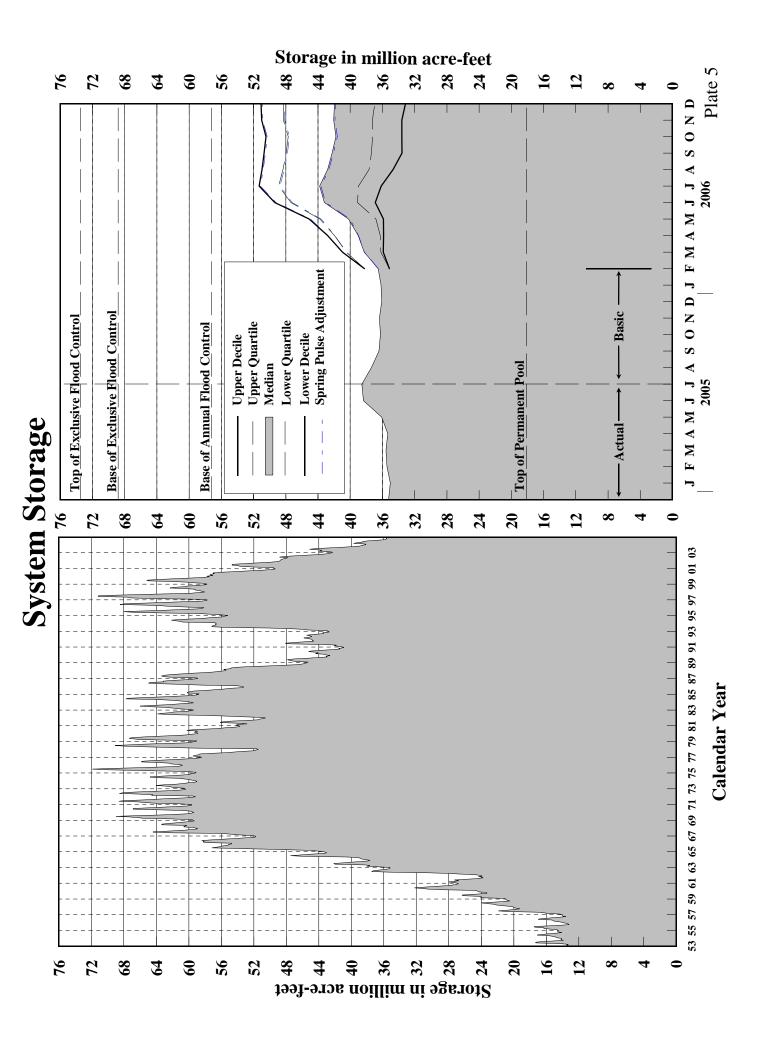


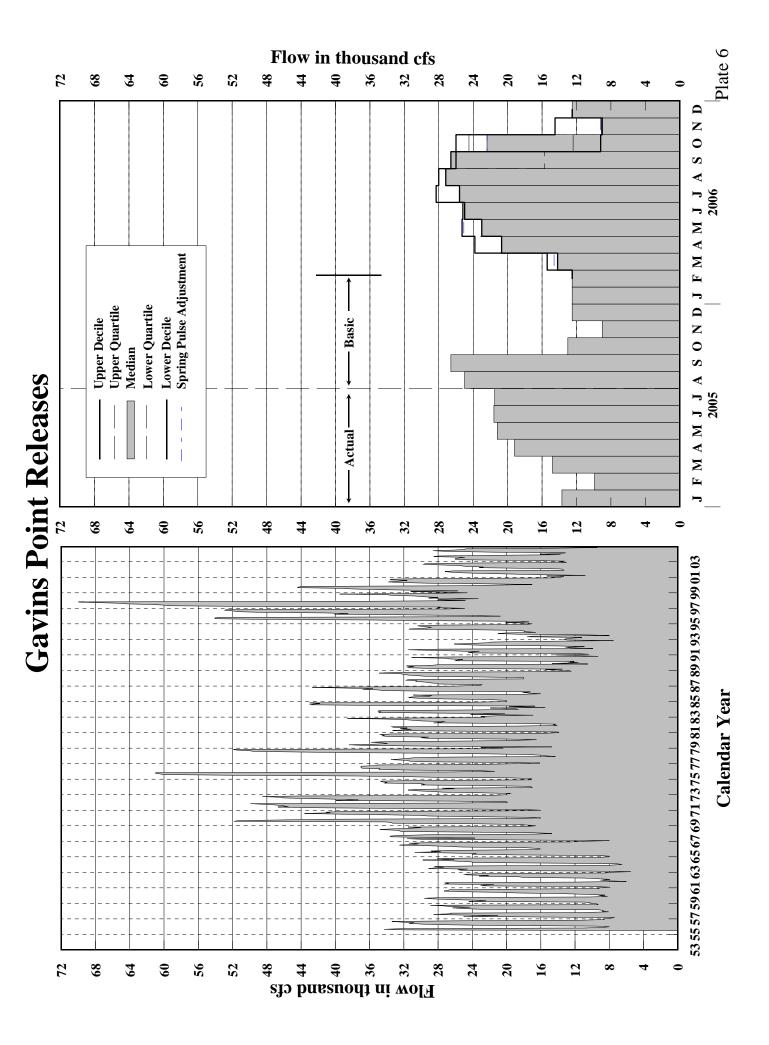
# **Garrison** 2005-2006 Final AOP

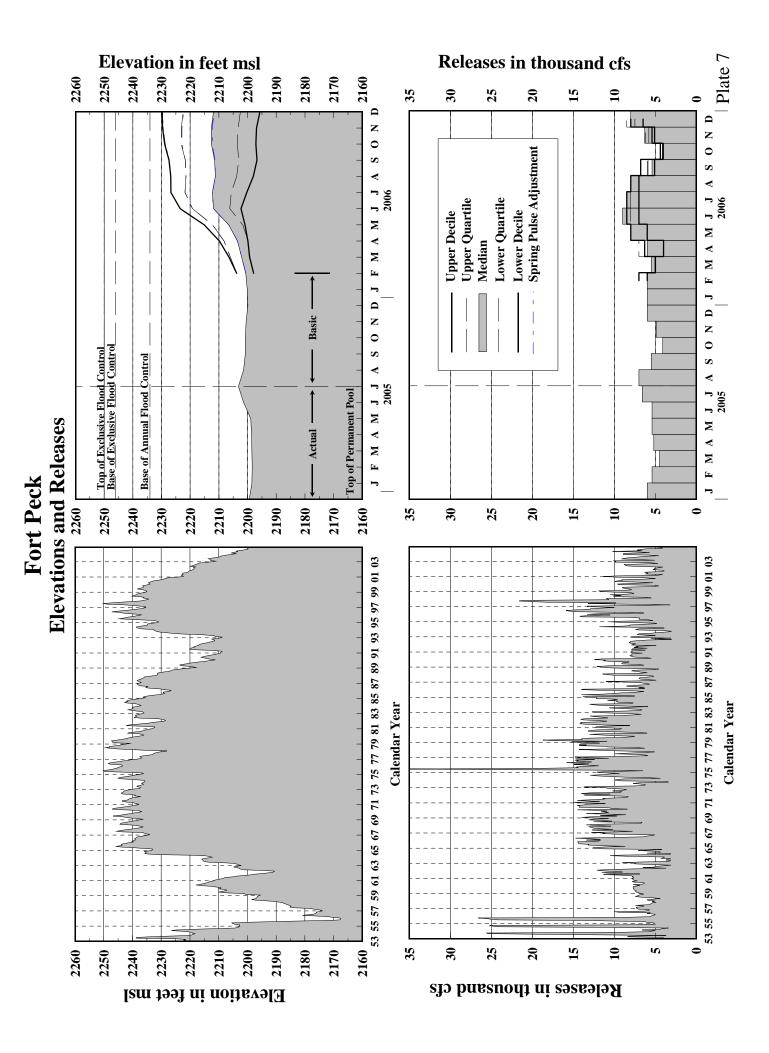


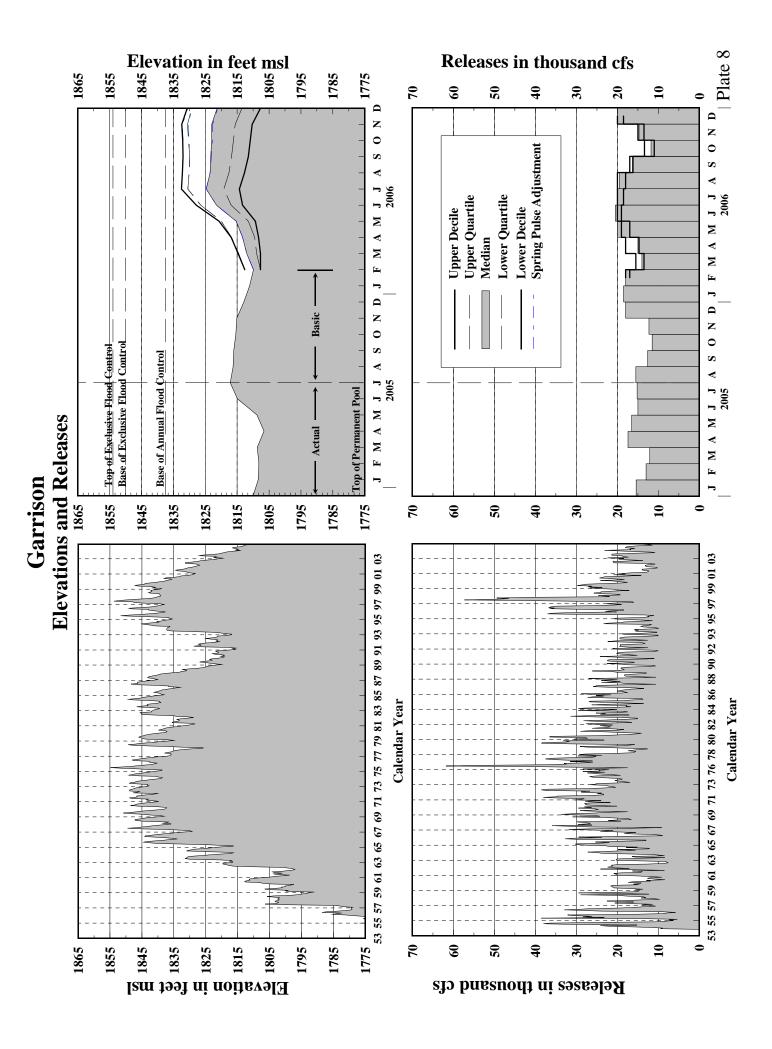
**Oahe** 2005-2006 Final AOP

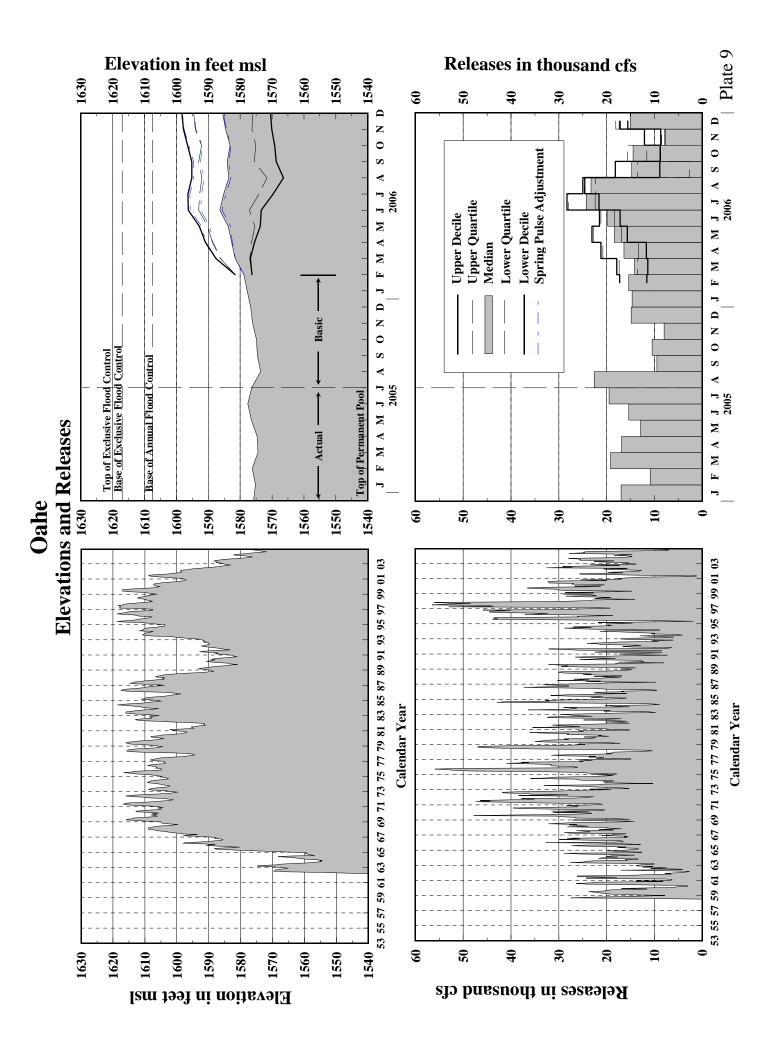


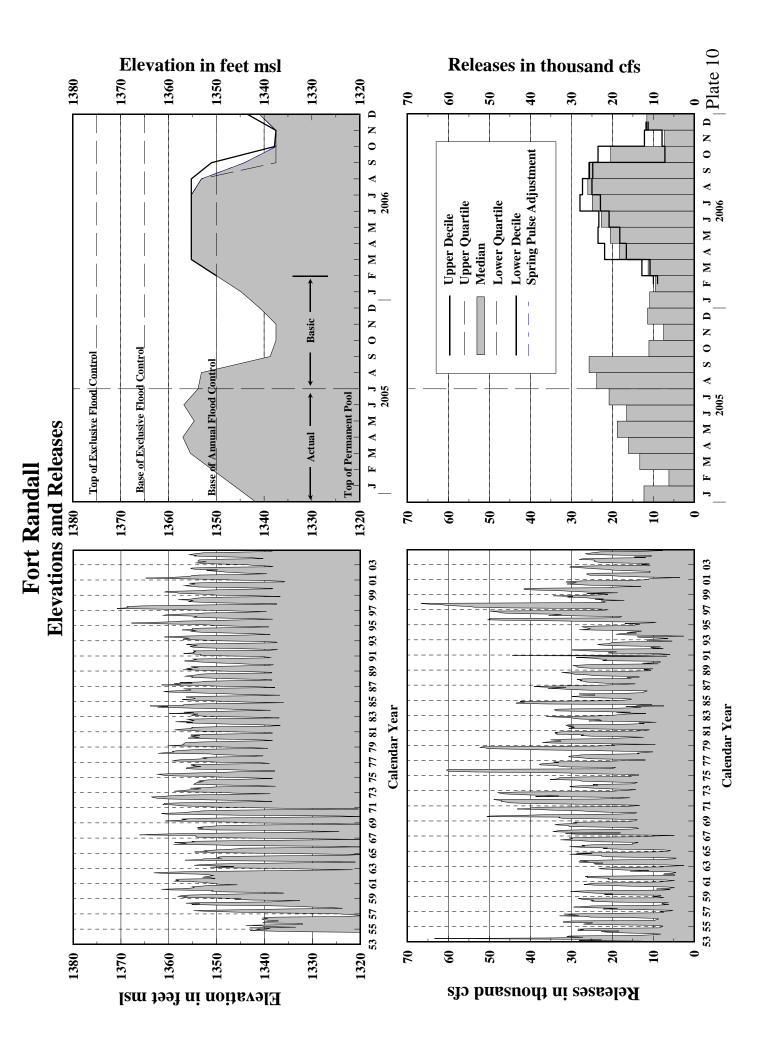






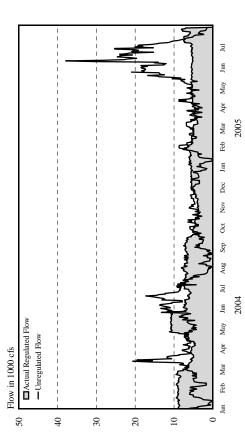


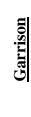


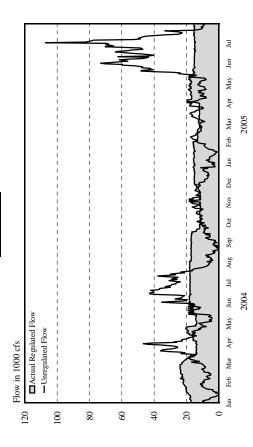


**Reservoir Release and Unregulated Flow** 











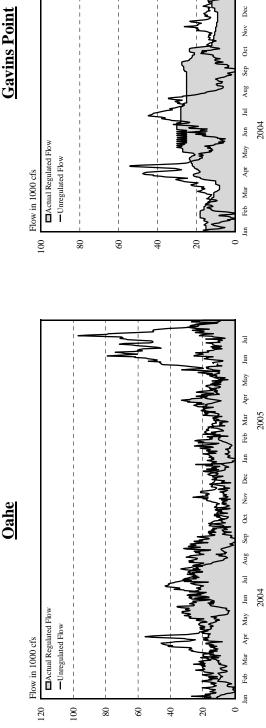
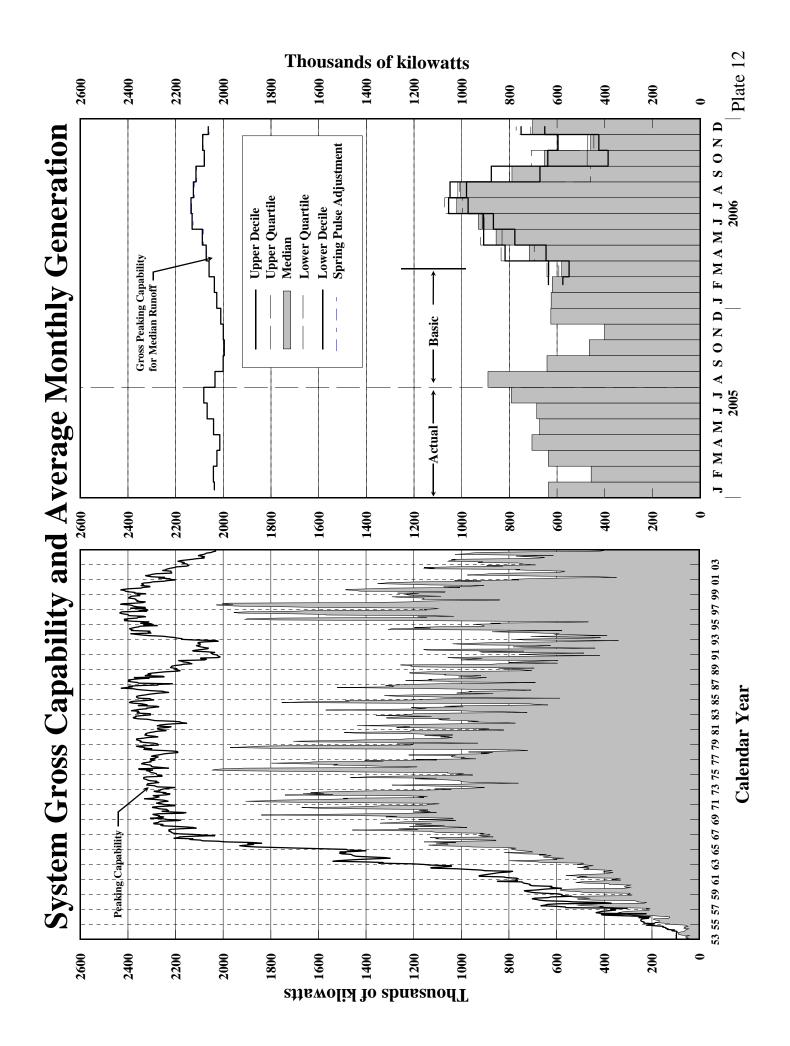
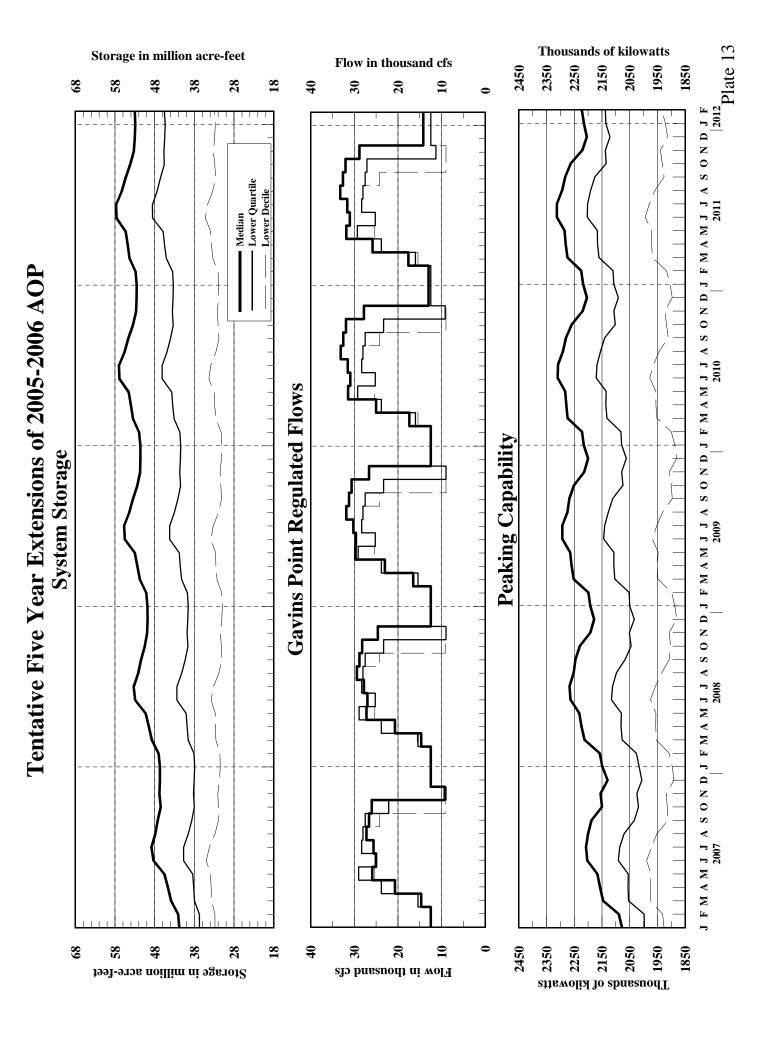


Plate 11

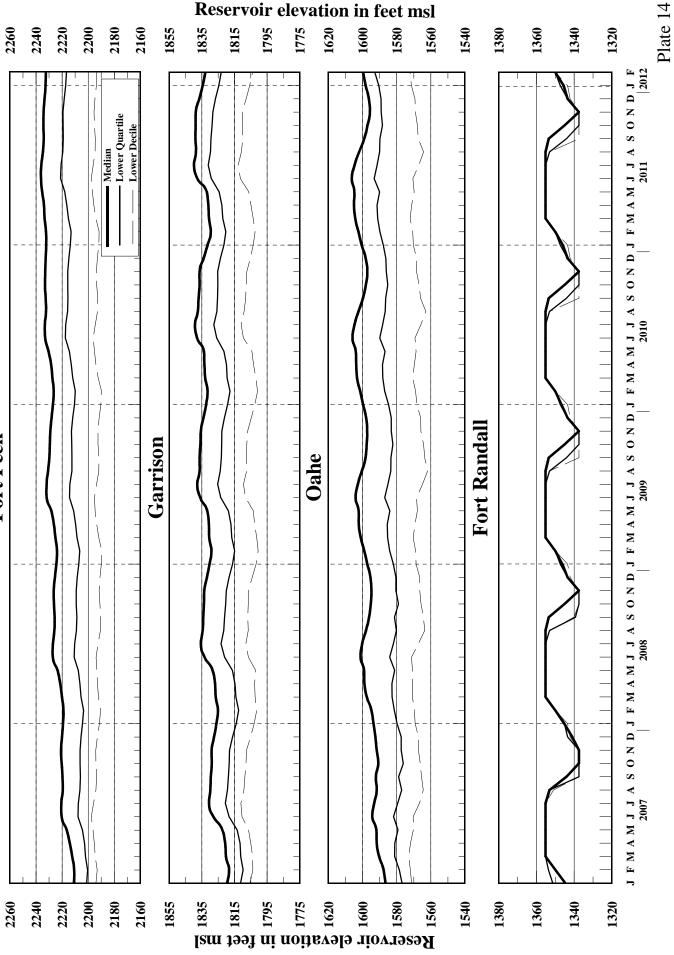
Jan Feb Mar Apr May Jun Jul

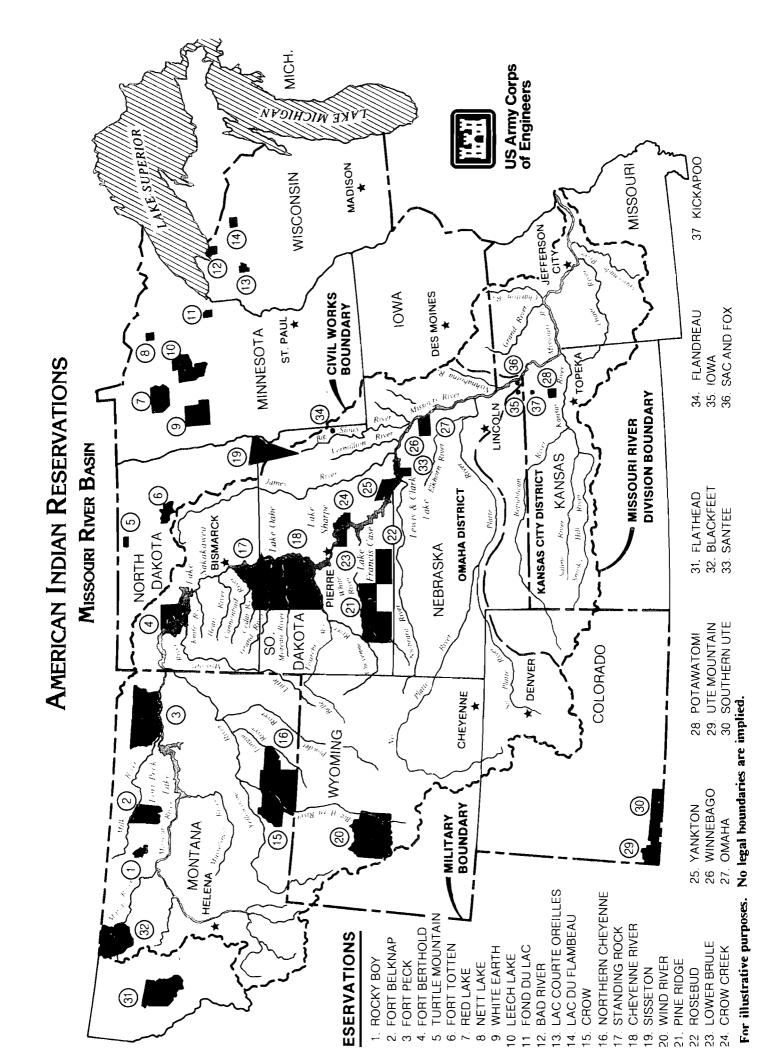
2005











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STUDY NO 1 2006

DATE OF STUDY						2005-	2006 AC	P BASIC	SIMULA	TION	
TIME OF STUDY	11:09:	35								SEASON	
31JU	1105 INI-SUM	31AUG	200 30SEP		1 5 NOV	22NOV	3 ONOV	31DEC	31JAN	28FEB	
FORT PECK NAT INFLOW DEPLETION	- 1840 -444			250 -76							
EVAPORATION MOD INFLOW	304 1980	62 171	78 229	68 258	117	55	63			410	
RELEASE STOR CHANGE	2371 -391	430 -260	326 - 97	253 6	-16	-15	- 25	-81	20	77	
STORAGE ELEV FTMSL DISCH KCFS POWER	9472 2203.1 6.6		2200.8	9121 2200.8 4.1	2200.7	2200.6	2200.5	2199.9	2200.1	2200.6	
AVE POWER MW PEAK POW MW ENERGY GWH	339.1	83 129 62.0	65 129 46.7	49 129 36.2	129	128	128	128		128	
GARRISON- NAT INFLOW DEPLETION CHAN STOR	- 2270 -421 6	450 65 -4	350 -107 16	370 31 15	- 82	-38	-43	-105	-87		
EVAPORATION REG INFLOW	363 4706	74 737	93 706	81 526	36	17	19	41 607		748	
RELEASE STOR CHANGE	6387 -1682	953 -216	752 ~46	707	342	167	222	1107 -500	1138	1000	
STORAGE ELEV FTMSL DISCH KCFS	12591	12375	12329 1816.1 12.6	12148	12130 1815.3	12118 1815.2	12082 1815.1	11582	11161 1811.1	10909 1809.9	
POWER AVE POWER MW		168	137	124		129		191	194		
PEAK POW MW ENERGY GWH	822.8	391 125.2	390 98.6	387 92.4		387 21.7	386 28.9	378 142.3	371 144.0		
OAHE- NAT INFLOW DEPLETION	350 179	50 93	90 24	55 -7	28 3	13 1	15 1	14	10 19	90 31	
CHAN STOR EVAPORATION	-15 302	-2 61	24 16 76	- / 6 67		- 3 14	-11	-21 36	- 3	31	
REG INFLOW RELEASE	6242 5749	847 1392	758 564	708 645	337	161 113	208 128	1035 914	1126 903	1061 857	
STOR CHANGE STORAGE	493 10958	-545	193 10607	63 10670	104	49	80 10903	121 11024	223 11247	205 11451	
ELEV FTMSL DISCH KCFS		1573.6	1574.6	1574.9	1575.4	1575.7	1576.1	1576.7	1577.8	1578.8	
POWER AVE POWER MW		242	102	113	84	88	87	161	160	169	
PEAK POW MW ENERGY GWH BIG BEND-	751.6	533 180.3	538 73.1	540 83.8	542 30.4	544 14.7	546 16.8	549 119.8	555 119.0	560 113.6	
EVAPORATION REG INFLOW	97 5651	20 1372	25 540	22 623	10 223	5 108	5 123	11 903	903	857	
RELEASE	5717 1687	1438 1621	540 1621	623 1621	223 1621	108 1621	123 1621	903 1622	903 1622	857 1622	
ELEV FTMSL DISCH KCFS			1420.0		1420.0						
POWER AVE POWER MW		111	46	51	38	39	39	74	72	74	
PEAK POW MW ENERGY GWH	339.8	518 82.3	538 33.1	538 38.2		538 6.6	538 7.5	538 54.8	538 53.8	529 49.8	
-FORT RANDAL	125	15	20 7	10	5	2	3	10	20	50	
DEPLETION EVAPORATION	34 95	15 25 1404	26	1	1 8	0 4 106	1 4	3 10 900	3	3 904	
REG INFLOW RELEASE	5705 6019	1465	518 1526	614 683	220	106	121 121 0	701	920 670	528	
STOR CHANGE		-61 3375	-1008	2298	2297	2297	2297	199 2496	250 2746	376 3122	
ELEV FTMSL DISCH KCFS POWER		23.8	25.7					1340.9			
VE POWER MW PEAK POW MW		199 349	200 290	82 285	285	285	56 285	85 301	84 318		
CANTER DOTE	568.4	14/./	114.1	60.7	19.5	9.4	10.7	63.0	62.2	51.0	
AT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE	695 28	90 10	90 - 5			2		90 10	100 1		
HAN STOR	21 36	-6 7	-5 -3 9 1609 1583	27 8	7 4	0 2	0	-7 4	ĩ	3	
REG INFLOW RELEASE	6671 6689	1532 1537	1609 1583	799 799	26 B 26 8			770 770	770 770	655 694	
STORAGE	376	371	397	397	397	397	397	397	397	-39 358	
ELEV FTMSL DISCH KCFS	1206.7	1206.5	1207.5	1207.5	1207.5	1207.5		1207.5	1207.5	1206.0	
POWER AVE POWER MW		87	92	46		32	32	44	44	44	
	284.2		117 66.6	117 34.3	117 11.6	117 5.4	117 6.2	117 33.1	117 33.1	114 29.6	
-GAVINS POINT NAT INFLOW DEPLETION	r - SIOU 540 114	X CITY- 130 34	- 95 22	75 9	38 6	18 3	20 3	45 12	35 13	85 13	
EGULATED FLOW KAF KCFS	AT SIO	UX CITY	1656	865		140	160	803	792	766	
- TOTAL NAT INFLOW	5820	925	845	860	400	187	213	575	740	1075	
CHAN STOR	-510	184 -12	~166 20	- 40	- 86	-40		-139 -34			
EVAPORATION STORAGE	1196	249 37368	307	264	119 36325	56	64 36366	138	-2 36176		
SYSTEM POWER		37366 890	642	465	38523	404	430	626	625	620	
PEAK POW MW ENERGY GWH	3105.9	2035 661.8	2001 462.2	1996 345.7	1998 138.9	1999 67.8	2000 82.5	2011 465.6	2028 464.8	2038 416.7	
AILY GWH		21.3	15.4	11.2	9.3	9.7	10.3	15.0	15.0	14.9	
1	NI-SUM	31AUG	30SEP	310CT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	

2005-2006 AOP 120 PERCENT SIMULATION

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STUDY NO 2

2006

	01/26/	00				2005-	2005 AO	P 120 P.	ERCENT	SIMULATI	LON
TIME OF STUDY	11:09:	36								SEASON 4	
31Л			200							S INDICA	(1ED
	INI-SUM	31AUG	30SEP	310CT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB	
FORT PECK-					150			200	270	42.0	
NAT INFLOW DEPLETION	2208 -589			300 -34	-47			300 -137	378 -155		
EVAPORATION MOD INFLOW	208 2589		58 248	51 283	12 190			27 410	533	551	
RELEASE	2491	430	278	258	149	69	87	400	430	389	
STOR CHANGE STORAGE	98 9472	-246 9226	-31 9195	25 9220	42 9262	9281	9295	10 9306	103 9408		
ELEV FTMSL	2203.1 6.6	2201.5	2201.3 4.7	2201.5 4.2	2201.8 5.0	2201.9 5.0	2202.0 5.5	2202.1 6.5	2202.7		
DISCH KCFS POWER											
AVE POWER MW PEAK POW MW		83 129	56 129	50 129	59 130	59 130	65 130	77 130	83 131	84 132	
ENERGY GWH	358.7	62.0	40.0	37.1	21.4	10.0	12.6	57.5	62.0	56.2	
~-GARRISON-											
NAT INFLOW DEPLETION	2724 -548		420 -114	444 17	180 -85	84 -40		216 -135	312	432 - 81	
CHAN STOR	~4	- 4	25	5	- 9		c	-11	- 5	01	
EVAPORATION REG INFLOW	249 5510		70 767	61 629	15 390		8 215	32 708	849	902	
RELEASE STOR CHANGE	6596 -1087	953 -90	847 - 80	769 -140	372 19	174 13	238 -23	1107 -399	1138 -289	1000 -98	
STORAGE	12591	12501	12421	12281	12299	12312	12290	11891	11602	11504	
ELEV FTMSL DISCH KCFS		1816.8	1816.5	1815.9	1816.0	1816.1	1816.0 15.0	1814.3	1813.0	1812.6	
POWER		169				135		193	196	190	
AVE POWER MW PEAK POW MW		392	155 391	135 389	135 389	390	162 389	383	379	377	
ENERGY GWH	856.5	125.4	111.3	100.7	48.7	22.7	31.1	143.4	145.8	127.4	
OAHE											
NAT INFLOW DEPLETION	420 179	60 93	108 24	66 -7	33 3	15 1	18 1	14	12 19	108 31	
CHAN STOR EVAPORATION	-14 209	-2 46		9 52	13	-	- 13 7	-16 28	- 3	3	
REG INFLOW	6614	872	880	799	390	182	234	1049	1128	1079	
RELEASE STOR CHANGE	5510 1104	1360 -487	528 352	607 192	211 179	101 81	119 115	1049 0	888 240	647 432	
STORAGE	10958	10471	10823	11015	11194	11275	11390	11390	11630	12062	
ELEV FTMSL DISCH KCFS	1576.4	22.1	8.9	1576.6	1577.5	1577.9	1578.5 7.5	1578.5	1579.6	1581.6	
POWER AVE POWER MW		237	95	107	77	80	83	187	159	130	
PEAK POW MW		534	544	549	553	555	558	558	565	575	
ENERGY GWH	726.4	176.3	68.7	79.6	27.9	13.4	15.9	139.2	118.3	87.2	
BIG BEND-		16	10	10	4	2	-	9			
EVAPORATION REG INFLOW	66 5444	15 1345	19 509	16 591	207	99	2 117	1040	888	647	
RELEASE STORAGE	5510 1687	$1411 \\ 1621$	509 1621	591 1621	207 1621	99 1621	117 1621	1041 1620	888 1620	647 1620	
ELEV FTMSL	1421.1	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	
DISCH KCFS POWER	15.9	22.9	8.6	9.6	7.0	7.2	7.4	16.9	14.4	11.6	
AVE POWER MW PEAK POW MW		109 518	43 538	49 538	35 538	36 538	37 538	84 538	70 538	56 529	
ENERGY GWH	326.4	80.8	31.2	36.2	12.7	6.1	7.2	62.3	52.4	37.6	
FORT RANDAL	L										
NAT INFLOW DEPLETION	150 34	6 15	24 7	12 1	6 1	3 0	3 1	12 3	24 3	60 3	
EVAPORATION	66	18	20	14	3	1	2	8			
REG INFLOW RELEASE	5553 5868	1383 1445	498 1506	588 660	209 209	100 100	$118 \\ 114$	1043 681	909 652	704 500	
STOR CHANGE	-315	-61	-1008	-72	0	0	4	362	257	204	
STORAGE ELEV FTMSL	3436 1353.9	3375 1353.1	2367 1338.7	2295 1337.5	2294 1337.4	2294 1337.4	2298 1337.5	2660 1343.5	2917 1347.2	3121 1350.0	
DISCH KCFS POWER	20.8	23.5	25.3	10.7	7.0	7.2	7.2	11.1	10.6	9.0	
AVE POWER MW		196	198	79 285	52						
PEAK POW MW ENERGY GWH	557.0	349	£90		0.05	53	53	83	83	73	
		145.7	142.2	58.8	285 18.6				83 330 61.9	73 339 48.9	
GAVINS POIN	C			58.8	18.6	285 8.9			330	339	
GAVINS POIN' NAT INFLOW	834			58.8	18.6	285 8.9 28	285 10.1 32	313 61.9	330 61.9 120	339	
GAVINS POIN' NAT INFLOW DEPLETION CHAN STOR	C 834 28 22			58.8	18.6	285 8.9 28	285 10.1 32 3	313 61.9 108 10 -7	330 61.9	339 48.9	
GAVINS POIN' NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW	5 834 28 22 24 6671			58.8	18.6	285 8.9 28 2 0 1	285 10.1 32 3 0 1	313 61.9 108 10 -7 3	330 61.9 120 1 1	339 48.9 150 3	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW PELEDSE	834 28 22 24 6671 6689	108 10 -5 1532 1537	108 -5 -3 7 1609	120 27 6 799	18.6 60 5 7 1 270 270	285 8.9 28 2 0 1 125 125	285 10.1 32 3 0 1 143	313 61.9 108 10 -7 3 769 769	330 61.9 120 1 1 772 772	339 48.9 150 3 653 692	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW PELEDSE	834 28 22 24 6671 6689	108 10 -5 1532 1537	108 -5 -3 7 1609	120 27 6 799	18.6 60 5 7 1 270 270	285 8.9 28 2 0 1 125 125	285 10.1 32 3 0 1 143	313 61.9 108 10 -7 3 769 769	330 61.9 120 1 1 772 772	339 48.9 150 3 653 692	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW PELEDSE	834 28 22 24 6671 6689	108 10 -5 1532 1537	108 -5 -3 7 1609	120 27 6 799	18.6 60 5 7 1 270 270	285 8.9 28 2 0 1 125 125	285 10.1 32 3 0 1 143	313 61.9 108 10 -7 3 769 769	330 61.9 120 1 1 772 772	339 48.9 150 3 653 692	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	834 28 22 24 6671 6689 -18 376 1206.7 21.5	108 10 -5 1532 1537 -5 371 1206.5 25.0	108 -5 -3 7 1609 1583 26 397 1207.5 26.6	120 2 27 6 799 799 397 1207.5 13.0	18.6 60 5 7 1 270 270 397 1207.5 9.1	285 8.9 28 2 0 1 125 125 397 1207.5 9.0	285 10.1 32 3 0 1 143 143 143 397 1207.5 9.0	313 61.9 108 10 -7 3 769 769 397 1207.5 12.5	330 61.9 120 1 772 772 397 1207.5 12.5	339 48.9 150 3 653 653 692 -39 358 1206.0 12.5	
NAT İNFLOM DEPLETION CHAN STOR EVAPORATION REG INFLOM RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POMER AVE POWER MW	834 28 22 24 6671 6689 -18 376 1206.7 21.5	108 10 -5 1532 1537 -5 371 1206.5 25.0	108 -5 -3 7 1609 1583 26 397 1207.5 26.6	120 27 6 799 799 397 1207.5 13.0	18.6 60 5 7 1 270 270 397 1207.5 9.1	285 8.9 28 2 0 1 125 125 397 1207.5 9.0	285 10.1 32 3 0 1 143 143 143 397 1207.5 9.0	313 61.9 108 10 -7 3 769 769 769 769 769 397 1207.5 12.5	330 61.9 120 1 1 772 772 772 397 1207.5 12.5 45	339 48.9 150 3 653 692	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	834 28 24 6671 6689 -18 376 1206.7 21.5	108 10 -5 1532 1537 -5 371 1206.5 25.0 87 115	108 -5 -3 7 1609 1583 26 397 1207.5 26.6 92 117	58.8 120 27 6 799 799 397 1207.5 13.0 46 117	18.6 60 5 7 1 270 270 397 1207.5 9.1	285 8.9 28 2 0 1 125 125 397 1207.5 9.0	285 10.1 32 3 0 1 143 143 143 143 1207.5 9.0	313 61.9 108 10 -7 3 769 769 397 1207.5 12.5	330 61.9 120 1 772 772 397 1207.5 12.5	339 48.9 150 3 653 692 -39 358 1206.0 12.5 44	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH GAVINS POIN'	834 28 22 24 6671 6689 -18 376 1206.7 21.5 284.2 284.2	108 10 -5 5 1532 1537 -5 371 1206.5 25.0 87 115 64.4 X CITY-	108 -5 -3 7 1609 1583 26 397 1207.5 26.6 92 117 66.6	58.8 120 2 77 6 799 799 397 1207.5 13.0 46 117 34.3	18.6 60 5 7 1 270 270 397 1207.5 9.1 32 117 11.6	285 8.9 28 20 1 125 125 125 9.0 397 1207.5 9.0 32 117 5.4	285 10.1 32 3 0 143 143 143 143 1207.5 9.0 32 117 6.2	313 61.9 108 10 -7 3 769 769 397 1207.5 12.5 12.5 12.5 44 117 33.0	330 61.9 120 1 772 772 397 1207.5 12.5 12.5 45 117 33.2	339 48.9 150 3 653 692 -39 358 1206.0 12.5 41 41 29.5	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH GAVINS POIN'	834 28 22 24 6671 6689 -18 376 1206.7 21.5 284.2 284.2	108 10 -5 5 1532 1537 -5 371 1206.5 25.0 87 115 64.4 X CITY-	108 -5 -3 7 1609 1583 26 397 1207.5 26.6 92 117 66.6	58.8 120 2 77 6 799 799 397 1207.5 13.0 46 117 34.3	18.6 60 57 1270 270 397 1207.5 9.1 32 117 11.6 45	285 8.9 28 2 0 1 125 125 125 125 1207.5 9.0 32 117 5.4 21	285 10.1 32 3 0 1 143 143 143 143 143 1207.5 9.0 32 117 6.2 24	313 61.9 108 10 -7 3 769 769 769 397 1207.5 12.5 12.5 12.5 44 117 33.0	330 61.9 120 1 1 772 772 397 1207.5 12.5 12.5 117 33.2 42	339 48.9 150 3 653 692 .39 358 1206.0 12.5 44 114 29.5 102	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH GAVINS POIN' NAT INFLOW DEPLETION REGULATED FLON	834 28 22 24 6671 6689 -18 376 1206.7 21.5 284.2 C - SIOU 648 114 7 AT SIO	108 10 -5 1532 1537 153 371 1206.5 25.0 87 115 64.4 X CITY- 156 4.4 X CITY- 156 34 V CITY-	108 -5 -3 7 1609 1583 26 397 1207.5 26.6 92 117 66.6 - 114 22	58.8 120 2 27 6 799 799 397 1207.5 13.0 46 117 34.3 90 9	18.6 60 7 1 270 270 270 397 1207.5 9.1 32 117 11.6 45 6	285 8.9 28 2 0 1 125 125 125 125 127.5 9.0 32 117 5.4 21 3	285 10.1 32 3 0 1 143 143 143 143 143 143 143 143 297 1207.5 9.0 32 117 6.2 24 3	313 61.9 108 10 -7 3 769 769 769 769 769 769 769 769 769 769	330 61.9 120 1 772 772 397 1207.5 12.5 12.5 117 33.2 42 13	339 48.9 150 3 653 692 -39 358 1206.0 12.5 44 114 29.5 102 13	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER AVE POWER MW PEAK POW MW ENERGY GWH GAVINS POINT NAT INFLOW DEPLETION	834 28 22 24 6671 6689 -18 376 1206.7 21.5 284.2 C - SIOU 648 114 7 AT SIO	108 10 -5 1532 1537 153 371 1206.5 25.0 87 115 64.4 X CITY- 156 4.4 X CITY- 156 34 V CITY-	108 -5 -7 1609 1503 26 26 26 26 6 92 117 66 6 - 114 22	58.8 120 2 77 799 799 1207.5 13.0 46 117 34.3 90 9 880	18.6 60 5 7 1270 270 397 1207.5 9.1 32 117 11.6 45 6 309	285 8.9 28 2 0 1 125 125 125 125 1207.5 9.0 32 117 5.4 21	285 10.1 32 3 0 1 143 143 143 143 143 1207.5 9.0 32 117 6.2 24	313 61.9 108 10 -7 769 769 397 1207.5 12.5 12.5 44 117 33.0 54 12 811	330 61.9 120 1 1 772 772 397 1207.5 12.5 12.5 117 33.2 42	339 48.9 150 3 653 692 -39 358 1206.0 12.5 44 114 29.5 102 13 781	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH GAVINS POIN: NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS	834 28 22 24 6671 6689 -18 376 1206.7 21.5 284.2 C - SIOU 648 114 7 AT SIO	108 10 -5 1532 1537 -5 371 1206.5 25.0 87 115 64.4 X CITY- 156 34 UX CITY 1659	108 -5 -7 1609 1583 26 397 1207.5 26.6 92 117 66.6 - 114 22 1675	58.8 120 2 77 799 799 1207.5 13.0 46 117 34.3 90 9 880	18.6 60 5 7 1270 270 397 1207.5 9.1 32 117 11.6 45 6 309	285 8.9 28 2 0 1 125 125 397 1207.5 9.0 32 117 5.4 21 3 143	285 10.1 32 3 0 143 143 143 143 143 143 143 143 143 143	313 61.9 108 10 -7 769 769 397 1207.5 12.5 12.5 44 117 33.0 54 12 811	330 61.9 120 1 772 772 772 1207.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12	339 48.9 150 3 653 692 -39 358 1206.0 12.5 44 114 29.5 102 13 781	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FIMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH GAVINS POIN' NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS TOTAL NAT INFLOW	834 22 24 6671 16689 -18 376 1206.7 21.5 284.2 C - SIOU 648 114 V AT SIO 7223	108 10 5 5 1537 -5 371 1206.5 25.0 87 115 64.4 X CITY- 156 34 UX CITY- 1659 27.0 1110	108 -5 -3 7 1609 1583 297 1207.5 26.6 - - 114 22 1675 28.1 1014	58.8 120 2 77 99 799 799 1207.5 13.0 46 117 34.3 90 9 880 14.3 1032	18.6 60 5 7 1 270 270 397 1207.5 9.1 32 117 11.6 45 6 309 10.4 480	285 8.9 28 2 0 1 125 125 125 1207.5 9.0 32 117 5.4 21 3 143 10.3 224	285 10.1 32 3 0 1 143 143 143 143 143 1207.5 9.0 32 117 6.2 24 3 164 10.3 256	313 61.9 108 10 -7 769 769 769 769 769 1207.5 12.5 44 117 33.0 54 12 811 13.2 690	330 61.9 120 1 772 772 1207.5 12.5 45 117 33.2 42 13 801 13.0 888	339 48.9 150 3 653 692 .39 358 1205 12.5 44 114 29.5 102 13 781 14.1 1290	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FIMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH GAVINS POIN' NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS TOTAL NAT INFLOW	834 22 24 6671 16689 -18 376 1206.7 21.5 284.2 C - SIOU 648 114 V AT SIO 7223	108 10 5 5 1537 -5 371 1206.5 25.0 87 115 64.4 X CITY- 156 34 UX CITY- 1659 27.0 1110	108 -5 -3 7 1609 1583 297 1207.5 26.6 - - 114 22 1675 28.1 1014	58.8 120 2 77 99 799 799 1207.5 13.0 46 117 34.3 90 9 880 14.3 1032	18.6 60 5 7 1 270 270 397 1207.5 9.1 32 117 11.6 45 6 309 10.4 480	285 8.9 28 2 0 1 125 125 125 1207.5 9.0 32 117 5.4 21 3 143 10.3 224	285 10.1 32 3 0 1 143 143 143 143 143 1207.5 9.0 32 117 6.2 24 3 164 10.3 256	313 61.9 108 10 -7 769 769 769 769 769 1207.5 12.5 44 117 33.0 54 12 811 13.2 690	330 61.9 120 1 772 772 1207.5 12.5 45 117 33.2 42 13 801 13.0 888	339 48.9 150 3 653 692 .39 358 1205 12.5 44 114 29.5 102 13 781 14.1 1290	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FIMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH GAVINS POIN' NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS TOTAL NAT INFLOW	834 22 24 6671 16689 -18 376 1206.7 21.5 284.2 C - SIOU 648 114 V AT SIO 7223	108 10 5 5 1537 -5 371 1206.5 25.0 87 115 64.4 X CITY- 156 34 UX CITY- 1659 27.0 1110	108 -5 -3 7 1609 1583 297 1207.5 26.6 - - 114 22 1675 28.1 1014	58.8 120 2 77 99 799 799 1207.5 13.0 46 117 34.3 90 9 880 14.3 1032	18.6 60 5 7 1 270 270 397 1207.5 9.1 32 117 11.6 45 6 309 10.4 480	285 8.9 28 2 0 1 125 125 125 1207.5 9.0 32 117 5.4 21 3 143 10.3 224	285 10.1 32 3 0 1 143 143 143 143 143 1207.5 9.0 32 117 6.2 24 3 164 10.3 256	313 61.9 108 10 -7 769 769 769 769 769 1207.5 12.5 44 117 33.0 54 12 811 13.2 690	330 61.9 120 1 772 772 1207.5 12.5 45 117 33.2 42 13 801 13.0 888	339 48.9 150 3 653 692 .39 358 1205 12.5 44 114 29.5 102 13 781 14.1 1290	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW REGILASE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH -GAVINS POINT NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS -TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION STORAGE SYSTEM POWER	834 22 24 6671 1206.7 21.5 284.2 5 284.2 5 - SIOU 648 114 7223 6984 -782 -782 -821 38520	108 10 5 5 1537 -5 371 1206.5 25.0 87 115 64.4 X CITY- 156 4.4 X CITY- 155 27.0 1110 208 -117 -110 208 -117 -110 -15 -15 -15 -15 -15 -15 -15 -15	108 -5 -3 7 1609 1583 266 92 117 66.6 - 114 22 1675 28.1 1014 -132 232 36824	58.8 120 2 799 799 799 799 1207.5 13.0 46 117 34.3 90 9 880 14.3 1032 -12 200 36829	18.6 60 5 7 1 270 270 397 1207.5 9.1 32 117 11.6 45 6 309 10.4 480 -118 -28 37068	285 8.9 28 2 0 1 125 125 9.0 32 117 5.4 21 3 143 10.3 224 -55 22 37180	285 10.1 32 3 0 1 143 143 143 143 143 143 143 143 143 1	313 61.9 108 10 -7 769 769 769 769 769 769 769 769 769 76	330 61.9 120 1 772 772 772 772 772 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.	339 48.9 150 3 653 692 39 358 1206.0 12.5 44 114 29.5 102 13 781 14.1 1290 -147 6 38236	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH -GAVINS POINT NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION STORAGE SYSTEM POWER AVE POWER MW	834 22 24 6671 6689 -18 376 1206.7 21.5 284.2 284.2 2 - SIOU 618 114 7 AT SIO 7223 6984 -782 -5 821 38520	108 108 153 1537 5 371 1206.5 25.0 87 115 64.4 X CITY- 1659 27.0 1110 208 -11 187 37564 880	108 -5 -3 7 1609 1583 26 - 1207.5 26.6 - 114 22 1675 28.1 1014 -132 20 236824 639	58.8 120 2 799 397 1207.5 13.0 46 117 34.3 90 99 8800 14.3 1032 -12 42 200 36829 466	18.6 60 5 7 1 270 270 270 270 270 397 1207.5 9.1 32 117 11.6 45 6 309 10.4 480 -118 376 397 10.4 480 397 397 10.4 397 10.4 397 10.4 397 10.5 309 309 10.5 309 309 309 309 309 309 309 309	285 8.9 28 2 0 1 125 125 9.0 397 1207.5 9.0 32 117 5.4 21 3 10.3 224 -55 0 22 37180 396	285 10.1 32 3 0 143 143 143 143 143 297 6.2 24 3 164 10.3 256 6-63 -19 226 37291 432	313 61.9 108 10 769 769 397 1207.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12	330 61.9 120 1 772 772 397 1207.5 12.5 12.5 12.5 12.5 12.5 12.5 12.7 33.2 42 13 801 13.0 888 13.0 888 -231 -7 37575 636	339 48.9 150 3 653 692 -39 358 1206.0 12.5 44 114 29.5 102 13 781 14.1 1290 -147 6 38236 576	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW REGINFLOW RELEASE STOR CHANGE STORAGE ELEV FIMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH -GAVINS POIN' NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS -TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION STORAGE SYSTEM POWER MW PEAK POW MW	834 22 24 6671 1206.7 21.5 284.2 5 - SIOU 648 114 7223 6984 -75 821 38520	108 108 153 1537 -5 371 1206.5 25.0 87 115 64.4 X CITY- 155 64.4 X CITY- 1659 27.0 1110 208 -11 180 27.0 1110 208 -37 37564 880 2039 654.5	108 -5 -3 7 1609 1583 297 1207.5 26.6 92 117 66.6 - 114 22 1675 28.1 1014 -132 202 36824 639 2009	58.8 120 2 7 6 799 397 1207.5 13.0 46 117 34.3 90 9 880 14.3 1032 -12 420 36829 466 2007 346.7	18.6 60 57 7 1270 270 397 1207.5 9.1 32 117 11.6 45 6 309 10.4 480 -118 -2 488 37068 391 2012 140.8	285 8.9 28 2 0 1 125 125 9.0 32 117 5.4 21 3 10.3 224 -55 0 223 37180 396 2015 66.5	285 10.1 32 3 0 143 143 143 143 143 143 143 143 297 6.2 24 3 107 6.2 24 3 164 10.3 256 -63 -19 266 37291 432 2018 83.0	313 61.9 108 10 769 769 397 1207.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12	330 61.9 120 1 1 772 772 397 1207.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12	339 48.9 150 3 653 692 -39 358 1206.0 12.5 44 114 29.5 102 13 781 14.1 1290 -147 -6 38236 576 2066.8	
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW REGENESS STOR CHANGE STORAGE ELEV FIMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH -GAVINS POIN' NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS -TOTAL NAT INFLOW DEPLETION STORAGE SYSTEM POWER MW PEAK POW MW PEAK POW MW PENERGY GWH DAILY GWH	834 22 24 6671 1206.7 21.5 284.2 5 - SIOU 648 114 7223 6984 -75 821 38520	108 10 5 5 1537 -5 371 1206.5 25.0 87 115 64.4 X CITY- 156 34 UX CITY- 1659 27.0 1110 208 -11 187 37564 880 2039 654.5 21.1	108 -5 1609 1583 297 1207.5 26.6 - 117 66.6 - 114 22 1675 28.1 1014 -132 202 36824 639 2009 460.0 15.3	58.8 120 2 7 6 799 397 1207.5 13.0 46 117 34.3 90 9 880 14.3 1032 -12 400 36829 466 207 3467 34777 34777 34777 34777 34777 34777 34777 347777 347777 347777 3477777 347777777777	18.6 60 5 7 1 270 270 397 1207.5 9.1 32 117 11.6 45 6 309 10.4 480 -118 -28 370 6 309 10.4 480 -118 -28 370 10.4 480 -118 -28 370 200 200 200 200 200 200 200 2	285 8.9 28 2 0 1 125 125 9.0 32 117 5.4 21 3 10.3 224 -55 0 22 37180 396 2015 66.5 9.5	285 10.1 32 3 143 143 143 143 143 143 143 143 143 1	313 61.9 108 10 769 769 397 1207.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12	330 61.9 120 1 772 772 1207.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12	339 48.9 150 3 653 692 -39 358 1206.0 12.5 44 114 29.5 102 13 781 14.1 1290 -147 -6 38236 576 2066 386.8 13.8	

TIME OF STUDY 10:29:11

TIME OF STODS						VALUES	5 IN 100	O AF E	KCEPT AS	INDICA
31.JU	INI-SUM	31AUG	2009 30SEP		1 5 NOV	22NOV	30NOV	31DEC	31JAN	28FEB
FORT PECK- NAT INFLOW DEPLETION EVAPORATION MOD INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	1472 -390 376 1486 2282 -796 9472		160 -79 96 143 243 -100 9020 2200.2 4.1	200 -53 84 169 246 -77 8944 2199.7 4.0	104 -27 38 93 119 -26 8918 2199.5 4.0	49 -12 18 43 62 -19 8898 2199.4 4.5	55 ~14 20 50 ~30 8869 2199.2 5.0	200 -82 43 239 369 -130 8738 2198.3 6.0	252 -76 328 400 -72 8667 2197.8 6.5	292 -51 343 333 10 8676 2197.9 6.0
AVE POWER MU PEAK POW MW ENERGY GWH		83 129 61.9	48 128 34.7	47 127 35.1	47 127 16.9	53 127 8.9	59 127 11.3	70 126 52.2	76 125 56.3	70 125 46.9
GARRISON- NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW	1816 -492 6 451 4145	-4 93 687	280 -148 32 116 586	296 -5 1 100 447	120 -86 45 280	56 -40 -5 21 132	64 - 46 - 5 24 160	144 - 79 - 11 51 530	208 -58 -6 660	288 -36 6
RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	6319 -2174 12591 1817.2 15.2	15.5	14.2	11.5	11.5	11.5	13.5	17.5	1076 -416 10699 1809.0 17.5	17.0
AVE POWER MY PEAK POW MW ENERGY GWH OAHE		168 390 125.1	153 386 110.3	123 382 91.6	123 381 44.1	122 380 20.6	143 379 27.5	183 371 136.4	180 364 134.1	173 359 116.2
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE	280 179 -10 376 6035 6045 -11 10958	40 93 -2 77 822 1424 ~603 10355	72 24 7 95 806 656 150 10506	44 -7 15 84 689 702 -13 10493	22 3 324 248 75 10569	10 1 151 120 31 10599	12 1 -11 20 193 137 57 10656	14 - 22 44 996 940 56 10712	8 19 1065 856 209 10922	72 31 3 988 962 26 10947
ELEV FTMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH	19.5 I	1573.3 23.2 248 531 184.3	1574.1 11.0 118 535 84.7	1574.0 11.4 122 535 90.8	1574.4 8.3 89 537 32.2	1574.5 8.7 93 538 15.6	1574.8 8.6 93 539 17.8	1575.1 15.3 164 541 122.1	1576.2 13.9 150 546 111.7	1576.3 17.3 187 547 125.9
BIG BEND- EVAPORATION REG INFLOW RELEASE STORAGE ELEV FTMSL DISCH KCFS POWER	121 5924 5989 1687	25 1400 1466 1621 1420.0 23.8	31 625 625 1621 1420.0 10.5	27 675 675 1621 1420.0 11.0	12 236 236 1621 1420.0 7.9	6 115 114 1621 1420.0 8.2	7 130 130 1622 1420.0 8.2	14 926 925 1622 1420.0 15.1	856 856 1622 1420.0 13.9	962 962 1622 1420.0 17.3
AVE POWER MU PEAK POW MW ENERGY GWH		113 518 83.9	53 538 38.3	56 538 41.3	40 538 14.5	42 538 7.0	42 538 8.0	76 538 56.2	69 538 51.2	83 529 55.9
FORT RANDAI NAT INFLOW DEPLETION EVAPORATION REG INFLOW RELEASE STOR CHANGE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	100 34 119 5929 6244 -315 3436	1485 -61 3375	16 7 33 594 1602 -1008 2366 1338.7 26.9	8 1 23 659 728 -69 2297 1337.5 11.8	4 10 229 230 -1 2297 1337.5 7.7	2 0 5 111 111 0 2296 1337.5 8.0	5 126 127 0 2296	11.7	16 3 869 689 180 2675 1343.7 11.2	10.0
AVE POWER MV PEAK POW MW ENERGY GWH	588.5	201 349 149.7	210 290 151.1	87 285 64.7	57 285 20.4	59 285 9.9	58 285 11.2	87 301 64.6	86 314 63.6	79 339 53.2
CAVINS POIN NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL ELEV FTMSL DISCH KCFS	556 28 20 45 6747 6765 -18 376	72 10 -6 9 1532 1537 -5 371 1206.5 25.0	72 -5 -5 11 1662 1636 26 397 1207.5 27.5	80 2 28 10 824 824 397 1207.5 13.4	40 5 268 268 268 397 1207.5 9.0	19 2 -1 125 125 125 125 1207-5 9.0	21 3 0 2 143 143 143 1207.5 9.0	72 10 -7 5 769 769 769 1207.5 12.5	80 1 1 769 769 397 1207.5 12.5	100 2 655 694 -39 358 1206.0 12.5
POWER AVE POWER MW PEAK POW MW ENERGY GWH	7 287.3	87 115 64.4	95 117 68.7	48 117 35.4	32 117 11.6	32 117 5.4	32 117 6.2	44 117 33.1	44 117 33.0	44 114 29.6
GAVINS POIN NAT INFLOW DEPLETION REGULATED FLO KAF KCFS	432 114	104 34 DUX CIT	76 22 4	60 9 875 14.2	30 6 292 9.8	14 3 136 9.8	16 3 156 9.8	36 12 793 12.9	28 13 784 12.7	68 13 749 13.5
TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION STORAGE SYSTEM POWER	4656 -527 9 1487 38520	740 162 -12 311 37167	676 -179 26 382 35975	688 -53 44 328 35557	320 -99 8 148 35544	149 -46 -6 69 35527	171 -53 -16 79 35500	460 -122 -40 170 35079	592 -98 -5 34980	860 -40 11 35142
AVE POWER MY PEAK POW MW ENERGY GWH DAILY GWH		899 2032 669.2 21.6	677 1994 487.8 16.3	482 1984 358.9 11.6	388 1985 139.7 9.3	401 1985 67.3 9.6	427 1986 81.9 10.2	624 1993 464.6 15.0	605 2004 450.0 14.5	636 2013 427.7 15.3
	INI-SUM	31AUG	30SEP	310CT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

DATE OF STUDY 01/26/06

DATE OF STUD											SIMULA		99001	9901		AGE	1
TIME OF STUD		36				SR-FT VALUE	S IN 10	NAV SEA 00 AF E	S 14-DAN XCEPT AS	S INDIC	+4.2'GA ATED	RR-3.0			STUDY	NO	4
28F	EB06 INI-SUM	15MAR	200 22MAR	5 31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	310CT	1 5NOV	22NOV	20 30NOV	31DEC	31JAN	28FEB
FORT PECK NAT INFLOW DEPLETION EVAPORATION	9600 378 283 8939	- 39	149 -18 167	192 -23	797 36 761	1604 340 1264	2491 580 1911	1219 170 18 1031	456 -66 58 464	379 -113 74 418	531 -68 66 533	210 -24 16 218	-11 7	112 -13 9 116	346 -126 35 437	297 -151 448	400 -96 496
MOD INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	4173 4767 9570	358 179 180 9750 2204.9 6.0	56 112 9862 2205.6 4.0	215 71 143 10005 2206.5 4.0	238 523 10528 2209.8 4.0	369 895 11423 2215.1 6.0	1911 417 1494 12917 2223.5 7.0	430 601 13518 2226.7 7.0	430 33 13551	302 116 13668 2227.4 5.1	249 284 13952	121 97 14049 2229.4 4.1	83 18 14068	95 21 14089 2229.6 6.0	400 37 14126 2229.8 6.5	440 400 48 14174 2230.0 5.5	333 163 14337
POWER AVE POWER M PEAK POW MW ENERGY GWH		72 133 26.0	48 134 8.1	49 135 10.5	49 139 35.4	75 145 55.9	91 154 65.2	93 157 69.0	93 157 69.4	68 157 48.8	54 158 40.5	55 159 19.7	81 159 13.6	81 159 15.5	87 159 65.1	88 159 65.1	81 160 54.4
GARRISON NAT INFLOW DEPLETION CHAN STOR EVAPORATION	14199 961 11 317	515 -15 11	240 -7 22	309 -9	1376 6	1934 192 -22	3530 883 -11	2647 513 21	841 64 67	574 -154 20 84	652 -13 10 73	260 -103 0 17	121 -48 -20 8	139 -55 9	278 -119 -5 38	348 -108	434 -66 5
REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	17104 13143 3962 11504 1812.6 18.0		325 208 117 11866 1814.2 15.0	390 268 122 11988 1814.7 15.0	1608 1071 537 12525 1816.9 18.0	2089 1168 921 13446 1820.7 19.0	3053 1190 1863 15308 1827.8 20.0	2544 1230 1314 16623 1832.5 20.0	1141 1230 -89 16534 1832.2 20.0	965 1012 -46 16488 1832.0 17.0	851 826 25 16513 1832.1 13.4	466 400 66 16579 1832.3 13.4	225 208 16 16595 1832.4 15.0	279 286 -6 16589 1832.4 18.0	753 1230 -476 16113 1830.7 20.0	856 1230 -374 15738 1829.4 20.0	838 1111 -272 15466 1828.4 20.0
POWER AVE POWER M PEAK POW MW ENERGY GWH	1846.1	169 381 60.9	160 383 26.8	160 385 34.6	194 393 139.5	209 407 155.3	228 433 164.1	237 450 176.3	240 449 178.8	204 448 147.2	162 448 120.4	162 449 58.3	181 449 30.4	217 449 41.6	239 443 177.9	237 438 176.2	235 435 157.9
OAHE NAT INFLOW DEPLETION CHAN STOR EVAPORATION	3850 613 -8 296	559 23 10	261 11 5	335 14 0	474 47 -15	347 66 -5	881 129 -5	297 151 20	123 100 62	163 25 14 77	102 -8 16 68	109 2 0 16	51 1 -7 8	58 1 -13 9	22 11 -9 37	10 16	59 26
REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	16075 11156 4920 12062	1022 323 700 12762 1584.8 10.8	463 173 290 13052 1586.0 12.5	589 209 380 13432 1587.6 11.7	1484 694 790 14221 1590.9 11.7	1445 967 477 14699 1592.8 15.7	1937 1024 914 15613 1596.3 17.2	1356 1325 31 15643	1191 1511 -320 15323	1086 1085 1 15324 1595.2 18.2	884 539 345 15670	491 517 -26 15644 1596.4 17.4	244 80 164 15807 1597.0 5.8	321 119 202 16009	1195 1057 138 16148	1224 914 310 16457 1599.4 14.9	1144 619 525 16982 1601.3 11.1
POWER AVE POWER MU PEAK POW MW ENERGY GWH	1630.3	123 592 44.1	143 598 24.0	135 607 29.2	137 623 98.4	187 632 138.9	207 650 149.2	262 650 194.8	297 644 221.2	220 644 158.6	107 651 79.3	211 650 76.1	71 653 11.9	92 657 17.7	211 660 157.0	184 665 136.5	139 675 93.4
BIG BEND- EVAPORATION REG INFLOW RELEASE STORAGE ELEV FTMSL DISCH KCFS	71 11085 11085 1620	323 323 1620 1420.0 10.8	173 173 1620 1420.0 12.5	209 209 1620 1420.0 11.7	694 694 1620 1420.0 11.7	967 967 1620 1420.0 15.7	1024 1024 1620 1420.0 17.2	5 1321 1321 1620 1420.0 21.5	15 1496 1496 1620 1420.0 24.3	19 1066 1066 1620 1420.0 17.9	16 522 522 1620 1420.0 8.5	4 513 513 1620 1420.0 17.2	2 78 1620 1420.0 5.6	2 117 117 1620 1420.0 7.4	9 1049 1049 1620 1420.0 17.1	914 914 1620 1420.0 14.9	619 619 1620 1420.0 11.1
POWER AVE POWER MW PEAK POW MW ENERGY GWH	641.1	51 517 18.5	58 509 9.8	55 509 11.8	55 509 39.3	74 509 54.8	81 509 58.0	101 509 74.8	114 509 84.7	85 525 61.5	43 538 32.0	87 538 31.2	29 538 4.8	37 538 7.2	84 538 62.7	72 538 53.9	54 529 36.0
FORT RANDAL NAT INFLOW DEPLETION EVAPORATION	1501 80	190 1	89 1	114 1	298 4	159 9	224 12	111 18	72 15	92 7	60 1	5	2	3	23	10 3	49 3
REG INFLOW RELEASE	78 12424 12421	511 217	261 127	322 322	988 988	1117 1117	1236 1236	6 1408 1408	19 1535 1535	23 1128 1475	16 560 1447	3 513 531	1 80 80	2 117 117	8 1061 695	921 664	665 461
STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	3 3121 1350.0 9.0	294 3415 1353.6 7.3	134 3549 1355.2 9.2	3549 1355.2 18.0	3549 1355.2 16.6	3549 1355.2 18.2	3549 1355.2 20.8	0 3549 1355.2 22.9	0 3549 1355.2 25.0	-347 3202 1351.0 24.8	-887 2315 1337.8 23.5	-18 2297 1337.5 17.8	0 2297 1337.5 5.7	0 2297 1337.5 7.4	366 2663 1343.5 11.3	257 2920 1347.2 10.8	204 3124 1350.0 8.3
AVE POWER MW PEAK POW MW ENERGY GWH	1230.2	61 351 21.9	78 356 13.1	153 356 33.1	141 356 101.5	154 356 114.6	176 356 126.5	194 356 144.0	211 356 156.8	206 342 148.2	181 286 135.0	130 285 46.8	42 285 7.1	54 285 10.4	85 313 63.2	85 330 63.1	67 339 45.1
CAVINS POIN NAT INFLOW DEPLETION CHAN STOR EVAPORATION	2252 114 0 26	107 0 3	50 0 - 4	64 0 -17	246 5 3	319 19 -3	281 24 ~5	211 39 -4 2	170 10 -4 5	135 -5 0 7	157 2 2 6	60 5 11 1	28 2 22 1	32 3 -3 1	95 10 -7 3	106 1 1	191 5
REG INFLOW RELEASE STOR CHANGE	14533 14533	328 328	174 174	370 370	1232 1232	1414 1414	$1488 \\ 1488$	1574 1574	1685 1672 13	1609 1583 26	1599 1599	595 595	127 127	143 143	769 769	770 770	657 696 -39
STORAGE ELEV FTMSL DISCH KCFS POWER	358 1206.0 12.5	11.0	12.5	358 1206.0 20.7	20.7	23.0	25.0	25.6	371 1206.5 27.2	397 1207.5 26.6	397 1207.5 26.0	20.0	397 1207.5 9.2	9.0	397 1207.5 12.5	397 1207.5 12.5	358 1206.0 12.5
AVE POWER MW PEAK POW MW ENERGY GWH ~-GAVINS POIN	610.1	39 114 13.9	$44 \\ 114 \\ 7.4$	71 114 15.4	71 114 51.4	79 114 58.7	86 114 61.6	88 114 65.1	93 115 69.3	92 117 66.6	91 117 67.8	71 117 25.4	33 117 5.5	32 117 6.2	44 78 33.1	44 78 33.1	44 76 29.7
NAT INFLOW DEPLETION REGULATED FLO	3100 248	195 6	91 3	117 4	1006 20	553 34	318 30	246 37	184 34	127 22	66 9	26 6	12 3	14 3	30 12	12 13	105 13
KAF KCFS TOTAL	17385	516 17.3	262 18.9	483 27.0	2218 37.3	1933 31.4	1776 29.8	1783 29.0	1822 29.6	1688 28.4	1656 26.9	615 20.7	137 9.8	153 9.7	787 12.8	769 12.5	788 14.2
NAT INFLOW DEPLETION CHAN STOR EVAPORATION	34502 2394 -1 1071	1885 -24 24	879 -11 23	1131 -15 -17	4197 118 -12	4916 660 -29	7725 1658 -20	4731 928 -4 70	1846 157 -4 225	1470 -218 33 283	1568 -77 24 246	670 -114 10 58	312 -53 -3 27	357 -61 -17 31	794 -209 -21 130	783 -226 1	1238 -120 10
STORAGE SYSTEM POWER AVE POWER MW PEAK POW MW	38236	39654 515 2088	40306 531 2094	40952 623 2106	42801 646 2134	45095 777 2163	49366 867 2216	51311 973 2236	50949 1049 2230	50699 876 2234	50467 639 2198	50586 715 2199	50785 436 2202	51001 513 2205	51066 751 2191	51307 710 2208	51887 620 2213
PEAK POW MW ENERGY GWH DAILY GWH	6620.1	185.3 12.4	2094 89.3 12.8	134.6 15.0	2134 465.4 15.5	578.3 18.7	624.5 20.8	2236 724.0 23.4	2230 780.3 25.2	630.8 21.0	475.1 15.3	257.5 17.2	73.2 10.5	98.5 12.3	559.0 18.0	527.9 17.0	416.5 14.9
	INI-SUM	15MAR	22MAR	31MAR	30APR	3 1 <b>MA</b> Y	30 <i>JU</i> N	31JUL	31AUG	30SEP	310CT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

	TUDY 01/26					SHORTE	N NAVIG	ATION SI	EASON 2			ATION	99001	9901	9901 P. STUDY	NO	1 5
	28FEB05 INI-SU	M 15MAR	200 22MAR		30APR	VALUE: 31MAY			CEPT AS	S INDICA 30SEP	ATED 310CT	15NOV	22NOV	20) 30NOV		31JAN	28FE
FORT F NAT INFL DEPLETIC EVAPORAT MOD INFL RELEASE STOR CHA STORAGE ELEV FTM DISCH KC	LOW 890 DN 38 TION 29 LOW 822 SI4 ANGE 308 957 ISL 2203.	0 -38 2 9 334 5 179 5 156 0 9726 8 2204.8	-18 156 69 87 9813 2205.3	178 -23 201 89 111 9924 2206.0 5.0	10270	1487 340 1147 492 655 10925 2212.2 8.0	2309 580 1729 506 1223 12148 2219.2 8.5	1130 158 17 955 492 463 12611 2221.8 8.0	423 -62 55 430 492 -62 12549 2221.5 8.0	351 -126 70 407 357 50 12600 2221.7 6.0	492 -67 61 498 252 245 12845 2223.1 4.1	195 -23 28 190 146 44 12889 2223.3 4.9	91 -11 13 89 97 -9 12881 2223.3 7.0	104 -12 15 101 127 -26 12855 2223.1 8.0	321 -120 32 409 523 -114 12741 2222.5 8.5	276 -143 419 523 -104 12637 2221.9 8.5	-9 46 44 1 1265 2222.
POWER AVE POWE PEAK POW ENERGY G	i mw	72 133 9 26.0	134	61 135 13.1	73 137 52.7	99 142 73.6	108 150 77.7	104 152 77.3	104 152 77.7	78 152 56.5	54 153 40.1	65 154 23.2	92 154 15.5	105 154 20.2	112 153 83.0	111 152 82.8	15
GARRI NAT INFI DEPLETIC CHAN STO EVAPORAT REG INFL RELEASE STOR CHA	.OW 1290 DN 94 DR -1 'ION 34 .OW 1674 1298	8 -15 1 11 3 4 686 6 476	-7 11 312 208	289 -9 387 268 119	1250 8 -11 1588 1041 547	1723 210 -22 1983 1199 784	3207 859 -5 2848 1190 1658	2405 517 20 2365 1230 1135	764 72 65 1119 1230 -111	522 -129 20 82 946 1012 -65	593 -13 19 72 806 695 111	236 -111 -8 33 452 387 65	110 -52 -22 15 222 194 28	126 -59 -10 17 284 286 -1	260 -132 -5 38 872 1230 -358	316 -116 955 1230 -275	-7 91 111
STORAGE ELEV FTM DISCH KC POWER	1150 ISL 1812. IFS 18.	4 11714 6 1813.5 0 16.0	11818 1814.0 15.0	11937 1814.5 15.0	12484 1816.8 17.5	13268 1820.0 19.5	14927 1826.4 20.0	16062 1830.5 20.0	15951 1830.1 20.0	15885 1829.9 17.0	15996 1830.3 11.3	16061 1830.5 13.0	16089 1830.6 14.0	16088 1830.6 18.0	15730 1829.3 20.0	15455 1828.3 20.0	1526 1827. 20.
AVE POWE PEAK POW ENERGY G	MW WH 1808.	169 380 4 60.9	382	160 384 34.5	188 392 135.4	213 404 158.8	226 428 162.9	234 443 174.4	237 441 176.5	202 440 145.2	$135 \\ 442 \\ 100.2$	155 443 55.8	167 443 28.1	214 443 41.1	237 438 176.1	235 435 174.8	
OAH NAT INFL DEPLETIO CHAN STO EVAPORAT REG INFL RELEASE STOR CHA STORAGE ELEV FTM DISCH KC	OW 320 N 61 R - ION 31 OW 1525 1140 NGE 384 1206 SL 1581.	3 23 9 10 2 923 3 503 9 421 2 12483 6 1583.5	11 5 417 86 332 12814	276 14 0 530 246 284 13098 1586.2 13.8	394 47 -12 1376 792 584 13682 1588.7 13.3	285 66 -10 1408 1039 370 14051 1590.2 16.9	749 129 -2 1808 1096 712 14763 1593.0 18.4	246 151 1306 1380 -74 14689 1592.7 22.4	103 100 59 1174 1370 -196 14493 1592.0 22.3	135 25 14 75 1061 804 257 14751 1593.0 13.5	85 -8 26 5 749 968 -219 14532 1592.1 1592.1	91 2 -8 30 438 219 219 14751 1593.0 7.4	42 1 -5 14 217 112 106 14857 1593.4 8.0	48 1 -18 299 126 172 15029 1594.1 8.0	18 11 -9 35 1193 1068 125 15154 1594.6 17.4	5 16 1219 918 301 15455 1595.7 14.9	4 2 113 67 45 1591 1597. 12.
POWER AVE POWE PEAK POW ENERGY G	R MW MW	190 585	70 593 11.8	15.8 158 599 34.1	154 612 111.1	198 620 147.1	218 634 157.1	22.4 267 632 198.9	22.3 265 628 196.8	161 633 115.9	13.7 188 629 139.6	88 633 31.7	96 635 16.2	96 639 18.4	209 641 155.5	14.3 180 647 134.3	12. 14 65 99.
BIG B EVAPORAT REG INFL RELEASE STORAGE ELEV FTM DISCH KC	ION 7 OW 1132 1132 162 SL 1420.	5 503 5 503 0 1620 0 1420.0		246 246 1620 1420.0 13.8	792 792 1620 1420.0 13.3	1039 1039 1620 1420.0 16.9	1096 1096 1620 1420.0 18.4	5 1375 1375 1620 1420.0 22.4	15 1355 1355 1620 1420.0 22.0	19 785 785 1620 1420.0 13.2	16 952 952 1620 1420.0 15.5	7 212 212 1620 1420.0 7.1	3 108 108 1620 1420.0 7.8	4 122 122 1620 1420.0 7.7	9 1060 1060 1620 1420.0 17.2	918 918 1620 1420.0 14.9	67 67 162 1420. 12.
POWER AVE POWE PEAK POW ENERGY G	MW	79 510 5 28.5	29 509 4.8	65 509 13.9	62 509 44.9	79 509 58.8	86 509 62.1	105 509 77.9	104 518 77.6	65 538 46.9	78 538 58.0	36 538 13.0	40 538 6.6	39 538 7.5	85 538 63.4	73 538 54.2	5 52 39,
- FORT RAI NAT INFL DEPLETIO EVAPORAT REG INFL RELEASE STOR CHAI STORAGE ELEV FTM DISCH KC	OW 1200 N 8 ION 8 OW 12360 12360 NGE 1 SL 1350.0	0 1 5 643 4 232 3 411 L 3532 0 1355.0	66 1 151 134 17 3549 1355.2 9.7	85 1 330 330 3549 1355.2 18.5	239 4 1027 1027 3549 1355.2 17.3	150 9 1180 1180 3549 1355.2 19.2	195 12 1279 1279 3549 1355.2 21.5	89 18 6 1440 1440 0 3549 1355.2 23.4	65 15 19 1386 1560 -174 3375 1353.1 25.4	64 7 21 821 1496 -675 2700 1344.1 25.1	38 1 15 974 1378 -403 2297 1337.5 22.4	3 1 6 208 208 0 2297 1337.5 7.0	1 0 3 106 106 2297 1337.5 7.6	1 3 120 120 2297 1337.5 7.6	18 3 8 1067 701 366 2663 1343.5 11.4	5 3 920 683 237 2900 1347.0 11.1	71 48 22 312 1350. 8.
POWER AVE POWE PEAK POW ENERGY G	MW	65 355 23.5	82 356 13.8	157 356 33.9	146 356 105.5	163 356 121.0	182 356 130.9	198 356 147.3	212 349 158.0	201 315 144.7	167 285 124.5	51 285 18.5	56 285 9.4	55 285 10.6	86 313 63.7	87 328 64.7	7: 33: 47.
-GAVINS I NAT INFL DEPLETION CHAN STON EVAPORAT REG INFL RELEASE STOR CHAN	OW 1899 N 114 R -1 ION 21 OW 14119 14119	0 2 3 3 3 2 8 3 2 8	44 0 -4 174 174	56 0 -17 370 370	207 5 2 1232 1232	257 19 -4 1414 1414	237 24 -4 1488 1488	178 39 -4 2 1574 1574	144 10 -4 5 1685 1672 13	114 -5 0 7 1609 1583 26	132 2 5 6 1506 1506	51 29 3 279 279	24 -1 125 125	27 3 0 1 143 143	86 10 -7 3 767 767	89 1 1 771 771	16: 654 692 -39
STORAGE ELEV FTM DISCH KCI POWER	350 SL 1206.0 FS 12.9	0 1206.0 5 11.0	12.6	20.7	20.7	23.0	25.0	25.6	371 1206.5 27.2	397 1207.5 26.6	24.5	9.4	9.0	9.0	12.5	12.5	358 1206.0 12.5
AVE POWER PEAK POW ENERGY G	MW WH 592."		44 114 7,4	71 114 15.4	71 114 51.4	79 114 58.7	86 114 61.6	88 114 65.1	93 115 69.3	92 117 66.6	86 117 64.0	33 117 12.0	32 117 5.4	32 117 6.2	44 78 33.0	45 78 33.1	44 76 29.6
NAT INFLO		181 6 OUX CITY	85 3	109 4 475 26.6	811 20 2023 34.0	406 34 1786 29.0	252 30 1710 28.7	199 37 1736 28.2	148 34 1786 29.1	97 22 1658 27.9	53 9 1550 25.2	21 6 294 9.9	10 3 132 9.5	11 3 151 9.5	24 12 779 12.7	10 13 768 12.5	84 13 764 13.8
TOTAL NAT INFLO DEPLETION CHAN STOP EVAPORATI STORAGE	DW 30602 N 2382 R -19	-23 24	772 -11 12 39973	992 -14 -17 40487	3640 120 -21 41964	4308 678 -35 43772	6949 1634 -12 47366	4247 920 2 68 48890	1647 169 -4 218 48360	1283 -206 35 273 47953	1393 -76 51 236 47687	595 -121 13 106 48015	278 -56 -27 50 48140	317 -65 -28 57 48286	727 -216 -21 124 48305	701 -226 1 48464	1098 -124 9 48932
SYSTEM PO	OWER	614 2079	445 2088	671 2097	696 2121	831 2145	906 2190	996 2206 740.9	1016 2204 755.9	800 2196 575.8	708 2164	428 2170 154.2	483 2172 81.2	542 2175 104.0	772 2161 574.6	731 2178 543.8	660 2183 443.8

DATE OF STUDY 01/27/06 TIME OF STUDY 13:17:03 2005-2006 AOP MEDIAN RUNOFF SIMULATION 99001 9901 4 PAGE 1

STUDY NO 6

TIME OF STUDY									SEASON 3		MIION		99001	3901	STUDY	NO	т Б
28FEB			200	6					XCEPT AS		ATED			20			°
		15MAR			30APR	31MAY	3 0 JUN	31JUL	31AUG	30SEP	310CT	15NOV	22 <b>N</b> OV	30NOV	31DEC	31JAN	28FEB
- FORT PECK NAT INFLOW DEPLETION EVAPORATION MOD INFLOW RELEASE STOR CHANGE STORAGE ELEV FIMSL DISCH KCFS	7400 230 356 6814 5159 1655 9081 2200.6 6.0	264 -7 272 179 93 9174 2201.2 6.0	123 -3 127 69 57 9232 2201.6 5.0	158 -4 163 89 74 9305 2202.1 5.0	628 55 573 357 216 9521 2203.5 6.0	1210 230 980 492 488 10009 2206.6 8.0	443 1408 536 872 10882 2211.9	829 225 21 583 523 60 10942 2212.3 8.5		319 -138 85 372 317 54 10821 2211.5 5.3	398 -105 75 428 246 182 11003 2212.6 4.0	188 -33 34 186 149 38 11041 2212.8 5.0	88 -15 16 87 97 -10 11030 2212.8 7.0	100 -18 18 99 127 -27 11003 2212.6 8.0	310 -112 39 383 492 -109 10894 2212.0 8.0	261 -134 395 523 -128 10766 2211.2 8.5	349 -93 442 472 -30 10736 2211.0 8.5
POWER AVE POWER MW PEAK POW MW ENERGY GWH	770.5	71 129 25.5	59 130 10.0	59 130 12.8	72 132 51.6	96 135 71.7	111 141 79.7	106 142 78.9	100 140 74.2	67 141 47.9	50 142 37.3	63 142 22.6	88 142 14.8	100 142 19.2	100 141 74.4	106 140 78.7	106 140 71.0
- CGARRISON NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	11001 883 -28 418 14831 12829 2003 10909 1809.9 18.0	469 -2 650 417 233 11143 1811.0 14.0	219 -1 11 300 194 106 11249 1811.5 14.0	282 -1 372 250 122 11371 1812.0 14.0	853 10 -11 1189 893 296 11667 1813.3 15.0	1423 197 -22 1696 1230 466 12133 1815.3 20.0	2958 739 -11 2744 1220 1524 13657 1821.5 20.5	2066 530 25 2039 1230 809 14466 1824.7 20.0	581 87 5 911 1199 ~288 14178 1823.5 19.5	497 -157 28 101 899 969 -70 14108 1823.3 16.3	454 -36 14 88 662 727 -64 14043 1823.0 11.8	192 -110 -11 40 378 22 14065 1823.1 12.7	89 -51 -21 19 198 208 -10 14055 1823.1 15.0	102 -58 -11 256 286 -30 14025 1823.0 18.0	253 -116 46 815 1230 -414 13611 1821.3 20.0	237 -92 -5 846 1261 -414 13197 1819.7 20.5	326 -56 0 854 1139 -284 12912 1818.5 20.5
	1716.2	145 371 52.3	146 373 24.6	147 375 31.7	158 380 113.9	213 387 158.2	224 410 161.5	226 421 168.2	222 417 165.2	$185 \\ 416 \\ 133.2$	134 415 100.0	144 415 51.9	170 415 28.6	204 415 39.1	225 409 167.1	228 403 169.3	225 399 151.5
DISCH KCFS	2300 613 -12 369 14135 12082 2053 11451 1578.8 15.4	317 23 21 731 404 327 11778 1580.3 13.6	148 11 331 212 120 11898 1580.9 15.3	190 14 426 258 168 12065 1581.6 14.5	364 47 -5 1204 977 227 12293 1582.7 16.4	236 66 -25 1374 1133 242 12535 1583.8 18.4	689 129 -3 1777 1177 601 13135 1586.4 19.8	162 151 2 1221 1492 -271 12864 1585.2 24.3	33 100 2 70 1064 1430 -366 12498 1583.6 23.3	118 25 16 88 990 878 112 12611 1584.1 14.8	14 -8 22 77 694 893 -199 12412 1583.2 14.5	5 2 -4 35 342 226 117 12529 1583.7 7.6	2 1 -12 16 182 115 67 12596 1584.0 8.3	3 -15 19 254 130 124 12720 1584.6 8.2	-20 11 -10 41 1148 931 217 12937 1585.5 15.1	16 -2 942 300 13237 1586.8 15.3	40 26 1153 886 267 13504 1587.9 15.9
POWER Ave power MW Peak pow MW Energy GWH	1660.5	150 568 54.1	170 571 28.5	162 575 34.9	184 581 132.6	208 586 154.6	225 600 162.3	277 594 206.3	264 585 196.2	167 588 120.5	164 583 122.4	86 586 31.0	94 588 15.8	93 590 17.9	173 596 128.6	176 602 131.0	185 608 124.0
DISCH KCFS Power Ave Power MW PEAK Pow MW	103 11978 11978 1622 1420.0 15.4	13.6 64 517	15.3 71 509	14.5 68 509	16.4 77 509	18.4 86 509	19.8 93 509	24.2 113 509	22.9 108 518	14.3 71 538	14.2 71 538	7.3 37 538	8.0 40 538	7.9 40 538	14.9 75 538	15.3 75 538	886 886 1622 1420.0 15.9 77 529
ENERGY GWH FORT RANDALL- NAT INFLOW DEPLETION EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FIMSL 1 DISCH KCFS	900 80 107 12692 12691 2 3122	23.2 122 1 525 232 293 3415 1353.6 7.8	12.0 57 1 268 134 134 3549 1355.2 9.7	14.6 73 1 331 331 3549 1355.2 18.5	55.4 115 4 1088 1088 3549 1355.2 18.3	64.2 140 9 1264 1264 3549 1355.2 20.5	66.7 185 12 1350 1350 3549 1355.2 22.7	84.2 74 18 8 1534 1534 0 3549 1355.2 24.9	80.7 57 15 25 1427 1601 -174 3375 1353.1 26.0	51.0 42 7 28 860 1535 -675 2700 1344.1 25.8	53.2 2 1 20 852 1256 -403 2297 1337.5 20.4	13.2 2 1 8 209 209 0 2297 1337.5 7.0	6.8 1 0 107 107 2296 1337.5 7.7	7.7 1 4 121 121 2296 1337.5 7.6	55.8 10 3 10 916 713 203 2499 1341.0 11.6	56.1 3 939 689 250 2749 1344.8 11.2	51.4 19 3 528 374 3123 1350.0 9.5
POWER AVE POWER MW PEAK POW MW	1248.8	65 351 23.3	82 356 13.8	157 356 33.9	155 356 111.6	174 356 129.4	192 356 138.1	211 356 156.7	218 349 162.1	206 315 148.4	153 285 113.6	52 285 18.6	56 285 9.5	56 285 10.7	86 301 64.1	86 319 64.0	76 339 51.1
RELEASE STOR CHANGE STORAGE ELEV FTMSL 1 DISCH KCFS	1450 114 -1 38 13988 13988 13988	92 0 3 328 328 358 1206.0 11.0	43 0 -4 174 174 358 1206.0 12.5	55 0 -17 370 370 358 1206.0 20.7	148 5 0 1232 1232 358 1206.0 20.7	174 19 -4 1414 1414 358 1206.0 23.0	166 24 -4 1488 1488 358 1206.0 25.0	86 39 -4 2 1574 1574 358 1206.0 25.6	103 10 -2 7 1685 1672 13 371 1206.5 27.2	77 -5 0 1609 1583 26 397 1207.5 26.6	122 2 10 8 1377 1377 397 1207.5 22.4	50 25 4 275 275 397 1207.5 9.2	23 2 -1 25 125 125 397 1207.5 9.0	27 3 0 143 143 397 1207.5 9.0	77 10 -7 4 769 769 397 1207.5 12.5	79 1 1 767 767 1207.5 12.5	127 3 658 697 - 39 358 1206.0 12.5
POWER AVE POWER MW PEAK POW MW ENERGY GWH	587.2	39 114 13.9	44 114 7.4	71 114 15.4	71 114 51.4	79 114 58.7	86 114 61.5	88 114 65.1	93 115 69.3	92 117 66.6	79 117 58.6	33 117 11.9	32 117 5.4	32 117 6.2	44 78 33.0	44 78 33.0	44 76 29.7
NAT INFLOW DEPLETION REGULATED FLOW	1550 251	X CITY- 169 6 UX CITY 491 16.5	79 3 250 18.0	102 4 467 26.2	199 21 1410 23.7	310 35 1689 27.5	224 30 1682 28.3	129 37 1666 27.1	96 34 1734 28.2	60 22 1621 27.2	42 10 1409 22.9	16 6 286 9.6	7 3 130 9.4	9 3 148 9.4	21 12 778 12.6	5 13 759 12.4	82 13 766 13.8
DEPLETION CHAN STOR EVAPORATION	24601 2171 -40 1391	1435 21 24	669 10 7	860 12 -17	2307 142 -16	3493 556 -52	6073 1377 -17	3346 1000 3 85	1194 186 269	1113 -246 45 335	1032 -136 46 289	452 -130 11 130	211 -60 -34 61	241 -69 -25 70	651 -192 -17 151	582 -193 ~7	943 -107 3
SYSTEM POWER AVE POWER MW PEAK POW MW	36543 679.3	37490 534 2051 192.4 12.8	37907 572 2053 96.2 13.7	38270 664 2060 143.4 15.9	39010 717 2072 516.4 17.2	40206 856 2088 636.8 20.5	43203 930 2131 669.9 22.3	43801 1021 2136 759.4 24.5	42811 1005 2126 747.7 24.1	42258 788 2115 567.5 18.9	41774 652 2080 485.1 15.6	41950 414 2084 149.2 9.9	41996 481 2085 80.8 11.5	42063 525 2087 100.8 12.6	41960 703 2063 523.0 16.9	41968 715 2080 532.1 17.2	42255 712 2091 478.6 17.1
	II-SUM	12.8 15MAR	22MAR	31MAR	30APR	31MAY	30 <b>JUN</b>	31JUL	31AUG	30SEP		15NOV	22NOV	30NOV		31JAN	28FEB

DATE OF STUDY 01/26/06 TIME OF STUDY 11:09:36 2005-2006 AOP LOWER QUARTILE RUNOFF

99001 9901 9901 PAGE 1

DATE OF STUDY 01/26	/06				2005-	2006 AO	P LOWER	QUARTII	LE RUNO	FF		99001	9901 9		AGE	1
TIME OF STUDY 11:09	:36							SEASON 4 XCEPT AS		ATED				STUDY	NO	7
28FEB06 INI-SU	M 15MAR	200 22MAR	6 31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	310CT	15NOV	22NOV	201 30NOV	07 31DEC	31JAN	28FEB
FORT PECK NAT INFLOW 600 DEPLETION 20 EVAPORATION 41 MOD INFLOW 538 RELEASE 501	3 -15 4 3 257	113 -7 120 69	145 -9 154 89	525 51 474 417	925 136 789 492	1454 279 1175 476	633 203 25 405 492	263 -11 79 195 492	252 -92 99 245 349	324 -83 87 320 247	167 -23 39 151 119	78 -11 18 70 97	89 -12 21 80 127	295 -83 45 333 461	212 -89 301 492	283 -31 314 444
STOR CHANGE 37 STORAGE 867 ELEV FTMSL 2197. DISCH KCFS 6. POWER AVE POWER MW	1 108 6 8785 9 2198.6 0 5.0 58	50 8835 2198.9 5.0 59	65 8900 2199.4 5.0 59	57 8957 2199.8 7.0 82	297 9255 2201.7 8.0 94	699 9953 2206.2 8.0 96	8.0 97	8.0 96	5.9 70	74 9539 2203.6 4.0 48	4.0 48	9543 2203.6 7.0 84	-47 9496 2203.3 8.0 96	-128 9368 2202.5 7.5 89	-191 9177 2201.2 8.0 95	-130 9047 2200.4 8.0 94
PEAK POW MW ENERGY GWH 722 GARRISON	126 3 21.0	127 9.8	127 12.7	127 59.1	130 70.2	135 69.1	134 72.1	132 71.6	131 50.6	132 35.8	132 17.4	132 14.1	132 18.4	131 66.6	129 70.6	128 63.4
NAT INFLOW 9400 DEPLETION 101 CHAN STOR -22 EVAPORATION 492 REG INFLOW 12883	3 19 3 11 2 5 584	207 9 267	266 12 344	712 29 -22 1077	1197 101 -11 1577	2521 578 2419	1765 470 30 1757	496 86 95 807	417 -99 23 118 770	400 29 20 103 535	164 -75 0 46 311	76 -35 -32 22 154	87 -40 -11 25 219	222 -47 53 683	165 ~22 -5 673	262 -2 708
RELEASE 1243 STOR CHANGE 444 STORAGE 1041 ELEV FTMSL 1807. DISCH KCFS 17.0 POWER	9 138 7 10555 7 1808.3	208 59 10614 1808.6 15.0	268 76 10690 1808.9 15.0	952 125 10815 1809.5 16.0	1138 439 11254 1811.5 18.5	1160 1259 12513 1816.9 19.5	1199 558 13071 1819.2 19.5	1199 -392 12679 1817.6 19.5	956 -187 12492 1816.8 16.1	672 -137 12355 1816.2 10.9	325 -14 12342 1816.2 10.9	236 -82 12260 1815.8 17.0	286 -67 12193 1815.6 18.0	1168 -485 11708 1813.5 19.0	1168 -495 11213 1811.3 19.0	1055 -347 10866 1809.7 19.0
AVE POWER MW PEAK POW MW ENERGY GWH 1596.3	152 361 354.9	153 362 25.7	153 364 33.1	164 366 118.1	191 373 142.3	207 393 149.2	213 401 158.4	213 395 158.8	175 392 125.9	119 390 88.3	118 390 42.7	183 389 30.8	194 388 37.2	202 380 150.6	199 372 148.3	196 367 132.0
OAHE NAT INFLOW 1449 DEPLETION 613 CHAN STOR -10	8 23 0 11	72 11	92 14 0	229 47 5	130 66 -13	577 129 - 5	102 151	24 100	65 25 19	9 - 8 28	2	- 33	1 ~5	-35 11 -5	-6 16	36 26
EVAPORATION 400 REG INFLOW 12863 RELEASE 12400 STOR CHANGE 466 STORAGE 1094 ELEV FIMSL 1576.2 DISCH KCFS 17.2 POWER	L 588 L 440 ) 148 7 11095 3 1577.0	269 263 6 11102 1577.1 18.9	346 367 -21 11081 1577.0 20.6	1129 1237 -108 10973 1576.4 20.8	1188 1398 -210 10763 1575.4 22.7	1603 1262 341 11104 1577.1 21.2	24 1126 1719 -593 10511 1574.1 28.0	74 1049 1518 ~469 10042 1571.6 24.7	95 920 162 759 10800 1575.6 2.7	85 631 713 -82 10718 1575.1 11.6	39 285 249 36 10754 1575.3 8.4	18 185 119 65 10820 1575.7 8.6	21 259 136 123 10943 1576.3 8.6	45 1072 1111 -40 10903 1576.1 18.1	1146 981 165 11069 1576.9 16.0	1065 727 338 11407 1578.5 13.1
AVE POWER MW PEAK POW MW ENERGY GWH 1616.4	161 551 57.8	206 551 34.6	223 551 48.2	225 548 162.1	245 542 182.1	229 551 164.9	300 536 223.0	260 523 193.8	29 543 20.9	125 541 93.1	90 542 32.4	93 544 15.6	93 547 17.8	195 546 145.3	173 550 128.6	143 559 96.2
BIG BEND EVAPORATION 125 REG INFLOW 12273 RELEASE 12273 STORAGE 1622 ELEV FTMSL 1420.0 DISCH KCFS 17.3 POWER	440 440 1622 1420.0	263 263 1622 1420.0 18.9	367 367 1622 1420.0 20.6	1237 1237 1622 1420.0 20.8	1398 1398 1622 1420.0 22.7	1262 1262 1622 1420.0 21.2	8 1711 1622 1420.0 27.8	24 1493 1493 1622 1420.0 24.3	31 131 1621 1420.0 2.2	27 686 686 1621 1420.0 11.2	12 236 236 1621 1420.0 7.9	6 113 113 1621 1420.0 8.2	7 129 129 1621 1420.0 8.1	14 1097 1697 1621 1420.0 17.8	981 981 1621 1420.0 16.0	727 727 1621 1420.0 13.1
POWER AVE POWER MW PEAK POW MW ENERGY GWH 705.1	70 518 25,2	89 511 14.9	96 509 20.8	97 509 70.1	106 509 79.2	99 509 71.5	130 509 96.9	115 518 85.5	11 538 8.0	56 538 41.4	40 538 14.3	41 538 6.9	41 538 7.8	87 537 64.5	76 523 56.4	62 516 41.7
DISCH KCFS 10.0	1 507 232 275 3396 1353.4	32 1 294 158 136 3532 1355.0 11.4	41 1 407 390 17 3549 1355.2 21.8	64 4 1297 1297 3549 1355.2 21.8	51 9 1440 1440 0 3549 1355.2 23.4	130 12 1380 1380 0 3549 1355.2 23.2	26 18 10 1709 1710 3549 1355.2 27.8		23 7 34 113 885 -772 2601 1342.6 14.9	1 26 660 662 -2 2599 1342.6 10.8	1 12 224 224 -1 2598 1342.5 7.5	0 6 108 108 2598 1342.5 7.8	1 6 122 123 0 2597 1342.5 7.7	5 3 15 1085 719 365 2963 1347.8 11.7	-5 3 701 272 3235 1351.4 11.4	15 3 550 189 3424 1353.7 9.9
POWER AVE POWER MW PEAK POW MW ENERGY GWH 1225.9	65 350 23.3	96 355 16.2	185 356 39.9	184 356 132.7	198 356 147.2	196 356 141.1	234 356 174.4	227 349 169.1	119 308 85.6	82 308 61.3	58 308 20.9	60 308 10.0	59 308 11.4	92 332 68.2	93 344 69.0	83 351 55.5
GAVINS POINT NAT INFLOW 1251 DEPLETION 114 CHAN STOR 0 EVAPORATION 47 REG INFLOW 13340 RELEASE 13340 STOR CHANGE STOR CHANGE 358	0 4 328 328	43 0 -7 194 194	55 0 -20 425 425	124 5 0 1416 1416	138 19 -3 1556 1556 358	143 24 0 1500 1500 358	81 39 -9 3 1740 1740 358	80 10 9 1735 1722 13 371	58 -5 23 11 960 934 26 397	105 2 8 10 762 762 397	47 5 268 268 268 397	22 2 0 2 125 125 397	25 3 0 2 143 143 397	70 10 -7 5 767 767 397	68 1 1 769 769 397	101 3 654 693 - 39 358
	1206.0	358 1206.0 14.0 49	358 1206.0 23.8 82	358 1206.0 23.8 82												
PEAK POW MW ENERGY GWH 559.1 GAVINS POINT - SIO	114 13.9	114 8.2	114 17.6	114 58.7	114 64.4	114 62.1	114 71.6	115 71.3	117 39.8	117 32.8	117 11.6	117 5.4	117 6.2	78 33.0	78 33.0	76 29.6
NAT INFLOW 900 DEPLETION 248 REGULATED FLOW AT SI KAF 13992	115 6 OUX CITY	54 3	69 4 490	90 20 1486	174 34 1696	125 30 1595	75 37 1778	56 34 1744	35 22 947	24 9 777	13 6 275	6 3 128	7 3 147	13 12 768	-3 13 753	48 13 728
KCFS TOTAL NAT INFLOW 19500	14.7 1114	17.6 520	27.5 668	25.0 1744	27.6 2615	26.8 4950	28.9 2682	28.4 968	15.9 850	12.6 863	9.2 390	9.2 182	9.2 208	12.5 570	12.2 431	13.1 745
DEPLETION 2271 CHAN STOR -33 EVAPORATION 1623 STORAGE 35142 EVETEM DOWER	26	16 -7 36063	21 - 20 36200	156 -28 36274	365 -28 36801	1052 -5 39099	918 -9 100 38976	234 1 313 37655	-142 65 389 37376	-50 55 338 37229	-85 6 153 37282	-40 -66 71 37239	-45 -16 82 37248	-94 -7 177 36960	-78 -5 36711	9 3 36722
SYSTEM POWER AVE POWER MW PEAK POW MW ENERGY GWH 6425.1 DAILY GWH	545 2021 196.2 13.1	651 2020 109.4 15.6	798 2021 172.3 19.1	835 2021 600.9 20.0	921 2025 685.4 22.1	914 2059 657.8 21.9	1071 2051 796.5 25.7	1008 2033 750.1 24.2	459 2030 330.8 11.0	474 2026 352.7 11.4	387 2027 139.2 9.3	493 2027 82.8 11.8	514 2029 98.7 12.3	710 2004 528.1 17.0	680 1997 506.0 16.3	622 1998 418.3 14.9
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	3 O J UN	31 <b>J</b> UL	3 1 AUG	30SEP	310CT	15NOV	22NOV	3 ONOV	31DEC	31JAN	28FEB

DATE OF STUDY 01/27/06

2005-2006 AOP LOWER DECILE RUNOFF

1

DATE OF STUDY	01/27/0	06				2005~	2006 AO	P LOWER	DECILE	RUNOFF			99001	9901	9901 P	466	T
TIME OF STUDY	10:29:	11							SEASON ! XCEPT A		ATED				STUDY	NO	8
28FE	BO6 INI-SUM	15MAP	200		30APR				31AUG			15NOV	22NOV	20 30NOV		31JAN	28FEB
FORT PECK- NAT INFLOW DEPLETION EVAPORATION MOD INFLOW RELEASE STOR CHANGE STORAGE ELEV FIMSL		234 -15 249 149 100 8777 2198.5	109 -7 116 69 47 8824 2198.9	140 -9 149 89 60 8884 2199.3	515 51 464 375 89 8973 2199.9	783 136 647 492 155 9128 2200.9	996 279 717 506 211 9339 2202.3	439 186 24 229 523 -294 9045 2200.3	253 30 75 148 492 -344 8701 2198.0	242 -57 93 206 405 -199 8502 2196.7	320 -93 81 332 272 60 8562 2197.1	159 -26 37 148 119 29 8591 2197.3	74 -12 17 69 90 -21 8569 2197.1	85 -14 20 79 111 -32 8537 2196.9	271 - 88 42 317 492 - 175 8362 2195.7	205 -77 282 523 -241 8121 2194.0	275 -46 321 444 -123 7998 2193.1
DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH	6.0 724.1	5.0 58 126 21.0	5.0 58 126 9.8	5.0 59 127 12.7	6.3 74 128 53.2	8.0 94 129 70.0	8.5 101 130 72.4	8.5 100 128 74.8	8.0 94 125 69.6	6.8 79 123 56.8	4.4 51 124 38.1	4.0 46 124 16.7	6.5 75 124 12.6	7.0 81 124 15.5	8.0 92 122 68.3	8.5 97 119 71.8	8.0 90 118 60.5
GARRISON- NAT INFLOW DEPLETION CHAN STOR EVAPORATION REC INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	- 7299 924 -23 459 11044 11870 -827 10417 1807.7 17.0	270 21 11 409 417 -8 10410 1807.6 14.0	126 10 185 180 5 10415 1807.7 13.0	162 13 238 232 6 10421 1807.7 13.0	700 45 -15 1015 875 141 10562 1808.3 14.7	903 120 -19 1256 1045 211 10772 1809.3 17.0	2020 505 -6 2015 1131 885 11657 1813.3 19.0	1277 382 0 28 1389 1138 252 11908 1814.3 18.5	361 53 900 716 1107 -391 11517 1812.7 1812.7 18.0	277 -118 13 111 702 -260 11258 1811.5 16.2	390 43 26 96 549 676 -127 11131 1810.9 11.0	161 -66 5 43 308 327 -20 11111 1810.8 11.0	75 -31 -28 20 148 208 -60 11051 1810.6 15.0	86 -35 -6 23 204 270 -66 10985 1810.3 17.0	108 -27 -11 49 567 1138 -570 10415 1807.7 18.5	160 -1 -6 1138 -460 9955 1805.5 18.5	223 10 6 1027 -364 9591 1803.7 18.5
AVE POWER MW PEAK POW MW ENERGY GWH	1478.4	142 359 51.1	132 359 22.2	132 359 28.5	149 362 107.6	174 365 129.2	198 380 142.3	196 383 145.9	191 377 141.7	170 373 122.1	115 371 85.6	115 371 41.3	156 370 26.2	176 369 33.8	189 359 140.6	185 351 137.8	182 344 122.4
OAHE NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	1049 613 -8 368 11930 12775 -845 10947 1576.3 17.3	197 23 16 607 444 164 11111 1577.1 14.9	92 11 5 267 284 -16 11095 1577.0 20.4	118 14 337 377 -41 11054 1576.8 21.1	183 47 -9 1002 1262 -260 10794 1575.5 21.2	100 66 -12 1067 1421 -354 10440 1573.7 23.1	215 129 -11 1206 1277 -71 10369 1573.4 21.5	82 151 3 1048 1737 -689 9680 1569.7 28.3	21 100 3 962 1536 -575 9105 1566.4 25.0	64 25 11 87 532 393 9498 1568.7 8.9	5 -8 29 77 543 98 9596 1569.2 8.8	-5 2 35 286 259 26 9622 1569.3 8.7	-2 1 -23 16 120 46 9568 1569.6 8.7	-3 1 -11 236 138 98 9766 1570.1 8.7	-48 11 -8 41 1029 958 71 9837 1570.5 1576	-12 16 966 143 9980 1571.3 15.7	41 26 920 122 10102 1572.0 16.6
POWER AVE POWER MW PEAK POW MW ENERGY GWH	1626.4	162 551 58.3	222 551 37.3	229 550 49.5	229 543 164.8	247 534 183.5	228 532 164.0	295 512 219.6	255 496 190.1	92 507 66.0	92 510 68.1	90 511 32.6	90 512 15.1	90 515 17.4	162 517 120.8	164 521 122.3	174 524 117.0
BIG BEND- EVAPORATION REGINFLOW RELEASE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER MW	129 12646 12646 1622 1420.0 17.3	14.9 71	284 284 1622 1420.0 20.4 96	21.1 99	21.2 99	1421 1421 1622 1420.0 23.1 108	21.5 100	28.1 132	24 1512 1512 1622 1420.0 24.6 116	8.4 43	27 516 516 1622 1420.0 8.4 43	12 247 247 1622 1420.0 8.3 42	6 115 115 1622 1420.0 8.3 42	7 131 131 1622 1420.0 8.3 42	14 944 944 1622 1420.0 15.4 77	966 966 1622 1420.0 15.7 77	920 920 1622 1420.0 16.6 80
PEAK POW MW ENERGY GWH	732.7	518 25.4	511 16.1	509 21.4	509 71.5	509 80.5	509 72.4	509 98.0	518 86.6	538 30.7	538 31.7	538 15.2	538 7.0	538 8.0	538 57.3	538 57.5	529 53.4
FORT RANDALI NAT INFLOW DEPLETION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	300 80 128 12729 12727 2 3121 1350.0 10.0	55 1 497 235 262 3383 1353.2 7.9	26 1 309 160 149 3532 1355.0 11.5	33 1 410 393 17 3549 1355.2 22.0	43 4 1301 1301 3549 1355.2 21.9	35 9 1447 1447 3549 1355.2 23.5	120 12 1385 1385 3549 1355.2 23.3	13 18 10 1715 1715 0 3549 1355.2 27.9	36 15 31 1502 1676 -174 3375 1353.1 27.3	-10 7 443 1521 -1079 2296 1337.5 25.6	-52 1 22 441 441 0 2296 1337.5 7.2	-3 10 233 234 0 2296 1337.5 7.9	-1 0 5 108 108 0 2296 1337.5 7.8	-1 124 124 2296 1337.5 7.8	3 12 928 726 203 2498 1341.0 11.8	-6 3 957 250 2748 1344.8 11.5	12 3 929 555 374 3122 1350.0 10.0
AVE POWER MW PEAK POW MW ENERGY GWH	1255.1	66 350 23.6	97 355 16.3	186 356 40.2	185 356 133.1	199 356 147.9	197 356 141.6	235 356 174.9	228 349 169.5	198 284 142.8	53 285 39,2	58 285 20.7	57 285 9.6	57 285 11.0	88 301 65.2	88 319 65.6	80 339 53.7
GAVINS POINT NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEVY FIMSL DISCH KCFS	F 1200 114 -1 47 13765 13765 358 1206.0 12.5	87 0 4 327 327 358 1206.0 11.0	41 0 -7 194 194 358 1206.0 14.0	52 0 -20 425 425 358 1206.0 23.8	120 5 0 1416 1416 358 1206.0 23.8	131 19 -3 1556 1556 358 1206.0 25.3	138 24 0 1500 1500 358 1206.0 25.2	76 39 -9 3 1740 1740 358 1206.0 28.3	76 10 1 9 1735 1722 13 371 1206.5 28.0	55 -5 3 11 1573 1547 26 397 1207.5 26.0	104 2 34 10 567 567 1207.5 9.2	45 5 -1 268 268 397 1207.5 9.0	21 2 0 125 125 125 1207.5 9.0	24 3 0 2 143 143 397 1207.5 9.0	67 10 -7 5 770 770 397 1207.5 12.5	65 1 772 772 397 1207.5 12.5	98 3 695 - 39 358 1206.0 12.5
POWER AVE POWER MW PEAK POW MW ENERGY GWH	576.4	38 114 13.9	49 114 8.2	82 114 17.6	82 114 58.7	87 114 64.4	86 114 62.1	96 114 71.6	96 115 71.3	90 117 65.2	33 117 24.5	32 117 11.6	32 117 5.4	32 117 6.2	44 78 33.1	45 78 33.2	44 76 29.7
GAVINS POIN NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS	550 248	36 6	- 17 3 208 15.0	22 4 443 24.8	77 20 1473 24.8	144 34 1666 27.1	106 30 1576 26.5	47 37 1750 28.5	22 34 1710 27.8	15 22 1540 25.9	14 9 572 9.3	10 6 272 9.1	4 3 127 9.1	5 3 145 9.1	10 12 768 12.5	-5 13 754 12.3	26 13 708 12.8
TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION STORAGE SYSTEM POWER	15498 2217 ~41 1522 35142	880 36 31 35661	411 17 -2 35845	528 22 -20 35888	1638 172 -23 35857	2096 384 -35 35869	3595 979 -16 36894	1934 813 -6 96 36162	769 242 9 298 34691	643 -126 18 365 33573	781 -46 90 314 33604	367 -79 3 142 33639	171 - 37 - 50 66 33603	195 -42 -17 76 33603	408 -79 -27 164 33131	407 ~45 ~5 32824	675 6 8 32793
AVE POWER MW PEAK POW MW ENERGY GWH DAILY GWH I	6392.9 NI-SUM	537 2018 193.3 12.9 15MAR	654 2017 109.9 15.7 22MAR	786 2016 169.9 18.9 31MAR	818 2012 589.0 19.6 30APR	908 2007 675.6 21.8 31MAY	909 2021 654.8 21.8 30JUN	1055 2004 784.7 25.3 31JUL	980 1981 728.8 23.5 31AUG	672 1942 483.7 16.1 30SEP	386 1945 287.1 9.3 310CT	383 1945 138.0 9.2 15NOV	452 1946 76.0 10.9 22NOV	478 1947 91.9 11.5 30NOV	652 1915 485.3 15.7 31DEC	656 1926 488.3 15.8 31JAN	650 1931 436.8 15.6 28FEB

DATE OF STUDY 01/27/06		2005-	2006 AOP UPPE	R DECILE F	RUNOFF SIMULA	TION 99001	9901 990	1 PAGE	1
TIME OF STUDY 10:45:03 28FEB06	2006		NAV SEAS 15-D S IN 1000 AF			(W/SPRING PUL	SE) 2007	STUDY NO	9
INI-SUM 15MAR		30APR 31MAY	30JUN 31JU	L 31AUG	30SEP 310CT	15NOV 22NO		1DEC 31JAN	28FEB
NAT INFLOW 9600 319 DEPLETION 378 -39 EVAPORATION 282	149 192 -18 -23	797 1604 36 340	2491 121 580 17 1	0 - 66	379 531 -113 -68 74 65	-24 -11	-13	346 297 -126 -151 35	400 -96
MOD INFLOW 8940 358 RELEASE 4215 179 STOR CHANGE 4725 180	167 215 56 71 112 143	761 1264 238 369 523 895	1911 103 417 43	1 464 0 430	418 534 321 265 98 269	218 10 128 8	2 116 9 95	437 448 400 400 37 48	496 333 163
STORAGE 9570 9750 ELEV FTMSL 2203.8 2204.9 DISCH KCFS 7.0 6.0	9862 10005	10528 11423 2209.8 2215.1 4.0 6.0	12917 1351 2223.5 2226.	8 13551 7 2226.8 2	13649 13917 2227.3 2228.7 5.4 4.3	14007 1402 2229.2 2229.	5 14047 1 5 2229.4 22	4084 14133 29.6 2229.8 6.5 6.5	14295 2230.6 6.0
POWER AVE POWER MW 72 PEAK POW MW 133	48 49 134 135	49 75 139 145	91 9 154 15	3 93	72 58 157 158	58 8:	. 81	87 87 159 159	81 160
ENERGY GWH 668.9 26.0	8.1 10.5	35.4 55.9	65.2 69.		51.8 43.0			65.1 65.1	54.4
NAT INFLOW         14199         515           DEPLETION         961         -15           CHAN STOR         11         11	240 309 -7 -9 22	1376 1934 6 192 -22	3530 264 883 51 -11	3 64	574 652 -154 -13 16 11	-103 -48	- 5 5	278 348 -119 -108 -5	434 -66 5
EVAPORATION 317 REG INFLOW 17146 720 RELEASE 13226 476	325 390 208 268	1608 2089 1071 1168	2 3053 254 1190 123	4 1141 0 1230	84 73 981 868 1012 882	473 223 427 208	279 286	38 753 856 1230 1230	838 1111
STOR CHANGE 3920 244 STORAGE 11504 11749 ELEV FTMSL 1812.6 1813.7	117 122 11866 11988 1814.2 1814.7		1827.8 1832.	3 16534 5 1832.2 1	-30 -15 16503 16488 .832.1 1832.0	16535 16554 1832.2 1832.2	16547 1 1832.2 18	-476 -374 6071 15697 30.5 1829.2	
DISCH KCFS 18.0 16.0 POWER AVE POWER MW 169 PEAK POW MW 381	15.0 15.0 160 160 383 385	18.0 19.0 194 209 393 407	20.0 20. 228 23 433 45	7 240	17.0 14.4 204 173	14.4 15.0 173 181	216	20.0 20.0 239 237	20.0 235
ENERGY GWH 1857.6 60.9	26.8 34.6	139.5 155.3	433 45 164.1 176.3		448 448 147.2 128.5	449 449 62.2 30.4		443 438 77.7 176.0	434 157.8
NAT INFLOW 3850 559 DEPLETION 613 23 CHAN STOR -8 10	261 335 11 14 5 0	474 347 47 66 -15 -5	881 29 129 15 -5		163 102 25 -8 14 12	2 1	1	22 10 11 16 -9	59 26
EVAPORATION 294 REG INFLOW 16161 1022 RELEASE 11283 323	463 589 183 236	1484 1445 691 1101	1937 135 1019 132	5 1192	76 68 1087 937 1085 539	16 8 518 248 482 80	321	37 1195 1224 1057 914	1144 619
		793 344 14188 14532 1590.7 1592.1		1 15162 3 1594.6 1	2 398 15163 15562 594.6 1596.1	1596.3 1596.9	15968 1 1597.6 15		525 16940 1601.1
DISCH KCFS 11.6 10.8 POWER AVE POWER MW 123	13.2 13.2 151 152	11.6 17.9 136 212	17.1 21.0 206 26	L 296	18.2 8.8 220 106	16.2 5.8 197 71	92	17.2 14.9 211 183	11.1 139
PEAK POW MW 592 ENERGY GWH 1644.7 44.1 BIG BEND	598 606 25.4 32.9	622 629 97.9 157.6	647 64 148.0 194.3		641 649 158.1 79.1	650 653 70.9 11.9		659 664 56.9 136.4	674 93.3
EVAPORATION 71 REG INFLOW 11213 323 RELEASE 11213 323	183 236 183 236	691 1101 691 1101	1019 132 1019 132	1496	19 16 1066 522 1066 522	4 2 478 78 478 78	117	9 1049 914 1049 914	619 619
STORAGE 1620 1620	1620 1620	1620 1620 1420.0 1420.0 11.6 17.9	1620 1620 1420.0 1420.0 17.1 21.5	) 1620 ) 1420.0 14	1620 1620 420.0 1420.0 17.9 8.5	1620 1620	1620 1420.0 14	1620 1620	1620 1420.0 11.1
POWER AVE POWER MW 51 PEAK POW MW 517	62 62 509 509	54 84 509 509	80 103 509 509	114	85 43 525 538	81 29 538 538	37	84 72 538 538	54 529
ENERGY GWH 648.2 18.5 FORT RANDALL	10.4 13.3	39.1 62.3	57.7 74.8		61.5 32.0	29.1 4.8		62.7 53.9	36.0
NAT INFLOW 1501 190 DEPLETION 80 1 EVAPORATION 78	89 114 1 1	298 159 4 9	224 111 12 18	15 19	92 60 7 1 23 16	5 2 1 0 3 1	3 1 2	23 10 3 3 8	49 3
REG INFLOW         12551         511           RELEASE         12548         217           STOR CHANGE         3         294           COUNCE         212         241	271 349 137 349 134	985 1251 985 1251	1231 1408 1231 1408	1535 0	1128 560 1475 1447 -347 -887	478 80 496 80 -18 0 2297 2297	117 0	1061 921 695 664 366 257	665 461 204
STORAGE 3121 3415 ELEV FTMSL 1350.0 1353.6 DISCH KCFS 9.0 7.3 POWER	3549 3549 1355.2 1355.2 1 9.9 19.5	3549 3549 1355.2 1355.2 16.6 20.3	3549 3549 1355.2 1355.2 20.7 22.9	2 1355.2 13	3202 2315 351.0 1337.8 24.8 23.5		1337.5 134	2663 2920 43.5 1347.2 11.3 10.8	3124 1350.0 8.3
AVE POWER MW 61 PEAK POW MW 351 ENERGY GWH 1243.6 21.9	84 165 356 356 14.1 35.7	140 172 356 356 101.2 128.1	175 194 356 356 126.1 144.0	356	206 181 342 286 148.2 135.0	122 42 285 285 43.8 7.1	54 285 10.4	85         85           313         330           53.2         63.1	67 339 45.1
GAVINS POINT NAT INFLOW 2252 107	50 64	246 319	281 211	. 170	135 157	60 28	32	95 106	191
DEPLETION 114 0 CHAN STOR 0 3 EVAPORATION 26	0 0 -5 -19	5 19 6 - 7	24 39 -1 -4	-4 5	-5 2 0 2 7 6	5 2 13 20 1 1	3 -3 1	$     \begin{array}{ccc}       10 & 1 \\       -7 & 1 \\       3 \\       3     \end{array} $	5
REG INFLOW 14661 328 RELEASE 14661 328 STOR CHANGE	182 395 182 395	1232 1543 1232 1543	1488 1574 1488 1574	1672 13	1609 1599 1583 1599 26	562 125 562 125	143 143	769 770 769 770 397 397	657 696 -39
STORAGE 358 358 ELEV FTMSL 1206.0 1206.0 DISCH KCFS 12.5 11.0 POWER	358 358 1206.0 1206.0 1 13.1 22.1	358 358 1206.0 1206.0 20.7 25.1	358 358 1206.0 1206.0 25.0 25.6	1206.5 12	397 397 207.5 1207.5 26.6 26.0	397 397 1207.5 1207.5 18.9 9.0			358 1206.0 12.5
AVE POWER MW 39 PEAK POW MW 114 ENERGY GWH 615.1 13.9	$\begin{array}{ccc} 46 & 76 \\ 114 & 114 \\ 7.7 & 16.4 \end{array}$	71 86 114 114 51.4 63.9	86 88 114 114 61.6 65.1	115	92 91 117 117 66.6 67.8	67 32 117 117 24.0 5.4	32 117 6.2	44 44 78 78 33.1 33.1	44 76 29.7
GAVINS POINT - SIOUX CITY- NAT INFLOW 3100 195		1006 553	318 246		127 66	26 12	14	30 12	105
DEPLETION 248 6 REGULATED FLOW AT SIOUX CITY KAF 17513 516	3 4 270 508	20 34 2218 2062	30 37 1776 1783	34 1822	22 9 1688 1656	6 3 582 134	3 153	12 13 787 769	13 788
KCFS 17.3	19.5 28.4	37.3 33.5	29.8 29.0		28.4 26.9	19.6 9.7		12.8 12.5	14.2
NAT INFLOW         34502         1885           DEPLETION         2394         -24           CHAN STOR         -1         24           EVAPORATION         1068         24	879 1131 -11 -15 22 -19	4197 4916 118 660 -9 -34	7725 4731 1658 928 -16 -4 70	157 -4	1470 1568 -218 -77 30 21 282 245	670 312 -114 -53 12 1 58 27		794 783 209 -226 -21 1 129	1238 -120 10
EVAPORATION 1068 STORAGE 38236 39654 SYSTEM POWER AVE POWER MW 515	40296 40915 550 664	42768 44928 645 838	49203 51149 865 972	50787 5	50535 50300 880 653	50454 50660 697 435	50876 50	751 709	51762 619
PEAK POW MW 2088 ENERGY GWH 6678.1 185.3 DAILY GWH 12.4	2094 2105 92.5 143.5 13.2 15.9	2134 2160 464.4 623.1 15.5 20.1	2213 2233 622.7 723.4 20.8 23.3	2227 779.5 6	2231 2196 633.3 485.5 21.1 15.7	2197 2200 250.9 73.1 16.7 10.4	2204 2 98.4 55	2189 2207 58.6 527.6 .8.0 17.0	2212 416.2 14.9
INI-SUM 15MAR	22MAR 31MAR							DEC 31JAN	

DATE OF STUDY 01 TIME OF STUDY 11											SIMULA			9901	9901 P. STUD		1 10
28FEB05			200 22MAR		30APR	VALUES	S IN 10	00 AF E	XCEPT AS	S INDIC				20 30NOV			28FEB
DEPLETION EVAPORATION MOD INFLOW	8901 380 292 8229 5182	296 -38 334 179	138 -18 156 69	178 -23 201 89	739 36 703 357	1487 340 1147 492	2309 580 1729 506	1130 158 17 955 492	423 -62 55 430 492	351 -126 70 407 357	492 -67 61 498 276	195 -23 28 190 159	91 -11 13 89 97	104 -12 15 101 127	321 ~120 32 409 523	276 -143 419 523	371 -91 462 444
STOR CHANGE STORAGE	3048 9570	156 9726	87 9813 2205.3 5.0 60	111 9924 2206.0 5.0	346 10270	655 10925	1223 12148 2219.2 8.5	463 12611	-62 12549	50 12600 2221.7 6.0 78	222 12821	139 31 12852 2223.1 5.4 71	-9 12843	-26 12818	-114 12704 2222.3 8.5	-104 12600 2221.7 8.5	18 12618 2221.8 8.0 105
PEAK POW MW ENERGY GWH 8	05.5	133 26.0	134 10.2	135 13.1	137 52.7	142 73.6	150 77.7	152 77.3	152 77.7	152 56.5	153 43.8	154 25.4	153 15.5	153 20.2	153 82.9	152 82.7	152 70.2
DEPLETION CHAN STOR EVAPORATION REG INFLOW 1	2901 948 -11 343 6782	482 -15 11 686	225 -7 11 312	289 -9 387	1250 8 -11 1588	1723 210 -22 1983	3207 859 -5 2848	2405 517 20 2365	764 72 65 1119	522 -129 20 82 946	593 -13 16 72 825	236 -111 -9 33 465	110 -52 -17 15 227	126 -59 -10 17 284	260 -132 -5 38 872	316 -116 955	394 -75 5 918
STOR CHANGE STORAGE 1 ELEV FTMSL 18 DISCH KCFS POWER	3069 3713 1504 12.6 18.0	16.0	15.0	15.0	17.5	1199 784 13268 1820.0 19.5	20.0	20.0	1230 -111 15951 1830.1 20.0	17.0	12.7	13.0	14.0	18.0	20.0	20.0	20.0
AVE POWER MW PEAK POW MW ENERGY GWH 18	19.5	169 380 60.9	159 382 26.8	160 384 34.5	188 392 135.4	213 404 158.8	226 428 162.9	$234 \\ 443 \\ 174.4$	237 441 176.5	202 440 145.2	150 441 112.0	155 442 55.7	167 442 28.0	214 442 41.1	236 438 175.9	235 434 174.6	233 431 156.8
DEPLETION CHAN STOR EVAPORATION REG INFLOW 1!	3200 613 -9 310 5337 1534	460 23 10 923 503	214 11 5 417 95	276 14 0 530 273	394 47 -12 1376 789	285 66 -10 1408 1172	749 129 -2 1808 1092	246 151 19 1306 1380	103 100 58 1174 1370	135 25 14 74 1062 804	85 ~8 20 65 826 937	91 2 -2 29 445 219	42 1 -5 14 217	48 1 -18 16 299	18 11 -9 35 1193	5 16 1219 918	49 26 1134 677
STOR CHANGE 3 STORAGE 12 ELEV FTMSL 150 DISCH KCFS 3 POWER	3804 2062	421 12483 1583.5 16.9	322 12805	257 13062 1586.1 15.3	587 13649 1588.5 13.3	236 13885 1589.5 19.1	716 14601 1592.4 18.3	-74 14527 1592.1 22.4	-195 14331 1591.3 22.3	258 14590 1592.4 13.5	-110 14479 1591.9 15.2	226 14705 1592.8 7.4	112 106 14811 1593.2 8.0	8.0	1068 125 15108 1594.4 17.4	301 15409 1595.5 14.9	457 15866 1597.3 12.2
AVE POWER MW PEAK POW MW ENERGY GWH 165	51.4	190 585 68.4	592 13.1	175 598 37.8	154 611 110.6	222 616 165.5	216 631 155.9	266 629 198.2	264 625 196.1	160 630 115.5	181 628 134.8	88 633 31.7	96 635 16.2	96 638 18.4	209 640 155.3	$180 \\ 646 \\ 134.1$	149 654 99.8
RELEASE 11 STORAGE 1 ELEV FTMSL 142	78 1456 1456 1620 20.0 1 11.6	503 503 1620 1420.0 16.9	95 95 1620 1420.0 6.9	273 273 1620 1420.0 15.3	789 789 1620 1420.0 13.3	1172 1172 1620 1420.0 19.1	1092 1092 1620 1420.0 18.3	5 1376 1376 1620 1420.0 22.4	15 1355 1355 1620 1420.0 22.0	19 785 785 1620 1420.0 13.2	16 920 920 1620 1420.0 15.0	7 212 212 1620 1420.0 7.1	3 108 1620 1420.0 7.8	4 122 1620 1420.0 7.7	9 1060 1060 1620 1420.0 17.2	918 918 1620 1420.0 14.9	677 677 1620 1420.0 12.2
AVE POWER MW PEAK POW MW	54.8	79 510 28.5	32 509 5.4	72 509 15.4	62 509 44.7	89 509 66.4	86 509 61.8	105 509 77.9	104 518 77.6	65 538 46.9	75 538 56.1	36 538 13.0	40 538 6.6	39 538 7.5	85 538 63.4	73 538 54.2	58 529 39.3
DEPLETION EVAPORATION REG INFLOW 12 RELEASE 12 STOR CHANGE STORAGE 3	1200 80 2497 2494 3 3121 50.0 1	142 1 643 232 411 3532 355.0	66 1 161 144 17 3549 1355.2	85 1 357 357 3549 1355.2	239 4 1024 1024 3549 1355.2	150 9 1313 1313 3549 1355.2	195 12 1275 1275 3549 1355.2	89 18 6 1441 1441 0 3549 1355.2	65 15 19 1386 1560 -174 3375 1353.1	64 7 21 821 1496 -675 2700 1344.1	38 15 943 1346 -403 2297 1337.5	3 1 208 208 0 2297 1337.5	1 0 3 106 106 0 2297 1337.5	1 120 120 0 2297 1337.5	18 3 1067 701 366 2663 1343.5	5 3 920 683 237 2900 1347.0	39 3 713 489 224 3124 1350.0
POWER AVE POWER MW PEAK POW MW	9.0 31.4	7.8 65 355 23.5	10.4 88 356 14.8	20.0 169 356 36.6	17.2 146 356 105.2	21.4 181 356 134.4	21.4 181 356 130.5	23.4 198 356 147.3	25.4 212 349 158.0	25.1 201 315 144.7	21.9 164 285 121.7	7.0 51 285 18.5	7.6 56 285 9.4	7.6 55 285 10.6	11.4 86 313 63.7	11.1 87 328 64.7	8.8 71 339 47.8
DEPLETION CHAN STOR EVAPORATION REG INFLOW 14	114 -1 28 250	93 0 2 328	44 0 -5 183	56 0 -18 395	207 5 5	257 19 -8 1543	237 24 0 1488	178 39 -4 2 1574	144 10 -4 5 1685	114 -5 0 7 1609	132 2 6 1476	51 5 28 3 278	24 2 -1 125	27 3 0 1 143	86 10 -7 3 767	89 1 1 771	161 4 654
STOR CHANGE STORAGE ELEV FTMSL 120	358 358 6.0 1 2.5	328 358 206.0 : 11.0	183 358 1206.0 13.2	395 358 1206.0 22.1	1232 358 1206.0 20.7	1543 358 1206.0 : 25.1	1488 358 1206.0 25.0	1574 358 1206.0 25.6	1672 13 371 1206.5 1 27.2	1583 26 397 1207.5 26.6	1476 397 1207.5 24.0	278 397 1207.5 9.4	125 397 1207.5 9.0	143 397 1207.5 9.0	767 397 1207.5 12.5	771 397 1207.5 12.5	693 -39 358 1206.0 12.5
POWER AVE POWER MW PEAK POW MW	97.9	39 114 13.9	46 114 7.7	76 114 16.4	71 114 51.4	86 114 63.9	86 114 61.6	88 114 65.1	93 115 69.3	92 117 66.6	84 117 62.7	33 117 12.0	32 117 5.4	32 117 6.2	44 78 33.0	45 78 33.1	44 76 29.6
GAVINS POINT - NAT INFLOW 2	SIOUX 2500 248		- 85 3	109 4	811 20	406 34	252 30	199 37	148 34	97 22	53 9	21 6	10 3	11 3	24 12	10 13	84 13
REGULATED FLOW AT			264 19.0	500 28.0	2023 34.0	1915 31.1	1710 28.7	1736 28.2	1786 29.1	1658 27.9	1520 24.7	293 9.9	132 9.5	151 9.5	779 12.7	768 12.5	764 13.8
DEPLETION 2 CHAN STOR EVAPORATION 1 STORAGE 38	)601 2383 -19 .130 236	1654 -23 24 39434	772 -11 11 39963	992 -14 -18 40451	3640 120 -18 41930	4308 678 -39 43606	6949 1634 -8 47203	4247 920 1 68 48727	1647 169 -4 217 48198	1283 -206 35 272 47792	1393 -76 42 236 47547	595 -121 18 106 47882	278 -56 -23 50 48012	317 -65 -28 57 48157	727 -216 -21 124 48176	701 -226 1 48336	1098 -124 9 48803
SYSTEM POWER AVE POWER MW PEAK POW MW ENERGY GWH 677 DAILY GWH	70.4	614 2079 221.2 14.7	464 2088 78.0 11.1	712 2096 153.8 17.1	694 2120 500.0 16.7	891 2141 662.7 21.4	903 2187 650.4 21.7	995 2203 740.2 23.9	1015 2201 755.2 24.4	799 2192 575.3 19.2	714 2162 531.1 17.1	434 2168 156.2 10.4	483 2170 81.1 11.6	541 2174 103.9 13.0	772 2160 574.2 18.5	730 2176 543.4 17.5	660 2182 443.5 15.8
	SUM										310CT		22NOV		31DEC		28FEB

DATE OF STUDY 01/27/06

DATE OF STUD	OY 01/27/	06				2005-2	006 AOP	MEDIAN	RUNOFF	SIMULA	TION		99001	9901	4 P.	AGE	1	
TIME OF STUD	Y 13:18:	48							EASON 31			G PULSE	)		STUD	Y NO	11	
28F	EB06		200						XCEPT AS					200				
FORT PECK				31MAR		31MAY					310CT		22NOV		31DEC		28FEB	
NAT INFLOW DEPLETION EVAPORATION MOD INFLOW	7400 230 356 6814		123 -3 127	158 -4 163	628 55 573	1210 230 980	1851 443 1408	829 225 21 583	324 -60 68 316	319 -138 85 372	398 -105 75 428	188 -33 34 187	88 -15 16 87	100 -18 18 100	310 -112 39 383	261 -134 395	349 -93 442	
RELEASE STOR CHANGE STORAGE	5212	179 93 9174	69 57 9232	89 74 9305	357 216 9521	492 488 10009	536 872 10882	523 523 60 10942	492 -175	347 25 10791	269 159 10950	149 38 10988	97 -10 10978	100 127 -27 10951	492 -109 10841	523 -128 10714	472 -30 10684	
ELEV FTMSL DISCH KCFS POWER				2202.1 5.0						2211.4	2212.3 4.4	2212.5	2212.5	2212.3	2211.7 8.0		2210.7	
AVE POWER M PEAK POW MW ENERGY GWH		71 129 25.5	59 130 10.0	59 130 12.8	72 132 51.6	96 135 71.7	111 141 79.7	106 142 78.9	100 140 74.2	73 141 52.4	55 142 40.7	63 142 22.6	88 142 14.7	100 142 19.2	100 141 74.3	106 140 78.6	105 140 70.9	
GARRISON NAT INFLOW DEPLETION CHAN STOR	11001 883 -28	469 -2	219 -1 11	282 -1	853 10 -11	1423 197 -22	2958 739 -11	2066 530 5	581 87 5	497 -157 23	454 -36 15	192 -110 -7	89 -51 -21	102 -58 -11	253 -116	237 -92 -5	326 -56 0	
EVAPORATION REG INFLOW RELEASE	418 14885 12935	650 417	300 194	372 250	1189 893	1696 1230	2744 1220	25 2039 1230	80 911 1199	100 924 1030	88 687 772	40 404 378	18 198 208	21 256 286	45 815 1230	846 1261	854 1139	
STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	10909	233 11143 1811.0 14.0	106 11249 1811.5 14.0	122 11371 1812.0 14.0	296 11667 1813.3 15.0	466 12133 1815.3 20.0	1524 13657 1821.5 20.5	809 14466 1824.7 20.0	-288 14178 1823.5 19.5	-107 14071 1823.1 17.3	-86 13986 1822.8 12.6	26 14012 1822.9 12.7	-10 14001 1822.9 15.0	-30 13972 1822.7 18.0	-414 13557 1821.1 20.0	-414 13143 1819.5 20.5	-284 12859 1818.3 20.5	
POWER AVE POWER M PEAK POW MW	W	145 371	146 373	147 375	158 380	213 387	224 410	226 421	222 417	196 415	143 414	144 415	170 414	203 414	224 408	227 402	225 398	
ENERGY GWH	1729.7	52.3	24.6	31.7	113.9	158.2	161.5	168.2	165.2	141.4	106.1	51.9	28.5	39.0	166.9	169.1	151.2	
NAT INFLOW DEPLETION CHAN STOR	2300 613 -12	317 23 21	148 11	190 14	364 47 -5	236 66 -25	689 129 -3	162 151 2	33 100 2 70	118 25 11 88	14 -8 24 77	5 2 -1	2 1 -12 16	3 1 -15	-20 11 -10	16 -2	40 26	
EVAPORATION REG INFLOW RELEASE STOR CHANGE	367 14244 12244 1999	731 404 327	331 222 110	426 285 141	1204 974 230	1374 1266 108	1777 1172 605	22 1221 1492 -271	1065 1430 ~365	1047 878 169	742 893 -151	35 346 226 120	182 115 67	19 254 130 124	41 1148 931 217	1242 942 300	1153 886 267	
STORAGE ELEV FTMSL DISCH KCFS	11451	11778	11888	12029	12260	12368	12973	12702 1584.5 24.3	12337	12506 1583.6 14.8	12355	12475	12542	12666	12883	13184	13451 1587.7 15.9	
POWER AVE POWER M PEAK POW MW ENERGY GWH		150 568 54.1	177 571 29.8	178 574 38.4	183 580 132.1	231 582 172.2	224 596 161.0	276 590 205.4	263 582 195.3	167 586 120.0	164 582 122.1	86 585 30.9	94 586 15.8	93 589 17.9	173 594 128.4	176 601 130.8	184 607 123.8	
BIG BEND EVAPORATION	103	404	222	295	974	1966	1172	6 1486	20 1410	25 853	22 871	10 216	5 110	5 125	11 919	942	886	
REG INFLOW RELEASE STORAGE ELEV FTMSL	12141 12141 1622 1420.0	404 404 1622	222 222 1622 1420.0	285 285 1622	974 1622	1266 1266 1622	1172 1622	1486 1622	1410 1622	853 1622	871 1622	216 1622	110 1622	125 1622	919 1622	942 1622	886 1622 1420.0	
DISCH KCFS POWER AVE POWER M	15.4	1420.0	16.0	16.0	1420.0	20.6	19.7	24.2	22.9 108	14.3	14.2	7.3	1420.0 8.0 40	7.9	14.9	15.3	15.9	
PEAK POW MW ENERGY GWH	705.3	517 23.2	509 12.6	509 16.1	509 55.2	509 71.7	509 66.4	509 84.2	518 80.7	538 51.0	538 53.2	538 13.3	538 6.8	538 7.7	538 55.8	538 56.1	529 51.4	
FORT RANDAN NAT INFLOW DEPLETION	900 80	122 1	57 1	73 1	115 4	140 9	185 12	74 18 8	57 15 25	42 7 28	2 1 20	2 1 8	1 0 4	1 1 4	10 3 10	3	19 3	
EVAPORATION REG INFLOW RELEASE STOR CHANGE	107 12855 12853 2	525 232 293	278 144 134	357 357	1085 1085	1397 1397	1345 1345	1534 1534 0	1427 1601 -174	860 1535 -675	852 1256 -403	209 209 0	107 107 0	121 121 0	916 713 203	939 689 250	902 528 374	
STORAGE ELEV FTMSL DISCH KCFS	3122 1350.0 9.5	3415 1353.6 7.8	3549	3549 1355.2 20.0	3549 1355.2 18.2	3549 1355.2 22.7	3549 1355.2 22.6	3549 1355.2 24.9	3375 1353.1 26.0	2700	2297	2297 1337.5 7.0	2296 1337.5 7.7	2296 1337.5 7.6	2499 1341.0 11.6	2749	3123 1350.0 9.5	
POWER AVE POWER MU PEAK POW MW		65 351	88 356	170 356	155 356	192 356	191 356	211 356	218 349	206 315	153 285	52 285	56 285	56 285	86 301	86 319	76 339	
ENERGY GWH GAVINS POIN NAT INFLOW	1265.2 NT 1450	23.3 92	14.8 43	36.6	111.3	142.9 174	137.6	156.7 86	162.1	148.4 77	113.6	18.6 50	9.5 23	10.7 27	64.1 77	64.0 79	51.1 127	
DEPLETION CHAN STOR EVAPORATION	114 -1 38	0 3	0 - 5	0 -19	5 3	19 -9	24 0	39 -4 2	10 -2 7	-5 0 9	2 10 8	5 25 4	2 -1 2	3 0 2	10 -7 4	1 1	3	
REG INFLOW RELEASE STOR CHANGE	14150 14150	328 328	182 182	395 395	1232 1232	1543 1543	1488 1488	1574 1574	1685 1672 13	1609 1583 26	1377 1377	275 275	125 125	143 143	769 769	767 767	658 697 -39	
STORAGE ELEV FTMSL DISCH KCFS POWER	358 1206.0 12.5	358 1206.0 11.0	358 1206.0 13.1	358 1206.0 22.1	358 1206.0 20.7	358 1206.0 25.1	358 1206.0 25.0	358 1206.0 25.6	371 1206.5 27.2	397 1207.5 26.6	397 1207.5 22.4	397 1207.5 9.2	397 1207.5 9.0	397 1207.5 9.0	397 1207.5 12.5	397 1207.5 12.5	358 1206.0 12.5	
AVE POWER MU PEAK POW MW ENERGY GWH	N 593.7	39 114 13.9	46 114 7.7	76 114 16.4	71 114 51.4	86 114 63.9	86 114 61.6	88 114 65.1	93 115 69.3	92 117 66.6	79 117 58.6	33 117 11.9	32 117 5.4	32 117 6.2	44 78 33.0	44 78 33.0	44 76 29.7	
GAVINS POIN NAT INFLOW DEPLETION	1550 253	169 6	79 3	102 4	199 21	310 35	224 30	129 37	96 34	60 22	42 10	16 6	7 3	9 3	21 13	5 13	82 13	
REGULATED FLC KAF KCFS	DW AT SIO 15447	00X CITY 491 16.5	258 18.6	492 27.6	1410 23.7	1818 29.6	1682 28.3	1666 27.1	1734 28.2	1621 27.2	1409 22.9	285 9.6	130 9.3	148 9.3	777 12.6	759 12.4	766 13.8	
TOTAL NAT INFLOW DEPLETION	24601 2173	1435 21	669 10	860 12	2307 142	3493 556	6073 1377	3346 1000	1194 186	1113 -246	1032	452 -129	211 -60	241 -69	651 -191	582 -193 -7	943 -107 3	
CHAN STOR EVAPORATION STORAGE SYSTEM POWER	-40 1388 36543	24 37490	6 37897	-19 38234	-13 38977	-56 40039	-13 43040	3 85 43638	6 269 42649	34 335 42087	49 289 41606	18 130 41790	-34 61 41837	-25 69 41903	-17 151 41800	41809	3 42096	
AVE POWER MW PEAK POW MW ENERGY GWH DAILY GWH		534 2051 192.4 12.8	591 2053 99.3 14.2	704 2059 152.2 16.9	716 2071 515.4 17.2	915 2084 680.6 22.0	928 2127 667.9 22.3	1020 2133 758.5 24.5	1004 2122 746.9 24.1	805 2112 579.8 19.3	665 2078 494.4 15.9	414 2081 149.0 9.9	480 2083 80.7 11.5	524 2085 100.7 12.6	702 2060 522.5 16.9	714 2078 531.5 17.1	712 2089 478.1 17.1	
	INI-SUM												22NOV	30NOV		31JAN	28FEB	

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

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DATE OF STU TIME OF STU						HORTEN	NAVIGAT	ION SEA	NS, MEDI SON 20 I XCEPT AS	DAYS		ULATION	99001	9901	4 p STUDY	AGE NO	1 12
28	FEB07 INI-SUM	1 15 <b>MA</b> R	200 22 <b>MA</b> R		30APR				31AUG			15NOV	22NOV	20 30NOV	31DEC	31JAN	1 29
FORT PEC NAT INFLOW DEPLETION EVAPORATIO MOD INFLOW RELEASE STOR CHANG STORAGE ELEV FTMSL	7400 410 N 382 6608 5197	-21 285 179 107 10790	133 69 64 10853	-12 171 89 82 10935	628 18 610 298 312 11247 2214.1	1210 339 871 461 410 11657 2216.4	1851 634 1217 536 681 12339 2220,3	829 223 583 523 60 12399 2220.6	324 -72 73 323 523 -199 12200 2219.5	319 -155 91 383 357 26 12226 2219.7	398 - 73 80 391 267 124 12349 2220.3	188 -39 36 190 130 60 12409 2220.7	17 89 61 28 12437		310 -131 42 399 523 -124 12303 2220.1	261 -144 405 553 -148 12155 2219.3	i i i i 12
DISCH KCFS POWER AVE POWER I PEAK POW M ENERGY GWH	8.5 MW	6.0 75 141	5.0 62 141 10.5	5.0	5.0 63 144 45.3	7.5 95 146 70.8	9.0 116 151 83.3	8.5 110 151 82.1	8.5 110 150 82.0	6.0 78 150 56.0	4.3 56 151 42.0	4.4 57 151 20.6	4.4 57 151 9.6	7.0 91 151 17.5	8.5 110 150 82.1	9.0 116 150 86.6	) i
GARRISON NAT INFLOW DEPLETION	N 11001 980	469	219 -2	282 - 3	853 2	1423 203	2958 804	2066 591	581 50	497 -135	454 - 29	192 - 108	89 -50	102 -58	253 - 116	237 -96	
CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE	-5 N 451 14762 13043	27 680	11 301 194 107	374 286 88	1149 1012 137	-27 1655 1230	-16 2674 1220 1454	5 27 1976 1230	87 967 1199	26 109 906 982	17 95 672 836 -163	0 43 387 330	20 181 154	-27 23 221 286	-15 49 827 1230	-5 881 1261	
STORAGE ELEV FTMSL DISCH KCFS POWER	12859 1818.3 20.5	13122 1819.4 14.0	13229 1819.8 14.0	13317 1820.2 16.0	13454 1820.7 17.0	425 13879 1822.4 20.0	15333 1827.9 20.5	746 16079 1830.6 20.0	19.5	16.5	15608 1828.9 13.6	57 15665 1829.1 11.1	1829.2 11.1	18.0	-403 15225 1827.5 20.0	-379 14845 1826.1 20.5	1 18
AVE POWER N PEAK POW MY ENERGY GWH	N 1823.9	154 402 55.6	155 403 26.1	178 405 38.4	189 407 136.2	224 413 166.4	235 433 169.1	236 443 175.3	231 440 172.0	195 439 140.6	161 437 119.6	131 437 47.2	131 438 22.1	212 437 40.7	234 431 174.1	238 426 176.7	
OAHE- NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGH STORAGE	2300 626 1 409 14309 12544	23 31 742 520 222	148 11 331 105 227 13900	190 14 -10 452 285 167 14067	364 47 -5 1324 974 350 14417	236 67 -14 1385 1317 68 14485	689 132 -2 1775 1171 604 15089	162 156 25 1213 1492 -279 14810	33 103 2 78 1053 1430 -377 14433	118 25 14 98 991 878 113 14546	14 -9 14 85 787 1121 -334 14212	5 2 38 307 225 81 14294	2 1 138 138 115 23 14316	3 -32 21 235 130 105 14421	-20 12 -9 45 1143 931 213 14634	17 -2 1241 972 270 14903	
ELEV FTMSL DISCH KCFS POWER AVE POWER N	1587.7 15.9						1594.3 19.7 235				14212 1590.8 18.2 216			14421 1591.7 8.2 97			15
PEAK POW MW ENERGY GWH BIG BENI	1803.6	612 73.1	617 14.8	620 40.5	627 139.2	628 188.7	640 169.1	635 215.9	627 205.5	629 126.2	623 160.5	624 32.3	625 16.5	627 18.7	631 133.9	636 140.5	
EVAPORATION REG INFLOW RELEASE STORAGE ELEV FTMSL DISCH KCFS POWER		520 520 1622 1420.0 17.5	105 105 1622 1420.0 7.5	285 285 1622 1420.0 16.0	974 974 1622 1420.0 16.4	1317 1317 1622 1420.0 21.4	1171 1171 1622 1420.0 19.7	6 1486 1486 1622 1420.0 24.2	20 1410 1410 1622 1420.0 22.9	25 853 853 1622 1420.0 14.3	22 1099 1099 1622 1420.0 17.9	10 216 216 1622 1420.0 7.2	5 110 1622 1420.0 7.9	5 125 1622 1420.0 7.9	11 919 919 1622 1420.0 14.9	972 972 1622 1420.0 15.8	14
AVE POWER M PEAK POW MW ENERGY GWH		82 510 29.5	35 509 5.9	75 509 16.1	77 509 55.2	100 509 74.6	92 509 66.3	113 509 84.2	108 518 80.7	71 538 51.0	90 538 66.9	37 538 13.2	40 538 6.8	40 538 7.7	75 538 55.8	78 538 57.7	
FORT RANDA NAT INFLOW DEPLETION EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	900 80 107 13156 13155 0 3123	122 1 641 232 409 3532 1355.0 7.8	57 1 144 17 3549 1355.2 10.4	73 1 357 357 3549 1355.2 20.0	115 4 1085 1085 3549 1355.2 18.2	140 9 1448 1448 3549 1355.2 23.5	185 12 1344 1344 3549 1355.2 22.6	74 18 8 1534 1534 0 3549 1355.2 24.9	57 15 25 1427 1601 -174 3375 1353.1 26.0	42 7 28 860 1535 -675 2700 1344.1 25.8	2 1 20 1081 1484 -403 2297 1337.5 24.1	2 1 8 209 209 0 2297 1337.5 7.0	1 0 4 107 07 2297 1337.5 7.7	1 4 121 121 0 2297 1337.5 7.6	10 3 916 713 203 2500 1341.0 11.6	3 969 689 280 2780 1345.3 11.2	13
POWER AVE POWER M PEAK POW MW ENERGY GWH	w	65 355 23.5	88 356 14.8	170 356 36.6	155 356 111.3	199 356 148.0	191 356 137.5	211 356 156.7	218 349 162.1	206 315 148.4	180 285 134.0	52 285 18.6	56 285 9.5	56 285 10.7	86 301 64.1	86 321 64.1	!
GAVINS POI NAT INFLOW DEPLETION CHAN STOR EVAPORATION	1450 114 ~1 38	92 0 3	43 0 -5	55 0 -19	148 5 3	174 19 -10	166 24 2	86 39 -5 2	103 10 -2 7	77 -5 0 9	122 2 3 8	50 5 32 4	23 2 -1 2	27 3 0 2	77 10 -7 4	79 1 1	
REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL	358	328 328 358 1206.0	182 182 358 1206.0	395 395 358 1206.0	1232 1232 358 1206.0	1593 1593 358 1206.0	1488 1488 358 1206.0	1574 1574 358 1206.0	1685 1672 13 371 1206.5 1	1609 1583 26 397 1207.5	1599 1599 397 1207.5	282 282 397 1207.5	125 125 397 1207.5	143 143 397 1207.5	769 769 397 1207.5	767 767 397 1207.5	120
DISCH KCFS POWER AVE POWER M PEAK POW MW	12.5 W	11.0 39 114	13.1 46 114	22.1 76 114	20.7 71 114	25.9 88 114	25.0 86 114	25.6 88 114	27.2 93 115	26.6 92 117	26.0 91 117	9.5 34 117	9.0 32 117	9.0 32 117	12.5 44 78	12.5 44 78	1
ENERGY GWH GAVINS POI NAT INFLOW	606.2 NT - SIOU 1550	13.9 JX CITY- 169	7.7 - 79	16.4 102	51.4 199	65.8 310	61.6 224	65.1 129	69.3 96	66.6 60	67.8 42	12.2	5.4	6.2 9	33.0 21	33.0	3
DEPLETION REGULATED FL KAF KCFS	251	6	3	492 27.6	1410 23.7	35 1868 30.4	30 1682 28.3	37 1666 27.1	34 1734 28.2	22 1621 27.2	10 1631 26.5	6 293 9.8	3 130 9.3	3 148 9.4	12 778 12.6	13 759 12.4	1
TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION	24601 2461 -4 1490	1435 4 62	669 2 6	860 3 -28	2307 97 -1	3493 672 -51	6073 1636 -16	3346 1064 3 91	1194 140 0 289	1113 -241 40 360	1032 -98 34 310	452 -134 44 139	211 -63 -1 65	241 -71 -59 74	651 -210 -32 162	582 -206 -7	-
STORAGE SYSTEM POWE AVE POWER M PEAK POW MW ENERGY GWH	42096 R W	43097 618 2135 222 4	43511 475 2141 79.9	43848 748 2146 161 5	44647 748 2157 538 6	45550 960 2167 714 4	48289 954 2203 687.0	48817 1047 2208 779.3	47848 1037 2200 771.6	47261 818 2188 588.8	46485 794 2150 590.7	46683 400 2153 144.1	46760 416 2154 69.8	46790 528 2155 101.4	46680 730 2130 543.0	46702 751 2149 558.7	46 2 50
DAILY GWH		222.4 14.8 15MAR	11.4	161.5 17.9 31MAR	538.6 18.0 30APR	714.4 23.0 31MAY	22.9 30JUN	25.1	24.9	19.6 30SEP	19.1	9.6 15NOV	10.0 22NOV	12.7 30NOV	17.5 31DEC	18.0 31JAN	29

DATE OF STUDY 01/26/06		2005-200	6 AOP EXTENS	IONS, MEDI	IAN RUNC	OFF SIMU	LATION	99001	9901	4 PÅ	GE	1
TIME OF STUDY 11:09:35		101115	5 IN 1000 AF	EXCEDT AS		TED				STUDY	NO 1	13
28FEB08 INI-SUM 15MAR	2008 22MAR 31MAR	30APR 31MAY		JL 31AUG	30SEP	310CT	15NOV	22NOV	200 30NOV		31JAN	28FEB
FORT PECK NAT INFLOW 7400 264 DEPLETION 421 -4 EVAPORATION 405	$   \begin{array}{cccc}     123 & 158 \\     -2 & -3   \end{array} $	628 1210 43 350	569 2	29 324 29 -68 25 77	319 -156 97	398 - 79 85	188 -41 39	88 -19 18	100 -22 21	310 -133 44	261 -146	349 -98
MOD INFLOW         6574         269           RELEASE         5666         179           STOR CHANGE         907         90           STORAGE         12094         12184           ELEV FIMSL         2218.9         2219.4           DISCH KCPS         9.0         6.0           POWER         100         100	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	585 860 357 492 228 368 12540 12908 2221.4 2223.4 6.0 8.0	595 58 687 13595 135	.0 2225.9	378 417 -38 13340 2225.7 7.0	392 297 95 13435 2226.2 4.8	189 144 46 13481 2226.5 4.8	88 83 5 13486 2226.5 6.0	101 111 -10 13476 2226.4 7.0	399 584 -186 13290 2225.5 9.5	407 615 -208 13082 2224.4 10.0	447 528 -81 13002 2223.9 9.5
AVE POWER MW 78 PEAK POW MW 150 ENERGY GWH 906.2 27.9	$\begin{array}{rrrr} 65 & 65 \\ 150 & 150 \\ 10.9 & 14.0 \end{array}$	78 105 152 154 56.3 78.0	132 1: 157 1: 95.2 94	57 156	93 156 67.0	64 157 47.8	64 157 23.2	80 157 13.4	93 157 17.9	126 156 93.9	132 155 98.2	125 154 84.2
GARRISON NAT INFLOW 11001 469 DEPLETION 1002 -4 CHAN STOR -5 31 EVAPORATION 474	219 282 -2 -2 10	853 1423 3 201 ~10 ~21	2958 200 814 60 -21		497 -142 15 114	454 ~24 22 99	192 -112 45	89 - 52 - 12 21	102 ~60 ~10 24	253 -119 -25 51	237 -97 -5	326 -62 5
REG INFLOW         15186         683           RELEASE         14086         476           STOR CHANGE         1100         207           STORAGE         14578         14785		1197 1693 1071 1291 126 402 15077 15478 1826.9 1828.4 18.0 21.0	2718 203 1339 139 1380 66 16858 1753 1833.3 1835 22.5 22	3         1291           55         -320           23         17203           6         1834.5	957 1071 -114 17089 1834.1 18.0	698 804 -106 16982 1833.7 13.1	402 389 13 16996	192 222 -30 16966 1833.7 16.0	239 286 -47 16919	880 1353 -473 16446	944 1383 -440 16006 1830.3 22.5	921 1250 -329 15678 1829.1 22.5
PONER MW 184 AVE POWER MW 184 PEAK POW MW 425 ENERGY GWH 2035.7 66.3	185 185 427 428 31.1 40.0	209 245 429 435 150.3 182.1	267 26 453 46 192.6 199	1 457	219 456 157.9	159 454 118.6	159 454 57.3	195 454 32.7	218 454 41.9	265 447 197.0	268 442 199.3	266 437 178.4
OAHE NAT INFLOW 2300 317 DEPLETION 640 23 CHAN STOR -9 20 EVAPORATION 436	148 190 11 14	364 236 48 68 -9 -13	689 16 135 16 -7		118 25 13 105	14 -9 22 90	5 2 40	2 1 -13 19	3 1 -9 21	-20 12 -18 47	17 -2	40 27
DISCH KCFS 15.3 17.5		1378 1446 974 1399 404 47 16321 16368 1598.9 1599.1 16.4 22.8	1886 132 1291 162 595 -29 16964 1666 1601.2 1600 21.7 26	8 1740 8 -603 5 16063 2 1598.0	1072 1544 -471 15591 1596.2 25.9	759 1027 -269 15323 1595.2 16.7	352 485 -133 15190 1594.7 16.3	192 209 -17 15172 1594.6 15.1	257 227 30 15203 1594.8 14.3	1256 1082 174 15377 1595.4 17.6	1364 879 486 15863 1597.2 14.3	1263 786 477 16340 1599.0 14.1
POWER AVE POWER MW 211 PEAK POW MW 648 ENERGY GWH 2101.4 76.0	92 195 652 655 15.4 42.1	201 280 663 664 144.9 208.6	269 32 675 66 193.8 244.	9 658	316 649 227.4	203 644 150.7	197 642 70.8	182 642 30.5	172 642 33.1	212 645 158.1	174 654 129.4	174 663 116.9
BIG BEND EVAPORATION 103 REG INFLOW 14075 520 RELEASE 14075 520 STORAGE 1622 1622 ELEV FTMSL 1420.0 1420.0 DISCH KCFS 15.3 17.5 POWER	105 285 105 285 1622 1622 1420.0 1420.0 1 7.5 16.0	974 1399 974 1399 1622 1622 1420.0 1420.0 16.4 22.8	1291 162 1291 162 1622 162 1420.0 1420. 21.7 26.	1 1720 2 1622 0 1420.0	25 1519 1519 1622 1420.0 25.5	22 1006 1006 1622 1420.0 1 16.4	10 475 475 1622 1420.0 16.0	5 205 205 1622 1420.0 14.7	5 221 221 1622 1420.0 14.0	11 1070 1070 1622 1420.0 17.4	879 879 1622 1420.0 14.3	786 786 1622 1420.0 14.1
AVE POWER MW 82 PEAK POW MW 510 ENERGY GWH 811.9 29.5	35 75 509 509 5.9 16.1	77 107 509 509 55.2 79.3	102 12 509 50 73.1 91.	9 509	121 517 87.1	80 538 59.8	80 538 28.9	74 538 12.5	70 538 13.5	86 538 64.0	70 538 52.0	68 529 45.6
FORT RANDALL NAT INFLOW 900 122 DEPLETION 80 1	57 73 1 1	$     \begin{array}{ccc}       115 & 140 \\       4 & 9     \end{array} $	185 7 12 1		42 7	2	2	1	1	10 3	3	19 3
	161 357 144 357 17 3549 3549 1355.2 1355.2 1		1464 166 1464 166 3549 354 1355.2 1355.	9 1737 9 1737 0 0 9 3549 2 1355.2					4 217 225 -8 2297 1337.5			802 528 274 3124 1350.0
DISCH KCFS 9.6 7.8 POWER AVE POWER MW 65 PEAK POW MW 355 ENERGY GWH 1468.4 23.5	10.4 20.0 88 170 356 356 14.8 36.6	18.2 24.9 155 210 356 356 111.3 156.3	24.6 27. 208 22 356 35 149.6 170.	9 238 6 356	28.0 234 350 168.7	26.3 211 319 157.3	25.9 196 298 70.7	25.9 190 286 31.9	14.2 104 285 19.9	11.4 86 313 63.7	11.2 88 325 65.1	9.5 76 339 51.4
GAVINS POINT NAT INFLOW 1450 92	43 55	148 174		6 103	77	122	50	23	27	77	79	127
DEPLETION 114 0 CHAN STOR -1 3 EVAPORATION 38 REG INFLOW 16074 328	0 0 -5 -19 182 395	5 19 3 -13 1232 1672		5~2 27	-5 0 9 1740	2 3 8 1734	5 1 4 812	2 0 2 379	3 22 2	10 5 4 769	1 0 767	3
REG INFLOW 16074 328 RELEASE 16074 328 STOR CHANGE STORAGE 358 358	182 395 182 395 358 358	1232 1672 1232 1672 358 358	1607 170 1607 170 358 35	9 1808 13	1740 1714 26 397	1734 1734 397	812 812 397	379 379 397	269 269 397	769 769 397	767 767 397	658 697 -39 358
ELEV FTMSL 1206.0 1206.0 DISCH KCFS 12.5 11.0 POWER	1206.0 1206.0 1 13.1 22.1	206.0 1206.0 20.7 27.2	1206.0 1206. 27.0 27.	0 1206.5 : 8 29.4	1207.5 : 28.8	1207.5 1 28.2	207.5 1 27.3	1207.5 27.3	1207.5 17.0	1207.5 1 12.5	12.5 1 12.5	1206.0 12.5
AVE POWER MW 39 PEAK POW MW 114 ENERGY GWH 672.5 13.9	$\begin{array}{ccc} 46 & 76 \\ 114 & 114 \\ 7.7 & 16.4 \end{array}$	71 93 114 114 51.4 69.0	92 9 114 11 66.3 70.	4 115	100 117 71.8	99 117 73.4	96 117 34.4	96 117 16.1	60 117 11.5	44 78 33.1	44 78 33.0	44 76 29.7
GAVINS POINT - SIGUX CITY- NAT INFLOW 1550 169 DEPLETION 255 6 REGULATED FLOW AT SIGUX CITY	79 102 3 4	199 310 21 35	224 12 30 3	8 35	60 23	42 10	16 6	7 3	9 3	21 12	5 13	82 14
KAF 17369 492 KCFS 16.5	258 492 18.6 27.6	1410 1947 23.7 31.7	1801 180 30.3 29.		$1751 \\ 29.4$	1766 28.7	823 27.7	384 27.7	$275 \\ 17.3$	778 12.7	759 12.3	765 13.8

R 28.7 27.7 27.7 17.3 12.7 27.6 23.7 31.7 29.3 30.4 29.4 12.3 13.8 KCFS 16.5 18.6 30.3 --TOTAL--NAT INFLOW DEPLETION CHAN STOR EVAPORATION STORAGE SYSTEM POWER MW PEAK POWER MW ENERGY GWH DAILY GWH 2512 -15 1574 46991 1093 2 97 149 12 306 52186 -99 47 329 50527 ~140 147 50149 -65 -25 68 49948 -74 3 77 49914 -215 -38 169 49795 22 55 10 6 13 -19 682 -47 1584 -27 -248 29 381 - 209 - 7 -116 -16 2203 237.2 15.8 2208 85.9 12.3 2232 773.2 24.9 2264 770.6 25.7 2267 870.5 28.1 2252 882.8 28.5 2246 780.0 26.0 2230 607.7 19.6 2206 285.3 19.0 2193 137.1 19.6 2192 137.8 17.2 2178 609.7 19.7 2192 577.1 18.6 2213 165.4 18.4 2224 569.4 19.0 2199 506.3 18.1 7995.9 INI-SUM 15MAR 22MAR 31MAR 30APR 31MAY 30JUN 31JUL 31AUG 30SEP 31OCT 15NOV 22NOV 30NOV 31DEC 31JAN 26FEB

DATE	OF	STUDY	01/	26/	06

TIME OF STUDY 11:				2	003-2000	5 AUP 5	ATENSIO	NG, 1160.	IAN KON	orr 514	ULAI ION	<b>JJUUI</b>	<i>yy</i> 01	STUDY	NO	14
29FEB09		200	9		VALUES	5 IN 10	00 AF E	XCEPT A	S INDIC	ATED			20			
	SUM 15M	AR 22MAF	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	310CT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB
DEPLETION EVAPORATION MOD INFLOW 63 RELEASE 66 STOR CHANGE 4 STORAGE 136	421 428 551 2 075 1 476 002 130	64 123 -4 -2 69 125 90 56 92 13148 .4 2224.7	-3 161 89 72 13219	628 43 585 357 228 13447 2226.3	1210 350 860 492 368 13815 2228.2	1851 569 1282 565 717 14532 2231.8		324 -68 83 309 523 -214 14339 2230.8	319 -156 103 372 585 -213 14126 2229,8		188 -41 40 188 228 -40 14003 2229,2		100 - 22 21 100 127 - 27 13981 2229.0	310 -133 46 397 584 -187 13793 2228.1	261 -146 407 615 -208 13586 2227.0	447 555 108 13477
DISCH KCFS POWER AVE POWER MW PEAK POW MW	9.5 6	.0 5.0 79 66 55 155	5.0 66 156	6.0 80 157 57.4	8.0 107 158 79.4	9.5 128 161 92.0	9.0 122 161 90.6	8.5 115 160 85.5	9.8 132 159 95.3	7.7 103 159 76.6	7.7 103 159 37.0	6.0 81 159 13.6	8.0 107 159 20.6	9.5 127 158 94.7	10.0 133 157 99.1	10.0 133 157 89.3
DEPLETION 10 CHAN STOR EVAPORATION 4	013 -5 488	59 219 -4 -2 36 10	- 2	853 3 -10	1423 200 -20	2958 834 -15	2066 613 5 30	581 56 54	497 -145 -13 117	454 -28 22 102	192 -116 46	89 - 54 17 22	102 -62 -20 25	253 -120 -15 53	237 -98 -5	326 -63
STOR CHANGE 6 STORAGE 156 ELEV FTMSL 1829	920 4	9 1830.2	286 87 16055 1830.5	1197 1131 66 16121 1830.7 19.0	1694 1414 280 16402 1831.7 23.0	2674 1428 1246 17648 1836.0 24.0	1982 1414 568 18215 1837.8 23.0	958 1383 -425 17790 1836.4 22.5	1095 1104 -8 17782 1836.4 18.6	872 1027 -155 17628 1835.9 16.7	489 497 -8 17620 1835.9 16.7	222 232 -10 17609 1835.9 16.7	246 317 -71 17538 1835.6 20.0	890 1353 463 17075 1834.0 22.0	945 1414 -469 16506 1832.4 23.0	944 1222 -277 16328 1831.5 22.0
AVE POWER MW PEAK POW MW ENERGY GWH 2192		0 441	190 442 41.1	226 443 162.7	274 447 203.9	291 463 209.3	284 469 211.4	278 464 207.2	229 464 164.9	206 462 153.3	206 462 74.0	206 462 34.5	246 461 47.2	268 455 199.7	278 450 206.5	263 446 177.0
DEPLETION 6 CHAN STOR	2 2	17 148 23 11 28	190 14	364 48 -13	236 69 -17	689 138 -4	162 165 4	33 109 2	118 27 17	-14 -10 8	5 1 0	2 0	3 1 - 15	-20 12 -9	17 -4	40 27 4
REG INFLOW 161 RELEASE 154 STOR CHANGE 6 STORAGE 163 ELEV FIMSL 1599 DISCH KCFS 14	43 50 576 23 540 165	7 132 1 227 1 16798 8 1600.6	462 327 135 16933 1601.1 18.3	1434 1111 323 17256 1602.2 18.7	1564 1553 11 17267 1602.3 25.3	1975 1446 529 17796 1604.1 24.3	29 1387 1775 -388 17408 1602.8 28.9	89 1221 1887 ~666 16741 1600.4 30.7	109 1103 1686 -583 16158 1598.3 28.3	93 966 1175 -209 15949 1597.6 19.1	42 459 556 -97 15851 1597.2 18.7	19 214 256 -42 15809 1597.0 18.5	22 283 226 57 15866 1597.3 14.3	48 1263 1082 182 16047 1597.9 17.6	1393 909 484 16532 1599.7 14.8	1239 756 484 17015 1601.4 13.6
POWER AVE POWER MW PEAK POW MW ENERGY GWH 2322	2: 66 2.8 84	7 672	228 674 49.3	234 680 168.3	317 680 235.6	306 690 220.5	364 683 270.5	383 670 284.6	349 660 251.4	234 656 174.3	229 654 82.3	226 653 37.9	174 654 33.5	215 658 160.3	182 667 135.7	170 676 114.0
REG INFLOW 153 RELEASE 153 STORAGE 16 ELEV FTMSL 1420		7 132 2 1622 0 1420.0	327 327 1622 1420.0 18.3	1111 1111 1622 1420.0 18.7	1553 1553 1622 1420.0 25.3	1446 1446 1622 1420.0 24.3	6 1769 1769 1622 1420.0 28.8	20 1868 1868 1622 1420.0 30.4	25 1662 1662 1622 1420.0 27.9	22 1153 1153 1622 1420.0 18.8	10 546 546 1622 1420.0 18.4	5 252 252 1622 1420.0 18.1	5 221 221 1622 1420.0 13.9	11 1070 1070 1622 1420.0 17.4	909 909 1622 1420.0 14.8	756 756 1622 1420.0 13.6
AVE POWER MW PEAK POW MW ENERGY GWH 884	51		86 509 18.5	87 509 62.9	118 509 88.0	114 509 81.9	135 509 100.2	142 509 105.8	132 517 95.3	92 538 68.5	92 538 33.2	91 538 15.3	70 538 13.5	86 538 64.0	72 538 53.7	65 529 43.9
DEPLETION EVAPORATION 1 REGINFLOW 160 RELEASE 160 STOR CHANGE STORAGE 31 ELEV FIMSL 1350 DISCH KCFS 9	.18  43 68	1 1 8 188 0 171 8 17 2 3549 0 1355.2	73 1 399 399 3549 1355.2 22.4	115 4 1222 1222 3549 1355.2 20.5	140 9 1684 1684 3549 1355.2 27.4	185 12 1619 1619 3549 1355.2 27.2	74 18 8 1817 1817 0 3549 1355.2 29.5	57 15 25 1884 1884 0 3549 1355.2 30.6	42 7 31 1665 1809 -144 3405 1353.5 30.4	2 1 25 1130 1767 -637 2768 1345.1 28.7	2 10 537 842 - 304 2464 1340.4 28.3	1 0 248 393 -145 2319 1337.9 28.3	1 4 217 239 -22 2297 1337.5 15.1	10 3 10 1067 701 366 2663 1343.5 11.4	3 906 689 217 2880 1346.7 11.2	19 3 772 528 244 3124 1350.0 9.5
POWER AVE POWER MW PEAK POW MW ENERGY GWH 1593	35		189 356 40.9	174 356 125.2	231 356 171.8	229 356 165.2	249 356 185.1	258 356 191.9	254 350 183.0	230 319 171.4	214 298 77.1	208 287 34.9	110 285 21.1	86 313 63.7	88 327 65.2	77 339 51.5
CHAN STOR	14 -1 38 40 37		55 0 ~19 436 436	148 5 4 1369 1369	174 19 -13 1826 1826	166 24 0 1761 1761	86 39 -4 2 1857 1857	103 10 -2 7 1968 1955 13	77 -5 0 1883 1857 26	122 2 3 8 1882 1882	50 5 1 884 884	23 2 0 2 412 412	27 3 25 286 286	77 10 7 4 770 770	79 1 0 767 767	127 3 658 697 -39
STORAGE 3	58 35 .0 1206. .5 12.	0 1206.0	358 1206.0 24.4	358 1206.0 23.0	358 1206.0 29.7	358 1206.0 29.6	358 1206.0 30.2	371	397	397 1207.5 30.6	397 1207.5 29.7	397 1207.5 29.7	397 1207.5 18.0	397 1207.5 12.5	397 1207.5 12.5	358 1206.0 12.5
AVE POWER MW PEAK POW MW ENERGY GWH 716		4 114 8 8.8	84 114 18.1	79 114 56.9	100 114 74.5	100 114 72.0	101 114 75.4	106 115 78.5	106 117 76.0	105 117 78.2	103 117 37.0	103 117 17.3	64 117 12.2	45 78 33.1	44 78 33.0	44 76 29.7
REGULATED FLOW AT	50 16 62 SIOUX CI	9 79 7 3 TY	102 4	199 22	310 35	224 31	129 38	96 36	60 23	42 10	16 6	73	93	21 13	5 14	82 14
KAF 186. KCFS	28 53 18.		533 29.9	1546 26.0	2101 34.2	1954 32.8	1948 31.7	2015 32.8	1894 31.8	$\begin{array}{c}1914\\31.1\end{array}$	894 30.0	417 30.0	291 18.3	778 12.7	758 12.3	765 13.8
TOTAL NAT INFLOW 246 DEPLETION 25: CHAN STOR EVAPORATION 16 STORAGE 501: SYSTEM POWER	42 2 -4 6 26	3 11 4 5	860 14 -19 51736	2307 125 -19 52353	3493 682 - 50 53012	6073 1608 -19 55504	3346 1102 5 101 55704	1194 158 5 318 54412	1113 -249 4 395 53490	1032 -104 33 339 52406	452 -143 151 51956	211 -67 16 70 51763	241 -76 -10 80 51700	651 -215 -17 173 51598	582 -209 -9 51621	943 -117 7 51924
AVE POWER MW PEAK POW MW ENERGY GWH 8695 DAILY GWH	71 224 .1 257. 17.	3 2248 7 96.7	843 2252 182.2 20.2	880 2260 633.4 21.1	1147 2265 853.2 27.5	1168 2293 840.8 28.0	1254 2293 933.2 30.1	1281 2275 953.4 30.8	1203 2268 865.8 28.9	971 2251 722.3 23.3	946 2228 340.7 22.7	914 2216 153.5 21.9	771 2214 148.1 18.5	827 2200 615.4 19.9	797 2216 593.2 19.1	752 2222 505.4 18.0

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

DATE OF STUD	Y 01/26/	06			2	005-200	6 AOP E	XTENSIO	NS, MED.	IAN RUN	OFF SIM	ULATION	99001	9901	1 P.	AGE	I
TIME OF STUD	Y 11:09:	35				VALUE	S IN 10	00 AF E	XCEPT A	SINDIC	ATED				STUDY	NO	15
28F	EB10 INI-SUM	1 15MAR	201 22MAR		30APR				31AUG			15NOV	22NOV	202 20NOV		31JAN	28FEB
FORT PECK NAT INFLOW DEPLETION EVAPORATION		264	123	158 - 3	628 42	1210 352	1851 578	829 244 27	324 -60 85	319 -156 106	398 -81 94	188 -42 42	88 - 20 20	100 -22 23	310 -136 49	261 - 147	349 -100
MOD INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL	6513 5346 1167 13477 2226.4	179 91 13568	126 83 42 13610 2227.1	161 107 54 13664 2227.4	586 387 199 13863 2228.4	858 461 397 14260 2230.4	1273 762 511 14772 2232.9			369 309 59 14705 2232.6	385 274 112 14817 2233.1	187 208 -21 14795 2233.0	87 104 -17 14779 2233.0	100 119 -19 14759 2232.9	397 461 -64 14695 2232.6	408 492 -84 14611 2232.2	449 417 32 14644 2232.3
DISCH KCFS POWER AVE POWER M PEAK POW MW ENERGY GWH	10.0 W 866.3	80 157	6.0 80 157 13.5	6.0 80 157 17.3	6.5 87 158 62.6	7.5 101 160 75.0	12.8 160 161 115.5	8.0 109 162 80.9	8.0 109 161 80.8	5.2 71 161 50.8	4.5 61 162 45.1	7.0 95 162 34.3	7.5 102 161 17.1	7.5 102 161 19.6	7.5 102 161 75.8	8.0 108 161 80.7	7.5 102 161 68.3
GARRISON NAT INFLOW DEPLETION CHAN STOR	11001 1030 25		219 -2	282 -2	853 4 ~ 5	1423 201 -10	2958 844 -53	2066 629 48	581 62	497 -148 28	454 -33 7	192 -119 -25	89 -56 -5	102 -63	253 -122	237 -98 -5	326 ~63 5
EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	495 14847 15396 -549 16328 1831.5 22.0	693 476 217 16545 1832.2	304 222 82 16627 1832.5 16.0	391 286 105 16732 1832.9 16.0	1231 1071 160 16892 1833.4 18.0	1673 1599 74 16966 1833.7 26.0	2822 1547 1275 18241 1837.9 26.0	30 1946 1537 409 18650 1839.2 25.0	96 915 1445 -530 18120 1837.5 23.5	119 863 1012 -149 17970 1837.0 17.0	103 665 856 -191 17780 1836.4 13.9	47 447 414 33 17812 1836.5 13.9	22 222 242 -19 17793 1836.5 17.4	25 260 286 -26 17767 1836.4 18.0	53 783 1506 -723 17044 1833.9 24.5	822 1537 -715 16329 1831.5 25.0	811 1361 -550 15779 1029.5 24.5
POWER AVE POWER MU PEAK POW MW ENERGY GWH		192 449 69.2	193 450 32.4	193 451 41.7	218 453 156.8	314 454 233.6	318 470 229.3	312 475 232.0	293 468 217.9	211 466 152.1	173 464 128.4	172 465 62.0	215 464 36.1	222 464 42.7	299 455 222.6	300 446 223.5	290 439 195.1
OAHE NAT INFLOW DEPLETION CHAN STOR EVAPORATION	2300 666 -12 459	24 25	148 11	190 1 <b>4</b>	364 49 -8	236 70 -33	689 142	162 169 4 30	33 112 6 91	118 27 27 111	14 -10 13 95	5 1 42	2 0 - 15 19	3 1 -3 22	-20 12 -29 49	17 - 2	40 27 2
REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	16559 16274 286 17015 1601.4 13.6	794 449 345 17360 1602.6 15.1	359 250 108 17469 1603.0 18.0	461 381 80 17549 1603.2 21.3	1378 1230 148 17697 1603.7 20.7	1732 1657 74 17771 1604.0 27.0	2094 1523 572 18343 1605.9 25.6	1505 1855 -350 17993 1604.7 30.2	1281 1967 -686 17307 1602.4 32.0	1019 1764 -745 16562 1599.8 29.6	798 1255 ~457 16106 1598.1 20.4	376 595 -219 15887 1597.3 20.0	209 275 -66 15821 1597.1 19.8	263 239 24 15845 1597.2 15.0	1397 1112 285 16130 1598.2 18.1	1518 889 629 16758 1600.5 14.5	1376 833 542 17301 1602.4 15.0
POWER AVE POWER MV PEAK POW MW ENERGY GWH	2466.7	190 682 68.2	227 684 38.2	269 685 58.1	261 688 188.1	341 689 253.4	325 700 23 <b>4</b> .3	384 693 285.5	403 681 299.8	369 667 265.4	252 659 187.2	245 655 88.2	241 654 40.6	184 654 35.3	222 659 164.9	179 671 133.3	188 681 126.3
BIG BEND- EVAPORATION REG INFLOW RELEASE STORAGE ELEV FTMSL DISCH KCFS	103 16170 16170 1622 1420.0 13.6	449 449 1622 1420.0 15.1	250 250 1622 1420.0 18.0	381 381 1622 1420.0 21.3	1230 1230 1622 1420.0 20.7	1657 1657 1622 1420.0 27.0	1523 1523 1622 1420.0 25.6	6 1848 1848 1622 1420.0 30.1	20 1947 1947 1622 1420.0 31.7	25 1739 1739 1622 1420.0 29.2	22 1233 1233 1622 1420.0 20.1	10 585 585 1622 1420.0 19.7	5 270 270 1622 1420.0 19.4	5 233 233 1622 1420.0 14.7	11 1101 1622 1420.0 17.9	889 889 1622 1420.0 14.5	833 833 1622 1420.0 15.0
POWER AVE POWER MW PEAK POW MW ENERGY GWH	932.3	72 517 25.8	85 510 14.2	100 509 21.6	97 509 69.7	126 509 93.9	120 509 86.2	141 509 104.7	148 509 110.3	138 517 99.7	98 538 73.2	99 538 35.5	98 538 16.4	74 538 14.2	88 538 65.8	71 538 52.7	72 529 48.4
-FORT RANDAL NAT INFLOW DEPLETION EVAPORATION REG INFLOW RELEASE	L 900 80 118 16873 16873	122 1 570 280	57 1 307 189	73 1 454 437	115 4 1341 1341	140 9 1788 1788	185 12 1696 1696	74 18 8 1897 1897	57 15 25 1964 1964	42 7 31 1742 1887	2 1 25 1209 1847	2 1 10 576 880	1 0 4 266 411	1 4 230 252	10 3 10 1098 732	3 886 719	19 3 849 555
STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	0 3124 1350.0 9.5	290 3414 1353.6 9.4	118 3532 1355.0 13.6	17 3549 1355.2 24.5	22.5	3549 1355.2 29.1	3549 1355.2 28.5	0 3549 1355.2 30.8	31.9	-144 3405 1353.5 31.7	-637 2768 1345.1 30.0	29.6	-145 2319 1337.9 29.6	-22 2297 1337.5 15.9	366 2663 1343.5 11.9	167 2830 1346.0 11.7	294 3124 1350.0 10.0
AVE POWER MW PEAK POW MW ENERGY GWH -GAVINS POIN	1674.5	78 351 28.1	115 355 19.3	206 356 44.6	191 356 137.2	245 356 182.3	240 356 172.9	260 356 193.1	269 356 199.9	265 350 190.7	241 319 179.0	224 298 80.6	217 287 36.4	116 285 22.2	89 313 66.5	91 324 67.9	80 339 54.0
NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE	1450 114 -2 38 18169 18169	92 0 373 373	43 0 ~8 224 224	55 0 -21 472 472	148 5 4 1487 1487	174 19 -13 1931 1931	166 24 1 1839 1839	86 39 -5 2 1937 1937	103 10 -2 7 2048 2035	77 -5 0 9 1960 1934	122 2 3 1961 1961	50 5 1 922 922	23 2 0 2 430 430	27 3 25 299 299	77 10 7 4 802 802	79 1 0 798 798	127 3 686 725
STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	358 1206.0 12.5	358 1206.0 12.5	358 1206.0 16.2	358 1206.0 26.4	358 1206.0 25.0	358 1206.0 31.4	358 1206.0 30.9	358 1206.0 31.5	13 371 1206.5 33.1	26 397 1207.5 32.5	397 1207.5 31.9	397 1207.5 31.0	397 1207.5 31.0	397 1207.5 18.9	397 1207.5 13.0	397 1207.5 13.0	-39 358 1206.0 13.0
AVE POWER MW PEAX POW MW ENERGY GWH	743.2	44 114 15.8	56 114 9.4	90 114 19.5	86 114 61.6	104 114 77.5	103 114 74.2	104 114 77.7	108 115 80.7	109 117 78.1	108 117 80.4	106 117 38.2	106 117 17.8	67 117 12.8	46 78 34.4	46 78 34.3	46 76 30.9
-GAVINS POIN NAT INFLOW DEPLETION EGULATED FLO	1550 263 W AT SIC	169 7 OUX CITY	79 3	102 4	199 22	310 35	224 31	129 38	96 36	60 24	42 10	16 6	7 3	9 3	21 13	5 14	82 14
KAF KCFS	19456	535 18.0	300 21.6	569 31.9	1664 28.0	2206 35.9	2032 34.1	2028 33.0	2095 34.1	1970 33.1	1993 32.4	932 31.3	435 31.3	304 19.2	810 13.2	789 12.8	793 14.3
TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION STORAGE	24601 2595 10 1657 51924	1435 23 66 52867	669 11 8 53217	860 14 - 21 53474	2307 126 -10 53981	3493 686 -56 54526	6073 1631 -52 56884	3346 1137 47 103 57009	1194 175 4 324 55614	1113 -251 55 402 54661	1032 -111 24 346 53488	452 -148 -25 154 52977	211 ~69 ~20 71 52730	241 - 79 23 81 52687	651 -220 -21 176 52551	582 -210 -7 52547	943 -119 10 52827
SYSTEM POWER AVE POWER MW PEAK POW MW ENERGY GWH DAILY GWH		655 2270 235.9 15.7	756 2271 127.0 18.1	939 2274 202.8 22.5	939 2279 675.9 22.5	1231 2283 915.6 29.5	1267 2310 912.4 30.4	1309 2309 973.8 31.4	1330 2291 989.4 31.9	1162 2280 836.8 27.9	22.4	941 2234 338.7 22.6	979 2221 164.5 23.5	765 2220 146.8 18.3	847 2204 630.0 20.3	796 2218 592.4 19.1	778 2225 523.0 18.7
			0.0147.0	2 1 1 / 2 1	242.05	3 3 3 4 3 1 T	20 TT D1	<b>11 TIT</b>	2 1 1 170	200000	21000	1 ENOV	221/01/2	2 01017	21050	21 77.17	20555

INI-SUM 15MAR 22MAR 31MAR 30APR 31MAY 30JUN 31JUL 31AUG 30SEP 310CT 15NOV 22NOV 30NOV 31DEC 31JAN 28FEB

DATE OF STUDY 01/26/				21	005-200	6 AOP E	XTENSIO	NS, MEDI	IAN RUN	OFF SIM	JLATION	99001	9901		AGE	1
TIME OF STUDY 11:09: 28FEB11 INI-SUM		201: 22MAR		30APR				XCEPT AS			15NOV	22NOV	201 30NOV		31JAN	29FEB
FORT PECK NAT INFLOW 7400 DEPLETION 454	264 - 5	123 -2	158 ~3	628 42	1210 353	1851 582	829 251	324 -55 87	319 -156 109	398 - 80 95	188 -42 43	88 -19 20	100 -22	310 -134 50	261 -146	349 -110
EVAPORATION 454 MOD INFLOW 6492 RELEASE 6463 STOR CHANGE 29 STORAGE 14644 ELEV FTMSL 2232.3 DISCH KCFS 7.5	269 179 91 14734 2232.8 6.0	126 69 56 14791 2233.0 5.0				2236.2	28 550 615 -65 15398 2235.9 10.0	292 553 -261 15136 2234.7	366 476 -110 15027 2234.1	383 357 26 15053 2234.3	186 173 13 15066 2234.3	87 81 6 15072 2234.4	2234.2	394 553 -159 14878 2233.4	2232.7	2232.5
POWER AVE POWER MW PEAK POW MW ENERGY GWH 1004.7	82 161 29.3	68 162 11.4	5.0 68 162 14.7	8.0 109 162 78.4	9.0 123 163 91.4	18.2 163 163 117.3	137 164 101.8	9.0 123 163 91.6	8.0 109 162 78.6	5.8 79 162 59.0	5.8 79 162 28.5	5.8 79 162 13.3	8.5 116 162 22.3	9.0 123 162 91.2	9.0 122 161 91.0	9.0 122 161 85.0
GARRISON NAT INFLOW 11001 DEPLETION 1246 CHAN STOR -18	469 -3 15	219 -2 10	282 -2	853 4 ~31	1423 201 -10	2958 854 -93	2066 645 81	581 68 10	497 -151 10	454 -37 22	192 -97 0	89 -45 0	102 -52 -27	253 -70 -5	237 -46	326 ~21
EVAPORATION         509           REG INFLOW         15692           RELEASE         14757           STOR CHANGE         935           STORAGE         15779           ELEV FTMSL         1829.5           DISCH KCFS         24.5	667 476 191 15970 1830.2 16.0	300 222 78 16048 1830.5 16.0	373 321 52 16099 1830.6 18.0	1294 1190 104 16203 1831.0 20.0	1765 1476 289 16493 1832.0 24.0	3094 1428 1665 18158 1837.7 24.0	31 2087 1414 672 18831 1839.8 23.0	97 979 1353 -374 18457 1838.6 22.0	122 1012 924 88 18545 1838.9 15.5	107 762 781 -18 18526 1838.8 12.7	48 413 378 35 18561 1838.9 12.7	23 193 236 -43 18518 1838.8 17.0	26 236 286 -49 18469 1838.7 18.0	55 817 1445 -628 17840 1836.6 23.5	836 1476 -639 17201 1834.5 24.0	865 1352 -487 16714 1832.8 23.5
POWER AVE POWER MW PEAK POW MW ENERGY GWH 2189.5	190 441 68.3	190 442 32.0	214 443 46.3	238 444 171.4	286 448 213.0	293 469 210.6	287 477 213.8	276 472 205.1	195 473 140.2	160 473 118.8	160 473 57.5	213 473 35.8	225 472 43.3	292 465 216.9	294 457 218.6	284 451 197.9
OAHE NAT INFLOW 2300 DEPLETION 681 CHAN STOR 2 EVAPORATION 454	317 24 36	148 11	190 14 -8	364 49 -8	236 71 -16	689 145	162 173 4 30	33 116 4 91	118 28 27 110	14 -10 12 93	5 1 41	2 0 -19 19	3 1 -4 22	-20 12 -25 47	18 -2	40 28 2
REG INFLOW         15924           RELEASE         16690           STOR CHANGE         -766           STORAGE         17301           ELEV FTMSL         1602.4           DISCH KCFS         15.0	804 485 320 17621 1603.5 16.3	359 212 147 17768 1604.0 15.3	489 399 89 17857 1604.3 22.4	1497 1277 220 18077 1605.0 21.5	1624 1681 -57 18020 1604.8 27.3	1972 1528 444 18464 1606.3 25.7	1378 1861 -483 17981	1183 1973 -790 17191 1602.0 32.1	930 1770 -839 16352	724 1261 -537 15814	341 598 -257 15557	200 276 -76 15481	262 303 -41 15440 1595.7 19.1	1341 1176 165 15604	1455 933 522 16127 1598.2 15.2	1366 958 408 16535 1599.7 16.7
POWER AVE POWER MW PEAK POW MW ENERGY GWH 2525.0	206 687 74.0	194 689 32.5	284 691 61.2	273 695 196.5	347 694 258.5	328 702 235.9	385 693 286.8	404 679 300.4	369 663 265.4	252 653 187.1	244 649 88.0	241 647 40.5	231 647 44.3	232 650 172.6	186 659 138.1	206 667 143.1
BIG BEND EVAPORATION 103 REG INFLOW 16587 RELEASE 16587 STORAGE 1622 ELEV FTMSL 1420.0 DISCH KCPS 15.0 POWER	16.3	15.3	22.4	21.5	27.3	25.7	30.2	31.8	29.3	20.2	19.8	19.5	5 297 297 1622 1420.0 18.7	18.9	15.2	958 958 1622 1420.0 16.7
AVE POWER MW PEAK POW MW ENERGY GWH 956.7	77 516 27.7	72 510 12.0	105 509 22.6	$100 \\ 509 \\ 72.4$	128 509 95.2	120 509 86.6	141 509 105.0	149 509 110.6	139 517 100.1	99 538 73.5	99 538 35.7	98 538 16.5	94 538 18.1	94 538 69.6	74 538 55.4	80 529 55.6
								57 15 25 1970 1970 0 3549 1355.2					1 4 293 315 -22 2297 1337.5			
DISCH KCFS 10.0 POWER AVE POWER MW PEAK POW MW ENERGY GWH 1713.6	9.9 82 352 29.5	12.4 105 355 17.7	25.5 215 356 46.4	23.3 197 356 141.9	29.5 248 356 184.6	28.6 241 356 173.4	30.9 260 356 193.7	32.0 269 356 200.5	31.8 266 350 191.2	30.1 241 319 179.6	29.7 225 298 80.9	29.7 218 287 36.6	19.9 144 285 27.7	12.9 97 313 72.2	12.9 100 322 74.7	11.3 91 339 63.0
GAVINS POINT NAT INFLOW 1450 DEPLETION 114 CHAN STOR -4 EVAPORATION 38 REG INFLOW 18584	92 0 0 386	43 0 -5 211	55 0 - 25 486	148 5 4 1535	174 19 -12 1955	166 24 2 1845	86 39 ~5 2 1943	103 10 -2 7 2054	77 -5 0 9 1966	122 2 3 8 1968	50 5 1 4 925	23 2 0 2 432	27 3 18 2 355	77 10 13 4 871	79 1 0 871	127 3 780
RELEASE 18584 STOR CHANGE STORAGE 358 ELEV FTMSL 1206.0 DISCH KCFS 13.0	386 358 1206.0 13.0	211 358 1206.0 15.2	486 358 1206.0 27.2	1535 358 1206.0 25.8	1955 358 1206.0 31.8	1845 358 1206.0 31.0	1943 358 1206.0 31.6	2041 13 371 1206.5 33.2	1940 26 397 1207.5 32.6	1968 397 1207.5 32.0	925 397 1207.5 31.1	432 397 1207.5 31.1	355 397 1207.5 22.4	871 397 1207.5 14.2	871 397 1207.5 14.2	819 -39 358 1206.0 14.2
POWER AVE POWER MW PEAK POW MW ENERGY GWH 759.7	45 114 16.4	53 114 8.9	93 114 20.0	88 114 63.5	105 114 78.2	103 114 74.3	105 114 77.8	109 115 80.8	109 117 78.3	108 117 80.6	106 117 38.2	106 117 17.8	79 117 15.1	50 78 37.4	50 78 37.4	50 76 34.9
GAVINS POINT - SIOU NAT INFLOW 1550 DEPLETION 266	169 7	- 79 3	102 4	199 22	310 36	224 31	129 39	96 36	60 24	42 11	16 6	7 3	9 3	21 13	5 14	82 14
REGULATED FLOW AT SIO KAF 19868 KCFS	UX CITY 549 18.5	287 20.7	583 32.7	1712 28.8	2229 36.3	2038 34.2	2033 33.1	2101 34.2	1976 33.2	1999 32.5	935 31.4	436 31.4	361 22.7	879 14.3	862 14.0	887 15.4
TOTAL NAT INFLOW 24601 DEPLETION 2841 CHAN STOR -19 EVAPORATION 1675 STORAGE 52827 SYSTEM POWER	1435 23 51 53741	669 11 5 54117	860 14 -33 54347	2307 126 -35 54781	3493 689 -38 55318	6073 1648 -92 57613	3346 1165 81 104 57738	1194 190 12 327 56326	1113 ~253 38 407 55347	1032 -113 37 350 54180	452 -126 1 156 53667	211 -59 -19 72 53409	241 -67 -13 82 53261	651 -166 -17 178 53004	582 -156 -2 52878	943 -86 5 53025
AVE POWER MW PEAK POW MW ENERGY GWH 9149.3 DAILY GWH	681 2271 245.2 16.3	682 2273 114.5 16.4	978 2275 211.3 23.5	1006 2281 724.1 24.1	1238 2285 921.0 29.7	1247 2313 898.1 29.9	1316 2313 978.9 31.6	1329 2294 989.0 31.9	1186 2283 853.8 28.5	939 2263 698.7 22.5	913 2238 328.9 21.9	956 2225 160.5 22.9	890 2221 170.8 21.4	887 2205 659.9 21.3	827 2215 615.2 19.8	833 2223 579.4 20.0

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

DATE OF STUDY 01/26/06				SIONS, LOWER		E RUNOFF SIM	ULATION 99001	9901 9901 P STUDY	PAGE 1 NO 17
TIME OF STUDY 11:09:36 28FEB07 INI-SUM	2001 15MAR 22MAR		VALUES I	N 1000 AF EX	CEPT AS	INDICATED 30SEP 31OCT	15NOV 22NO	2008	
FORT PECK NAT INFLOW 6556 DEPLETION 541 EVAPORATION 424 MOD INFLOW 5591 RELEASE 5104	264 123 13 6 252 117 134 62	158 574 8 91 151 483 80 357	1011 323 688	1589 692 553 202 26 1036 464 506 492	287 -52 81 258 461	275 354 -141 -68 102 89 314 333 367 308	183 8 -33 -1 40 19 175 82	5 98 322 5 -17 -109 9 21 46 2 93 385	231 309 -124 -95 355 404
STOR CHANGE 487 STORAGE 9047	118 55 9165 9220 201.1 2201.5 4.5 4.5 53 53	71 126 9290 9416	258 9674 1 2204.4 22 7.0	530 -28 0204 10176	-203 9973	~52 25 9921 9946	26 - 2 9973 997 2206.3 2206.3 5.0 6.0	2 -18 -107 9953 9846 2206.2 2205.5 9 7.0 8.0	-198 -114 9648 9534 2204.3 2203.5 9.0 9.0
PEAK FOW MW ENERGY GWH 745.7	129 129 19.2 9.0	130 131 11.6 51.5	. 133	137 136 74.2 72.7	135 68.0	135 135 53.9 45.3	135 135	5 135 134	133 132
	475 221 26 12 39 622 272 446 208 175 63 11041 11105	285 763 16 54 -17 349 1049 268 952 82 97 11186 11284	174 -11 1527 1138 390 11673 1	2701 1891 785 562 -16 5 2405 1796 1220 1230 1185 566 2859 13425		446 428 -132 -100 14 12 121 105 838 653 977 786 -139 -133 12955 12823	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	58 -115 -11 -11 2 25 54 227 780 2 286 1230 -59 ~450 12786 12336	-92         -69           -11         812         867           1353         1208           -541         -341           11795         11454
DISCH KCFS 19.0 POWER	15.0 15.0	15.0 16.0	18.5	20.5 20.0	19.0	16.4 12.8		18.0 20.0	22.0 21.0
AVE POWER MW PEAK POW MW ENERGY GWH 1694.9	155 156 370 371 55.8 26.2	156 167 372 373 33.7 120.2	380	220 221 398 406 58.6 164.1	210 401 156.5	181 141 399 397 130.3 104.6	140 132 397 398 50.5 22.2	397 390	382 376
ELEV FTMSL 1578.5 15 DISCH KCFS 13.1	187         87           23         11           21         11           631         285           208         152           423         133           1930         11963           80.5         1581.2           7.0         10.9	112 278 14 47 0 -5 366 1178 352 1211 15 -33 11978 11945 1581.2 1581.1 19.7 20.4	67 -13 1216 : 1609 : -393 11552 12 1579.2 156	701         124           132         156           -10         3           26         1778           1207         1707           571         -533           2123         11590           81.9         1579.4           20.3         27.8	29 103 5 1019 1500 -482 11108 1 1577.1 15 24.4	79 11 25 -9 14 19 101 88 944 736 576 1296 367 -560 11475 10915 578.9 1576.1 9.7 21.1	2 1 0 4 39 18 339 152 224 119 115 33 11031 11064	$\begin{array}{cccc} -32 & -11 \\ 21 & 46 \\ 232 & 1119 \\ 133 & 1103 \\ 98 & 16 \\ 11162 & 11178 \\ 1577.4 & 1577.4 \end{array}$	16 26 -11 5 1319 1231 821 897 498 334 11676 12010
POWER AVE POWER MW PEAK POW MW ENERGY GWH 1747.9	78 122 569 573 28.0 20.4	219 227 573 572 47.4 163.1	562	225 307 577 563 62.1 228.6	266 551 198.2	106 229 561 546 76.5 170.7	82 93 549 550 29.5 15.6	553 553	147 173 566 574 109.2 120.7
BIG BEND EVAPORATION 129 REG INFLOW 12988 RELEASE 12988 STORAGE 1621 ELEV FIMSL 1420.0 14 DISCH KCFS 13.1 POWER	208 152 208 152 1621 1621 20.0 1420.0 7.0 10.9	352 1211 352 1211 1621 1621 1420.0 1420.0 19.7 20.4	1609 1 1621 1 1420.0 142	8 1207 1699 1207 1699 1621 1621 20.0 1420.0 1 20.3 27.6		31 27 546 1269 546 1269 1621 1621 20.0 1420.0 9.2 20.6	12 6 212 113 212 113 1621 1621 1420.0 1420.0 7.1 8.1	127 1089 1621 1621	821 897 821 897 1621 1621 1420.0 1420.0 13.3 15.6
AVE POWER MW PEAK POW MW	33 51 513 510 11.9 8.6	92 95 509 509 19.9 68.6		95 129 509 509 58.4 96.2	114 518 84.5	46 104 538 538 33.4 77.1	36 41 538 538 13.0 6.9	41 88 538 538 7.8 65.1	66 75 538 529 48.8 52.1
	88         41           1         1           295         192           223         155           71         37           3495         3532           54.6         1355.0           7.5         11.1	53 82 1 4 403 1289 386 1289 3549 3549 1355.2 1355.2 21.6 21.7	9 1666 1 1666 1 3549 3 1355.2 135	167 33 12 18 10 1362 1704 1362 1704 0 5549 3549 55.2 1355.2 2 22.9 27.7	-174 - 3375 1353.1 13	30 2 7 22 528 1247 1606 1247 1079 0 2296 2296 37.5 1337.5 27.0 20.3	1 0 10 5 202 108 202 108 202 296 2296 2296 1337.5 1337.5 6.8 7.8	$\begin{array}{cccc} & & & & & & & & & & & & & & & & & $	-6 19 3 3 695 569 117 344 2779 3123 1350.0 11.3 9.9
AVE POWER MW PEAK POW MW	64 95 354 355 22.9 15.9	183 183 356 356 39.5 131.9	356	194 234 356 356 19.4 173.8	227 349 168.7 1	209 147 284 285 50.7 109.5	50 57 285 285 18.0 9.6	56 87 285 313 10.7 64.8	88 79 320 339 65.4 55.2
GAVINS POINT NAT INFLOW 1335 DEPLETION 114 CHAN STOR -1 EVAPORATION 47 REG INFLOW 14887 RELEASE 14887	98 45 0 0 5 -7 326 193 326 193	59 132 0 5 -20 0 425 1416 425 1416	19 -10 1783 1	153 87 24 39 8 -9 3 500 1740 500 1740		62 112 -5 2 0 12 11 10 1662 1359 1636 1359	50 23 5 2 25 -2 5 2 268 125 268 125	27 75 3 10 0 -7 2 5 143 766 143 766	73 107 1 3 767 679 767 718
STOR CHANGE STORAGE 358 ELEV FTMSL 1206.0 12 DISCH KCFS 12.5	358 358 06.0 1206.0 11.0 13.9	358 358 1206.0 1206.0 23.8 23.8	358 1206.0 120	358 358	13 371 1206.5 12	26 397 397	397 397	397 397 1207.5 1207.5 9.0 12.5	-39 397 358 1207.5 1206.0 12.5 12.5
POWER Ave power MW Peak pow MW	38 49 114 114 13.8 8.2	82 82 114 114 17.6 58.7	99 114	86 96 114 114 2.1 71.6	96 115	95 78 117 117 68.7 57.9	32 32 117 117 11.6 5.4	32 44 117 78 6.2 32.9	44 44 78 76 33.0 30.6
GAVINS POINT - SIOUX NAT INFLOW 1135 DEPLETION 251 REGULATED FLOW AT SIOUX KAF 15771	CITY 145 68 6 3	87 113 4 21 508 1508 28.5 25.3	219 35 1967 1	158 95 30 37 .628 1798 .7.4 29.2	70 34 1758	44 31 22 10 1658 1380 27.9 22.4	16 7 6 3 278 130 9.4 9.4	9 16 3 12 148 770 9.4 12.5	-3 60 13 13 751 765 12.2 13.3
TOTAL NAT INFLOW 21499 DEPLETION 2667 CHAN STOR -31 EVAPORATION 1653	1256 586 69 32 65 -7	753 1942 41 222 -20 -22	2883 5 627 1 -34	469 2922 536 1014 -19 -1 103	1066 174 12 323	936 938 - 224 - 74 20 43 398 342	424 198 -129 -60 26 -8 154 72	226 615 -69 -187 -42 -29 82 179	465 819 ~183 -122 -21 8
STORAGE 36722 3 SYSTEM POWER AVE POWER MW PEAK POW MW ENERGY GWH 6910.8 1 DAILY GWH	7510         37799           421         525           2049         2053           51.5         88.3           10.1         12.6	37982 38172 786 825 2054 2056 169.8 594.1 18.9 19.8	1016 2055 2 756.2 66 24.4 2	714         40719           923         1085           091         2086           4.6         807.0           2.2         26.0	39542 3 1004 2070 747.1 5 24.1	8665         37998           713         759           2033         2018           13.5         564.9           17.1         18.2	38146         38194           401         428           2022         2023           144.4         72.0           9.6         10.3	38215         38040           502         728           2024         2006           96.5         541.6           12.1         17.5	37916 38099 688 701 2016 2026 511.7 487.6 16.5 16.8
INI-SUM 1	SMAR ZZMAR	31MAR 30APR	31MAY 30		STAUG 3	OSEP 31OCT	15NOV 22NOV	30NOV 31DEC	31JAN 29FEB

DATE OF STUDY 01/26/06 TIME OF STUDY 11:09:36			05-2006 Orten Na	VIGATIO	N SEAS	•	AYS			JLATION	99001	9901 9	9901 PA	AGE NO	1 18
28FEB08 INI-SUM	20 15MAR 22MA		30APR	31MAY	30JUN		31AUG			15NOV	22NOV	200 30NOV	)9 31DEC	31JAN	28FEB
DISCH KCFS 9.0	267 12 -16 - 283 13 134 63 149 65 9683 975 204.5 2204.5 4.5 4.5	7 -10 2 170 2 80 9 89 2 9841 9 2205.5	579 35 544 417 127 9969 2206.3 7.0	1019 316 703 492 211 10180 2207.6 8.0	1603 548 1055 536 519 10699 2210.8 9.0	698 210 26 462 523 -61 10638 2210.4 8.5	289 -48 83 254 492 -238 10400 2209.0 8.0	278 -142 104 316 357 -41 10359 2208.7 6.0	357 -74 91 340 288 52 10411 2209.1 4.7		86 -16 19 83 62 20 10469 2209.4 4.5	98 -18 22 94 127 -33 10436 2209.2 8.0	325 -112 48 389 523 -133 10303 2208.4 8.5	233 -126 359 553 -194 10108 2207.2 9.0	312 -86 398 500 -102 10007 2206.5 9.0
POWER AVE POWER MW PEAK POW MW ENERGY GWH 783.7	54 54 133 133 19.5 9.1	134	85 135 61.1	97 136 72.5	111 140 79.7	105 140 78.4	99 138 73.5	74 138 53.2	58 138 42.9	58 138 20.8	56 138 9.3	99 138 18.9	104 137 77.7	110 136 81.8	109 135 73.5
	478 22 -4 -2 50 666 28 476 194 190 9 11643 11736 813.2 1813.6 16.0 14.0	-2 369 250 120 11856 1814.1	768 -2 -27 1159 1012 148 12003 1814.7 17.0	1290 226 -11 1545 1168 377 12380 1816.3 19.0	2718 782 -11 2461 1279 1181 13561 1821.1 21.5	1903 585 31 1815 1291 523 14085 1823.2 21.0	535 69 59 864 1261 -397 13688 1821.6 20.5	449 -117 21 124 820 952 -132 13556 1821.1 16.0	431 -32 14 108 657 828 -171 13386 1820.4 13.5	176 -114 49 380 401 -20 13365 1820.4 13.5	82 -53 23 177 208 -31 13334 1820.2 15.0	94 -61 -37 26 218 286 -68 13266 1320.0 18.0	240 -117 -5 56 819 1230 -411 12855 1818.3 20.0	178 -94 -5 1322 -502 12353 1816.2 21.5	282 -64 846 1166 -320 12033 1814.9 21.0
AVE POWER MW PEAK POW MW ENERGY GWH 1766.6	169 148 379 381 60.7 24.9	. 383	181 385 130.5	204 391 151.7	236 408 169.7	236 416 175.4	231 410 171.6	179 408 129.1	150 406 112.0	150 405 54.0	167 405 28.0	200 404 38.3	220 398 163.7	233 390 173.5	225 385 151.3
OAHE NAT INFLOW 1794 DEPLETION 640 CHAN STOR 0 EVAPORATION 441 REG INFLOW 14037 RELEASE 13444 STOR CHANGE 593 STORAGE 12010 ELEV FTMSL 1581.4 1 DISCH KCFS 15.6 POWER	190 89 23 11 26 10 669 282 409 24 259 34 12269 12303 582.6 1582.7 13.8 17.9	14 350 350 0 12303 1582.7	283 48 -15 1231 1208 23 12326 1582.8 20.3	161 68 -10 1251 1600 -349 11977 1581.2 26.0	714 135 -13 1846 1203 643 12620 1584.1 20.2	127 160 2 27 1233 1706 - 472 12148 1582.0 27.7	30 106 3 64 1103 1497 -395 11753 1580.2 24.4	80 27 23 106 922 679 244 11996 1581.3 11.4	11 -10 13 92 770 1269 -499 11497 1579.0 20.6	1 359 221 137 11635 1579.6 7.4	0 -8 19 181 119 62 11696 1579.9 8.5	1 -16 22 247 133 114 11811 1580.5 8.4	-43 12 10 48 1116 1102 14 11824 1580.5 17.9	15.9	45 27 3 1167 722 465 12603 1584.1 13.0
AVE POWER MW PEAK POW MW ENERGY GWH 1817.7	154 201 580 581 55.5 33.8	581	228 581 164.3	291 573 216.2	227 588 163.5	312 577 231.8	271 567 201.3	127 573 91.5	228 561 169.9	82 565 29.6	95 566 15.9	93 569 17.9	199 569 148.0	177 577 131.9	147 588 98.6
BIG BEND EVAPORATION 129 REG INFLOW 13315 RELEASE 13315 STORAGE 1621 ELEV FTMSL 1420.0 1 DISCH KCFS 15.6 POWER AVE POWER MW PEAK POW MW ENERGY GWH 772.2	409 249 409 249 1621 1621 420.0 1420.0 13.8 17.9 65 84 517 510 23.4 14.1	350 1621 1420.0 19.6 92	1208 1208 1621 1420.0 20.3 95 509 68.4	1600 1600 1621 1420.0 26.0 122 509 90.6	1203 1203 1621 1420.0 20.2 95 509 68.1	8 1698 1698 1621 1420.0 27.6 129 509 96.2	24 1473 1473 1621 1420.0 24.0 113 518 84.3	31 648 648 1621 1420.0 10.9 55 538 39.6	27 1242 1242 1621 1420.0 20.2 101 538 75.5	12 209 209 1621 1420.0 7.0 36 538 12.8	6 113 1621 1420.0 8.1 41 538 6.9	7 127 1621 1420.0 8.0 40 538 7.8	14 1088 1088 1621 1420.0 17.7 87 538 65.1	977 977 1621 1420.0 15.9 77 538 57.5	722 722 1621 1420.0 13.0 62 529 41.9
FORT RANDALL NAT INFLOW 659 DEPLETION 80 EVAPORATION 130 REG INFLOW 13758 RELEASE 13757 STOR CHANGE 1 STORAGE 3123	90 42 1 1 497 290 223 154 274 135 3397 3532 353.4 1355.0 7.5 11.1	54 1 403 386 17 3549	84 4 1288 1288 0 3549	67 9 1658 1658 0 3549	171 12 1362 1362 3549	34 18 10 1704 1704 0 3549	65 15 31 1492 1666 -174 3375 1353.1 27.1	31 7 33 631 1606 -975 2400	2 1 23 1220 1323 -103 2297	1 10 199 199 0 2296	0 5 108 108 0 2296 1337.5 7.8	1 5 121 121 0 2296	7 13 1079 713 366 2662	-7 3 967 695 272 2934	20 3 739 550 189 3123 1350.0 9.9
AVE POWER MW PEAK POW MW ENERGY GWH 1352.0	62 94 350 355 22.4 15.6	183 356 39.5	183 356 131.8	227 356 169.2	193 356 139.3	234 356 173.8	227 349 168.6	211 292 151.9	157 285 117.0	49 285 17.7	57 285 9.6	56 285 10.7	87 313 64.8	89 330 66.0	80 339 53.8
- GAVINS POINT NAT INPLOW 1342 DEPLETION 1342 CHAN STOR -1 EVAPORATION 47 REG INFLOW 14937 RELEASE 14937 STOR CHANGE STORAGE 358 ELEV FTMSL 1206.0 11 DISCH_KCFS 12.5	98 46 0 0 5 -7 326 194 326 194 358 358 206.0 1206.0 11.0 13.9	-20 425 425 358	133 5 0 1416 1416 358 1206.0 23.8	148 19 -10 1777 1777 358 .206.0 28.9	154 24 8 1500 1500 358 1206.0 25.2	87 39 -9 3 1740 1740 358 1206.0 28.3	86 10 1 9 1735 1722 13 371 1206.5 28.0	62 -5 0 11 1662 1636 26 397 1207.5	112 2 10 1433 1433 397 1207.5 23.3	51 5 268 268 397 1207.5 9.0	24 2 22 125 125 397 1207.5 9.0	27 3 0 2 143 143 397 1207.5 9.0	75 10 -7 5 766 766 397 1207.5 12.5	73 1 1 767 767 397 1207.5 12.5	108 3 660 699 -39 358 1206.0 12.6
POWER AVE POWER MW PEAK POW MW ENERGY GWH 625.0	38 49 114 114 13.9 8.2	82 114 17.6	82 114 58.7	98 114 73.1	86 114 62.1	96 114 71.6	96 115 71.3	95 117 68.7	82 117 60.9	32 117 11.6	32 117 5.4	32 117 6.2	44 78 32.9	44 78 33.0	44 76 29.8
GAVINS POINT - SIOUX NAT INFLOW 1160 DEPLETION 254 REGULATED FLOW AT SIOUX KAF 15843 KCFS	149 69 6 3	89 4 510 28.6	116 21 1511 25.4	224 35 1966 32.0	161 30 1631 27.4	97 37 1800 29.3	72 35 1759 28.6	45 23 1658 27.9	31 10 1454 23.6	16 6 278 9.4	7 3 130 9.3	9 3 148 9.4	17 12 771 12.5	-3 13 751 12.2	61 14 746 13.4
TOTAL- NAT INFLOW 21702 DEPLETION 2509 CHAN STOR -8 EVAPORATION 1698 STORAGE 38099 3 SYSTEM POWER MW	1271 593 11 5 80 3 38971 39303 543 631	762 6 -20 39528 780	1963 111 -43 39826 854	2909 673 ~31 40065 1039	5521 1531 -16 42409 948	2946 1049 -1 106 42399 1112	1077 187 9 331 41208 1036	945 -207 37 410 40329 742	944 -103 37 351 39608 777	427 -135 29 158 39763 407	199 -63 -8 74 39813 448	228 -72 -53 85 39827 520	621 -192 -23 184 39663 742	467 -186 -13 39552 731	828 -106 5 39744 668
PEAK POW MW ENERGY GWH 7117.2 1 DAILY GWH	2074 2075 195.5 106.0 13.0 15.1 15MAR 22MAR	2077 168.5 18.7	2081 615.0 20.5	2080 773.3 24.9	2116 682.4 22.7	2112 827.2 26.7	2098 770.5 24.9	2067 534.1 17.8	2045 578.2 18.7	2048 146.6 9.8	2049 75.2 10.7 22NOV	2051 99.8 12.5	2033 552.2 17.8 31DEC	2050 543.7 17.5	2052 449.0 16.0 28FEB

				SH	ORTEN N			ON 31-D							STUDY	NO	19
	EB09 INI-SUM	15MAR	2009 22MAR		30APR			00 AF E 31JUL				15NOV	22NOV	20 30NOV		31JAN	1 28F
FORT PECK NAT INFLOW DEPLETION EVAPORATION MOD INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS DENUE	- 6720 431 447 5842 5294 5294 548 10007 2206.5 9.0	271 -16 287 134 153 10160 2207.5 4.5	126 -7 134 62 71 10231 2208.0 4.5	163 -10 172 80 92 10323 2208.5 4.5	35 553 357 196 10519	1036 317 719 492 227 10746 2211.1 8.0	1629 552 1077 536 541 11287 2214.3 9.0	709 217 27 465 523 -58 11230 2214.0 8.5	294 -44 85 253 492 -239 10990 2212.5 8.0	282 -142 107 317 349 -32 10958 2212.4 5.9	363 -74 94 343 293 50 11008 2212.6 4.8		-16 20 84 69 15 11061	-19 23 96 127 -31 11030 2212.8	-113 49 394 553 -159 10870		4 5 105 2209
POWER AVE POWER MW PEAK POW MW ENERGY GWH	798.6	55 136 19.8	55 137 9.3	55 137 11.9	74 139 53.3	99 140 73.7	113 144 81.1	107 144 79.7	100 142 74.7	74 142 53.0	60 142 44.5	60 142 21.6	63 142 10.5	100 142 19.3	112 141 83.6	118 140 87.8	1
GARRISON NAT INFLOW DEFLETION CHAN STOR EVAPORATION REG INFLOW	10262 1015 0 527 14014	484 -4 49 671	226 -2 290	290 ~2 373	777 -2 -16 1120	1306 226 -22 1550	2752 791 -11 2486	1927 602 5 32 1821	542 75 5 102 863	455 -120 22 127 820	437 -37 12 110 669	179 -117 0 50 388	83 -55 -2 23 182	95 -62 -32 27 226	243 -119 -11 57 848	180 -94 -5 853	-
RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	13346 668 12033 1814.9 21.0	446 225 12257 1815.8 15.0	194 96 12353 1816.2 14.0	250 123 12476 1816.7 14.0	1012 108 12584 1817.2 17.0	1168 382 12966 1818.7 19.0	1309 1177 14143 1823.4 22.0	1322 499 14642 1825.3 21.5	1291 -429 14213 1823.7 21.0	988 -168 14045 1823.0 16.6	735 -67 13978 1822.8 12.0	356 32 14010 1822.9 12.0	168 13 14024 1822.9 12.1	301 -75 13948 1822.7 19.0	1230 -382 13566 1821.2 20.0	1353 -500 13066 1819.2 22.0	12 -3 127 1817 22
AVE POWER MW PEAK POW MW ENERGY GWH	1799.9	161 389 58.0	151 390 25,4	152 392 32.8	185 394 132.9	207 400 154.3	245 417 176.4	245 424 182.3	240 417 178.2	189 415 135.7	136 414 101.0	136 415 48.8	138 415 23.1	215 414 41.2	224 408 166.9	243 401 181.1	2 3 161
OAHE NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCPS POWER	1860 652 -5 460 14089 13404 686 12603 1584.1 13.0	197 23 30 651 404 246 12849 1585.1 13.6	92 11 5 281 246 35 12884 1585.3 17.7	118 14 354 347 8 12891 1585.3 19.4	294 48 -15 1243 1202 41 12932 1585.5 20.2	167 69 -10 1256 1608 -352 12580 1584.0 26.1	740 138 -15 1896 1193 703 13283 1587.0 20.1	131 165 2 9 1262 1703 -441 12842 1585.1 27.7	31 109 2 88 1127 1493 -366 12476 1583.5 24.3	83 27 22 110 956 971 -15 12461 1583.4 16.3	12 -10 23 96 685 969 -284 12177 1582.2 15.8	1 0 43 312 221 90 12268 1582.6 7.4	0 -1 20 147 118 28 12296 1582.7 8.5	1 -35 23 243 133 110 12406 1583.2 8.4	-45 12 -5 50 1117 1102 15 12421 1583.2 17.9	-7 17 -10 1319 977 342 12763 1584.8 15.9	12 7 5 132
AVE POWER MW PEAK POW MW	1843.2	155 593 55.8	202 594 34.0	222 594 47.9	231 595 166.1	297 587 220.8	229 603 165.0	317 593 235.5	275 585 204.7	185 584 132.9	177 578 132.0	84 580 30.2	96 581 16.2	95 583 18.2	202 584 150.5	180 592 134.1	1 6 99
DISCH KCFS	129 13275 13275 1621 1420.0 13.0	404 404 1621 1420.0 13.6	246 246 1621 1420.0 17.7	347 347 1621 1420.0 19.4	1202 1202 1621 1420.0 20.2	1608 1608 1621 1420.0 26.1	1193 1193 1621 1420.0 20.1	8 1695 1695 1621 1420.0 27.6	24 1469 1469 1621 1420.0 23.9	31 940 940 1621 1420.0 15.8	27 941 941 1621 1420.0 15.3	12 209 209 1621 1420.0 7.0	6 113 113 1621 1420.0 8.1	7 126 126 1621 1420.0 8.0	14 1088 1088 1621 1420.0 17.7	977 977 1621 1420.0 15.9	7 7 16 1420 12
POWER AVE POWER MW PEAK POW MW ENERGY GWH	768.8	64 517 23.2	83 510 14.0	91 509 19.6	95 509 68.1	122 509 91.1	94 509 67.6	129 509 96.0	113 518 84.1	78 538 56.1	77 538 57.4	36 538 12.9	41 538 6.9	40 538 7.8	87 538 65.1	77 538 57.5	5 41
DISCH KCFS	690 80 134 13752 13751 0 3123 1350.0 9.9	94 1 223 274 3397 1353.4 7.5	44 1 289 154 135 3532 1355.0 11.1	56 1 402 385 17 3549 1355.2 21.6		70 9 1669 1669 3549 1355.2 27.1	179 12 1360 1360 3549 1355.2 22.9	36 18 10 1703 1703 0 3549 1355.2 27.7	68 15 31 1491 1665 -174 3375 1353.1 27.1	32 7 930 1605 -675 2700 1344.1 27.0	2 1 917 1321 -403 2297 1337.5 21.5	1 10 199 199 0 2297 1337.5 6.7			7 3 13 1079 713 366 2663 1343.5 11.6	-7 3 967 695 272 2935 1347.4 11.3	7 5 1 31 1350 9
POWER AVE POWER MW PEAK POW MW ENERGY GWH	1357.3	62 350 22.4	94 355 15.8	182 356 39.4	183 356 131.6	229 356 170.3	193 356 139.1	233 356 173.7	226 349 168.5	215 315 155.0	161 285 119.4	49 285 17.7	57 285 9.5	56 285 10.7	87 313 64.8	89 330 66.0	3 53
-GAVINS POINT NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW	1359 114 -1 47 14948	100 0 5 328	47 0 -7 194	60 0 -20 425	135 5 0 1416	150 19 -11 1789	155 24 8 1500	88 39 -9 3 1740	87 10 1 9 1735	63 -5 0 11 1662	114 2 10 10 1433	51 5 27 5 268	24 2 -2 2 125	27 3 0 2 143	76 10 -7 5 767	74 1 1 768	1
RELEASE STOR CHANGE STORAGE ELEV FTMSL : DISCH KCFS	14948 358 1206.0 2 12.6	328 358 1206.0 11.0	194 358 1206.0 14.0	425 358 1206.0 23.8	1416 358 1206.0 23.8	1789 358 1206.0 29.1	1500 358 1206.0 25.2	1740 358 1206.0 28.3	1722 13 371 1206.5 28.0	1636 26 397 1207.5 27.5	1433 397 1207.5 23.3	268 397 1207.5 9.0	125 397 1207.5 9.0	143 397 1207.5 9.0	767 397 1207.5 12.5	768 397 1207.5 12.5	6 - 3 1206 12
POWER AVE POWER MW PEAK POW MW ENERGY GWH	625.3	39 114 13.9	49 114 8.2	82 114 17.6	82 114 58.7	99 114 73.5	86 114 62.1	96 114 71.6	96 115 71.3	95 117 68.7	82 117 60.9	32 117 11.6	32 117 5.4	32 117 6.2	44 78 33.0	44 78 33.0	29
-GAVINS POINT NAT INFLOW DEPLETION EGULATED FLOW KAF KCFS	1211 262	155 7	72 3 263 18.9	93 4 514 28.8	121 22 1515 25.5	234 35 1988 32.3	168 31 1637 27.5	101 38 1803 29.3	75 36 1761 28.6	47 23 1660 27.9	33 10 1456 23.7	17 6 279 9.4	8 3 130 9,4	9 3 149 9.4	17 13 771 12.5	-3 14 751 12.2	7 13
TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION	22102 2554 -5 1744	1301 11 84	607 5 - 2	780 7 -20	2003 112 -31	2963 675 -42	5623 1548 ~18	2992 1079 -2 108	1097 201 9 339	962 -210 45 421	961 -108 45 362	434 -139 28 162	203 -65 -5 76	231 -74 -66 87	628 -194 -23 189	474 ~186 -15	8 - 1
STORAGE SYSTEM POWER AVE POWER MW PEAK POW MW		40642 536 2100 193.1 12.9	40979 634 2101 106.6 15.2	41218 784 2104 169.3 18.8	41563 848 2107 610.8 20.4	41820 1053 2107 783.7 25.3	44241 960 2144 691.3 23.0		43046 1050 2127 781.5 25.2	42182 835 2111 601.5 20.0	41478 693 2074 515.3 16.6	41639 396 2077 142.7 9.5	41695 427 2078 71.7 10.2	41699 538 2079 103.3 12.9	41538 758 2062 563.8 18.2	41432 752 2079 559.6 18.1	4164 204 460 16

DATE OF STUDY	01/26/	06		20	05-2006	AOP EX	TENSION	S, LOWE	r quart	ILE RUN	OFF SIM	ULATION	99001	9901	9901 P.	AGE	1
TIME OF STUDY	11:09:	36		SH	ORTEN NA					S INDIC	ATED				STUDY	NO	20
	INI-SUM	15MAR	2010 22 <b>MAR</b>		30APR					30SEP		15NOV	2 2 NOV	20 30NOV		31JAN	28FEB
FORT PECK NAT INFLOW DEPLETION EVAPORATION	- 6751 442 462	272 -16	127 -8	163 -10	591 35	1041 318	1636 557	712 224 28	295 -40 88	284 -142 111	365 - 76 97	188 -36 44	88 -17 20	100 -19 23	332 -114 50	238 -127	318 -88
MOD INFLOW RELEASE	5847 5313	289 134	135 62		556 357	723 492	1079 536	460 523	247 492	315	344 309	180 155		96 127	396 553	365 553	406 500
STOR CHANGE STORAGE	534 10554 2209.9	155 10709	72 10782 2211.3		199 11074 2213.0	231 11305 2214.4	543 11848 2217.5	-63 11786 2217.2	-245 11540 2215.8	-52 11488 2215.5	36	11548	11 11560 2215.9	-31 11529 2215.7	-158 11371	-188 11182	
ELEV FTMSL DISCH KCFS POWER	9.0	2210.9 4.5	4.5	2211.9 4.5	6.0	8.0	9.0	8.5	8.0	6.2	2215.7 5.0	5.2	5.2	8.0	2214.8 9.0	2213.7 9.0	2213.1 9.0
AVE POWER MW PEAK POW MW	014 0	56 140	56 141	56 141	75 143	101 144	114 148	109 147	102 146	79 145	64 146	66 146	66 146	102	114 145	113 143	113 143
ENERGY GWH GARRISON	814.0	20.1	9.4	12.1	54.1	74.9	82.4	81.0	75.9	56.6	47.6	23.9	11.2	19.5	84.8	84.4	76.0
NAT INFLOW DEPLETION CHAN STOR	10290 1029 0	485 -4 49	226 -2	291 -2	779 -1 -16	1310 226 -21	2760 801 -11	1932 618 5	543 80 5	456 -123 19	438 -42 12	179 -121 -2	84 - 56	95 -64 -29	243 -121	181 -95	287 -65
EVAPORATION REG INFLOW	542 14032	672	291	374	1121	1555	2484	33 1809	104 856	130 836	113 687	51 401	24 188	27	-10 59 848	829	852
RELEASE STOR CHANGE	13386 646	446 225	194 96	250 124	1012 109	1168 386	1339 1145	1353 456	1322 -466	952 -116	729 -41	358 43	167 21	286 -55	1291 -443	1353 - 523	1166 -314
STORAGE ELEV FTMSL DISCH KCFS	12700 1817.7 22.0	12926 1818.6 15.0	13022 1819.0 14.0	13146 1819.5 14.0	13255 1819.9 17.0	13642 1821.5 19.0	14787 1825.9 22.5	15243 1827.6 22.0	14777 1825.8 21.5	14660 1825.4 16.0	14619 1825.2 11.9	14662 1825.4 12.0	14683 1825.5 12.0	14628 1825.3 18.0	14185 1823.6 21.0	13661 1821.5 22.0	13347 1820.3 21.0
POWER AVE POWER MW	22.0	164	154	155	188	211	255	255	249	184	137	139	139	207	239	248	234
	1836.4	399 59.2	400 25.9	402 33.4	404 135.5	409 157.3	426 183.6	432 189.4	425 185.1	424 132.8	423 101.7	424 50.0	424 23.3	423 39.7	417 178.1	410 184.2	405 157.1
OAHE NAT INFLOW DEPLETION	1877 666	199 24	93 11	119 14	297 49	168 70	747 142	132 169	31 112	84 27	12 -10	1	0	1	-45 12	-7 17	47 27
CHAN STOR EVAPORATION REG INFLOW	5 479 14122	34 656	5 281	355	-14 1245	-10 1257	-17 1927	2 30 1288	2 92 1151	27 115 921	20 100 671	-1 45 311	21 146	-29 24 232	-15 53 1167	-5 1324	5 1191
RELEASE STOR CHANGE	13447 675	403	258 23	372 -17	1198 47	1613 -357	1190 737	1703	1493 - 342	971 - 50	968 - 297	231 81	118 28	133 99	1102	977 347	715 476
STORAGE ELEV FTMSL		13541 1588.1				13237 1586.8	13973 1589.9	13559 1588.2	13216 1586.7		12869 1585.2	12950 1585.6	12977 1585.7		13141 1586.4	13488 1587.9	13963 1589.8
DISCH KCFS POWER AVE POWER MW	12.9	13.6 157	18.6 216	20.8 242	20.1 234	26.2 303	20.0 232	27.7 322	24.3 280	16.3 188	15.7 181	7.8 89	8.5 97	8.4 96	17.9 206	15.9 184	12.9 150
PEAK POW MW	1881.8	609 56.6	610 36.3	609 52.2	610 168.3	602 225.3	618 167.3	609 239.6	602 208.5	601 135.4	594 134.4	596 32.0	596 16.4	599 18.5	600 153.2	608 136.6	618 101.1
BIG BEND EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW RELEASE	13318 13318	403	258 258	372	1198 1198	1613	1190 1190	1695 1695	1469 1469	940 940	941 941	219 219	112 112	127 127	1088 1088	977 977	715 715
STORAGE ELEV FTMSL DISCH KCFS	1621 1420.0 12.9	1621 1420.0 13.6	1621 1420.0 18.6	1621 1420.0 20.8	1621 1420.0 20.1	1621 1420.0 26.2	1621 1420.0 20.0	1621 1420.0 27.6	1621 1420.0 23.9	1621 1420.0 15.8	1621 1420.0 15.3	1621 1420.0 7.3	1621 1420.0 8.1	1621 1420.0 8.0	1621 1420.0 17.7	1621 1420.0 15.9	1621 1420.0 12.9
POWER AVE POWER MW PEAK POW MW		64 517	87 510	98 509	94 509	123	94 509	129 509	113 518	78	77	37	41	40	87	77 538	62
ENERGY GWH	771.3	23.1	14.7	21.1	67.9	509 91.4	67.4	96.0	84.1	538 56.1	538 57.4	538 13.4	538 6.9	538 7.8	538 65.1	538	529 41.5
FORT RANDALL NAT INFLOW DEPLETION	 696 80	95 1	<b>44</b> 1	57 1	89 4	71 9	181 12	36 18	68 15	32	2 1	1	0	1	7 3	~7 3	21 3
EVAPORATION REG INFLOW	134 13801	497	302	428	1283	1675	1359	10 1703	31 1491	35 930	25 917	10 208	5 107	5 121	13 1079	967	733
RELEASE STOR CHANGE STORAGE	13801 0 3124	223 274 3397	167 135	411	1283 3549	1675 3549	1359 3549	1703 0 3549	1665 -174	1605	1321 ~403 2296	208 0 2296	107 0 2296	121	713 366 2662	695 272	544 189
ELEV FTMSL DISCH KCFS			3532 1355.0 12.0	3549 1355.2 23.0						2700 1344.1 27.0						2934 1347.4 11.3	3123 1350.0 9.8
POWER AVE POWER MW PEAK POW MW		62 350	102 355	195 356	182 356	230 356	193 356	233 356	226 349	215 315	161 285	51 285	56 285	56 285	87	89 330	79 339
ENERGY GWH	1362.2	22.4	17.1	42.0		356 170.9		356 173.7		315 155.0	285 119.4	18.5	285	10.7	313 64.8	66.0	339 53.2
GAVINS POINT NAT INFLOW DEPLETION	1362 114	100	47 0	60 0	135 5	150 19	156 24	88 39	87 10	63 -5	114 2	51 5	24 2	27 3	76 10	75 1	110
CHAN STOR EVAPORATION	-1 47	4	- 9	-21	3	-11	8	-9 3	1 9	0 11	10 10	27 5	~1 2	0 2	- 7 5	1	3
REG INFLOW RELEASE STOR CHANGE	15001 15001	328 328	205 205	450 450	1416 1416	1795 1795	1500 1500	1740 1740	1735 1722 13	1662 1636 26	1433 1433	277 277	125 125	143 143	767 767	769 769	657 696 -39
STORAGE	358 1206.0 12.5	358 1206.0 11.0	358 1206.0 14.8	358 1206.0 25.2	358 1206.0 23.8	358 1206.0 29.2	358 1206.0 25.2	358 1206.0 28.3	371	397 1207.5 27.5	397 1207.5 23.3	397 1207.5 9.3	397 1207.5 9.0	397 1207.5 9.0	397 1207.5 12.5	397 1207.5 12.5	358
POWER AVE POWER MW PEAK POW MW		39 114	51 114	86 114	82 114	99 114	86 114	96 114	20.0 96 115	95 117	82 117	33 117	32 117	32 117	44 78	44 78	44 76
ENERGY GWH	627.4 - SIOU	13.9	8.6	18.6	58.7	73.6	62.1	71.6	71.3	68.7	60.9	11.9	5.4	6.2	33.0	33.1	29.7
NAT INFLOW DEPLETION	1223 263	157 7	73 3	94 4	122 22	236 35	170 31	102 38	75 36	47 24	33 10	17 6	8 3	9 3	18 13	-3 14	65 14
REGULATED FLOW KAF KCFS	AT SIO 15961	UX CITY 478 16.1	275 19.8	540 30.3	1516 25.5	1996 32.5	1639 27.5	1804 29.3	1761 28.6	1659 27.9	1456 23.7	288 9.7	130 9.4	149 9.4	772 12.5	752 12.2	747 13.5
TOTAL NAT INFLOW	22199	1308	610	785	2013	2976	5650	3002	1099	966	964	435	203	232	631	477	848
DEPLETION CHAN STOR EVAPORATION	2594 5 1793	11 87	5 - 4	-21	114 -28	677 -42	1567 -19	1106 -2 111	213 9 349	-212 46 433	-115 43 372	-143 25 167	-67 -1 78	-76 -58 89	-197 -33 194	-187 -4	-109 8
STORAGE SYSTEM POWER	41646	42552	42879	43095	43450	43711		46115	44900	44032	43326	43474	43535	43547	43376	43284	43501
AVE POWER MW PEAK POW MW	7202 1	543 2130	666 2131	831 2132	855 2136	1066 2135	975 2171 701	1144 2168	1066 2155	840 2140	701 2102	416 2105	432 2106	533 2107	778 2091	755 2107	683 2110
DAILY GWH		13.0	16.0	179.6 20.0	20.5	793.4 25.6	701.8 23.4	851.3 27.5	793.4 25.6	604.7 20.2	521.5 16.8	149.8 10.0	72.6 10.4	102.4 12.8	579.0 18.7	561.8 18.1	458.6 16.4
IN	NI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	3 OJUN	31JUL	31AUG	30SEP	310CT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

DATE OF STUDY 01/26/06 TIME OF STUDY 11:09:36		ORTEN NAVIGAT	ON SEASON 24-D	AYS	FF SIMULATION 9900	1 9901 9901 PAGE 1 STUDY NO 21
28FEB11 INI-SUM 15MA	2011 R 22MAR 31MA	VALUI R 30APR 31MA		XCEPT AS INDIC 31AUG 30SEP	ATED 310CT 15NOV 22N	2012 DV 30NOV 31DEC 31JAN 29FEB
FORT PECK NAT INFLOW 7022 28 DEPLETION 455 -1 EVAPORATION 475 MOD INFLOW 6092 30 RELEASE 5500 13 STOR CHANGE 592 16 STORAGE 11086 1125 ELEV FTMSL 2213.1 2214. DISCH KCFS 9.0 4.	6 -8 -10 0 140 180 4 62 80 6 77 99 4 11331 11433 1 2214.6 2215.3	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	561         232           29         29           1141         480           565         553           576         -73           12503         12429           2221.2         2220.8	91 114 251 323 492 390 -241 -67 12189 12122	-76 -35 -: 100 45 : 355 185 (	4 2219.3 2218.4 2217.2 2216.6
POWER AVE POWER MW 5 PEAK POW MW 14 ENERGY GWH 856.7 20.	4 144 145	5 146 148	152 151	104 85 150 149 77.2 61.0	69 69 7 150 150 19 51.3 24.8 12	
GARRISON NAT INFLOW 10598 50 DEPLETION 1216 - CHAN STOR -5 4 EVAPORATION 567 REG INFLOW 14310 68 RELEASE 13586 44 STOR CHANGE 724 23 STORAGE 13347 1358 ELEV FTMSL 1820.3 1821. DISCH KCFS 21.0 15. POWER	3 -2 -2 8 5 297 382 6 194 250 9 103 132 5 13689 13821 2 1821.6 1822.2 0 14.0 14.0	2 -1 226 -16 -21 2 1145 1594 0 1012 1136 134 456 13955 14411 1822.7 1824.4 0 17.0 18.5	811 634 -16 5 34 2581 1880 1309 1322 1271 558 15682 16240 1829.2 1831.1 22.0 21.5	559 470 74 -149 10 15 109 137 878 887 1291 952 -413 -65 15827 15762 1829.7 1829.4 21.0 16.0	$\begin{array}{c} -13 & -102 & -4 \\ 13 & 0 & -1 \\ 19 & 54 & 2 \\ 685 & 391 & 18 \\ 899 & 435 & 20 \\ -214 & -44 & -2 \\ 15548 & 15504 & 1554 \\ 1828.7 & 1828.5 & 1828 \\ 14.6 & 14.6 & 14 \\ \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
AVE POWER MW 16 PEAK POW MW 40 ENERGY GWH 1904.6 60.3	9 410 412	414 420	438 445	249 189 439 439 185.4 136.3	173 172 17 436 435 43 128.4 61.9 29.	5 434 428 421 415
OAHE NAT INFLOW 2048 21' DEFLETION 681 2. CHAN STOR -5 2. EVAPORATION 500 REG INFLOW 14448 666 RELEASE 13719 52- STOR CHANGE 729 14. STORAGE 13963 14101 ELEV FIMSL 1589.8 1590.4 DISCH KCFS 12.9 17.4 POWER	11         14           3         5           3         289         366           4         134         347           4         156         19           3         14263         14282           4         1591.0         1591.1	49 71 -14 -7 1273 1243 1183 1607 89 -364 14372 14008 1591.5 1590.0	145 173 -17 2 31 1963 1264 1164 1695 799 -431 14806 14376	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	7 - 104 47 2 824 387 16 1206 358 10	7 134 1101 978 733 4 111 3 339 556 3 13794 13797 14137 14692 7 1589.1 1589.2 1590.5 1592.8
AVE POWER MW 20 PEAK POW MW 62 ENERGY GWH 1953.5 74.5	624 624	626 619		284 190 619 618 211.1 137.1	229 140 9 610 610 61 170.2 50.5 15.	
BIG BEND EVAPORATION 129 REG INFLOW 13590 524 RELEASE 13590 524 STORAGE 1621 1621 ELEV FTMSL 1420.0 1420.0 DISCH KCFS 12.9 17.6 POWER AVE POWER MW 81 PEAK POW MW 81 ENERGY GWH 787.8 29.6	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1183 1607 1621 1621 1420.0 1420.0 19.9 26.1 93 122 509 509	19.6 27.4	24 31 1459 934 1459 934 1621 1621 1420.0 1420.0 23.7 15.7 112 77 518 538 83.5 55.8	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2         127         1087         978         733           1         1621         1621         1621         1621           0         1420.0         1420.0         1420.0         1420.0           3         8.0         17.7         15.9         12.7           7         41         87         77         61           8         538         538         538         529
FORT RANDALL NAT INFLOW 779 106 DEPLETION 80 1 EVAPORATION 134 REG INFLOW 14157 623 RELEASE 14157 220 STOR CHANGE 0 405 STORAGE 3123 3533 ELEV FTMSL 1350.0 1355.0 DISCH KCPS 9.8 7.4 POWER AVE POWER MW 62	5 49 64 1 1 183 409 166 409 17 3549 3549 1355.2 1355.2 11.9 22.9	100 79 4 9 1279 1677 1279 1677 3549 3549 1355.2 1355.2	203 41 12 18 10 1355 1700 1355 1700 0 3549 3549	76 36 15 7 31 35 1489 928 1663 1603 ~174 -675 3375 2700	2 1 1 25 10 1155 336 9 1559 336 9	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
PEAK POW MW 355 ENERGY GWH 1394.0 22.3	356 356	356 356 131.0 171.1	356 356 138.6 173.4	349 315 168.3 154.8	285 285 28 140.6 29.7 8.	5 285 313 330 339
GAVINS POINT NAT INFLOW 1401 103 DEPLETION 114 C CHAN STOR -1 5 EVAPORATION 47 REG INFLOW 15396 326 RELEASE 15396 326 STOR CHANGE STORAGE 358 358 ELEV FTMSL 1206.0 1206.C DISCH KCFS 12.5 11.C	0 0 -9 -21 205 450 205 450 358 358 1206.0 1206.0		160 91 24 39 9 -9 3 1500 1740 1500 1740 1500 1740 358 358 1206.0 1206.0 25.2 28.3	89         65           10         -5           1         0           9         11           1735         1662           1722         1636           13         26           371         397           1206.5         1207.5           28.0         27.5	3 26	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
POWER AVE POWER MW 39 PEAK POW MW 114 ENERGY GWH 643.8 13.9	114 114	82 99 114 114 58.7 73.8	86 96 114 114 62.1 71.6	96 95 115 117 71.3 68.7	95 48 3 117 117 11 70.6 17.4 5.	7 117 78 78 76
GAVINS POINT - SIOUX CITY NAT INFLOW 1356 174 DEPLETION 266 7 REGULATED FLOW AT SIOUX CIT KAF 16486 495 KCFS 16.6	81 104 3 4 Y 283 550	135 262 22 36 1529 2028 25.7 33.0	188 113 31 39 1657 1814 27.8 29.5	84 52 36 24 1770 1654 28.8 28.0	37 19	9 10 20 -4 72 3 3 13 14 14 1 150 776 753 776
TOTAL NAT INFLOW 23204 1383 DEPLETION 2812 12 CHAN STOR -9 81 EVAPORATION 1853 STORAGE 43501 44459 SYSTEM POWER AVE POWER MW 614 PEAK POW MW 2153 ENERGY GWH 7540.3 221.2	5 7 -4 -21 44811 45062 526 815 2158 2161	2116 3111 113 680 -27 -39 45509 45873 860 1071 2166 2167 618.9 796.8	5910 3120 1584 1135 -24 -2 115 48519 48573 979 1156 2203 2202 705.1 660.2	1149 1010 216 -237 14 39 360 448 47390 46563 1071 853 2191 2176 796.7 613.8	999         452         21           -85         -124         -5           23         27         385           385         172         8           45593         45605         4566           850         571         45           2135         2135         2135         2136           632.7         205.5         76	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
DAILY GWH 14.7		20.6 25.7	23.5 27.7	25.7 20.5 31AUG 30SEP	20.4 13.7 10.	9 13.0 18.6 18.5 17.0

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STUDY NO

## SHORTEN NAVIGATION SEASON 61-DAYS VALUES IN 1000 AF EXCEPT AS INDICATED

TIME OF STUDY 10:29:11					SHORTEN NAVIGATION SEASON 61-DAYS VALUES IN 1000 AF EXCEPT AS INDICATED							STUDY NO 22					
28FE	B07 INI-SUM	15MAR	200 22MAR		30APR	31MAY	3 OJUN	31JUL	31AUG	30SEP	310CT	15NOV	22NOV	20 30NOV	08 31DEC	31JAN	29FEB
FORT PECK- NAT INFLOW DEPLETION EVAPORATION MOD INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	5435 425 376 4634 4995 -361 7998	250 2 247 149 99 8097 2193.8 5.0	116 1 115 69 46 8142 2194.1 5.0	150 1 148 89 59 8202 2194.6 5.0	549 51 498 387 111 8313 2195.3 6.5	834 208 626 492 134 8447 2196.3 8.0	1061 362 699 506 193 8640 2197.6 8.5	468 195 23 250 492 -242 8398 2195.9 8.0	270 -14 72 212 492 -280 8118 2194.0 8.0	258 -106 90 274 322 -48 8070 2193.6 5.4	341 -57 79 319 259 60 8131 2194.1 4.2	169 -11 36 144 125 19 8149 2194.2 4.2	79 -5 17 67 59 9 8158 2194.2 4.2	90 -6 19 77 -2 8156 2194.2 5.0	289 -62 41 310 492 -182 7974 2192.9 8.0	218 -79 297 523 -226 7748 2191.3 8.5	293 -56 349 460 -111 7637 2190.5 8.0
POWER AVE POWER MW PEAK POW MW ENERGY GWH	685.2	56 119 20.3	57 120 9.5	57 120 12.3	74 121 53.3	92 123 68.1	98 125 70.6	92 122 68.6	91 119 67.7	61 119 44.1	48 120 35.6	48 120 17.2	48 120 8.0	57 120 10.9	90 118 67.0	95 116 70.4	88 114 61.5
GARRISON- NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER	8026 1097 0 440 11484 11937 -454 9591	297 34 34 446 417 29 9620 1803.8 14.0	138 16 192 180 12 9632 1803.9 13.0	178 20 247 232 15 9646 1803.9 13.0	770 35 -17 1105 893 212 9858 1805.0 15.0	993 93 -17 1375 1076 299 10157 1806.4 17.5	2221 709 -6 2012 1160 852 11009 1810.4 19.5	1404 555 6 27 1319 1168 151 11160 1811.1 19.0	397 113 85 690 1107 -416 10744 1809.2 18.0	305 -97 29 106 647 773 -126 10617 1808.6 13.0	429 28 13 92 582 737 -156 10462 1807.9 12.0	177 -100 41 360 357 4 10466 1807.9 12.0	83 -46 19 168 166 2 10467 1807.9 12.0	94 -53 -9 22 196 270 -74 10393 1807.6 17.0	119 -92 -34 47 622 1138 -515 9878 1805.1 18.5	176 -69 -6 1199 -437 9441 1802.9 19.5	245 -49 6 760 1064 -304 9137 1801.4 18.5
AVE POWER MW PEAK POW MW ENERGY GWH	1450.2	137 345 49.5	128 345 21.5	128 345 27.6	148 349 106.6	174 355 129.6	198 369 142.6	197 371 146.4	186 365 138.1	133 362 95.9	122 360 91.0	122 360 43.9	122 360 20.5	172 359 33.0	185 350 137.6	191 342 142.1	179 336 124.2
OAHE NAT INFLOW DEPLETION CHAN STOR EVAPORATION RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER MW	1184 625 1 12145 12579 -434 10102 1572.0 16.6	223 23 25 641 431 210 10312 1573.1 14.5 153	104 11 5 279 277 3 10315 1573.1 19.9 211	134 14 352 369 -17 10298 1573.0 20.7 219	206 47 -11 1041 1250 -209 10088 1571.9 21.0 221	113 67 -14 1108 1411 -303 9786 1570.2 22.9 240	242 132 -11 1259 1248 11 9797 1570.3 21.0 218	92 156 3 22 1085 1732 -647 9150 1566.7 28.2 289	24 103 66 967 1351 -384 8766 1564.4 22.0 221	72 25 29 83 767 593 174 8940 1565.5 10.0 100	6 -9 74 684 550 134 9074 1566.2 8.9 91	-6 2 34 316 259 57 9131 1566.6 8.7 89	-3 1 0 16 147 120 27 9158 1566.7 8.7 88	-3 1 -29 18 219 137 82 9240 1567.2 8.7 89	-54 11 -9 39 1024 1022 2 9242 1567.2 16.6 170	-13 17 -6 1163 801 362 9604 1569.2 13.0 134	47 26 6 1091 1027 64 9668 1569.6 17.9 185
PEAK POW MW ENERGY GWH	1569.7	530 55.2	530 35.4	530 47.3	524 159.4	515 178.2	516 157.0	497 214.7	486 164.4	491 72.3	495 67.5	497 31.9	497 14.8	500 17.0	500 126.2	510 99.7	512 128.6
BIG BEND EVAPORATION REG INFLOW RELEASE STORAGE ELEV FTMSL DISCH KCFS POWER AVE POWER MW PEAK POW MW ENERGY GWH	129 12450 12450 1622	431 431 1622 1420.0 14.5 69 518 24.7	277 277 1622 1420.0 19.9 93 511 15.7	369 369 1622 1420.0 20.7 97 509 20.9	1250 1250 1622 1420.0 21.0 98 509 70.8	1411 1411 1622 1420.0 22.9 107 509 79.9	1248 1248 1622 1420.0 21.0 98 509 70.7	8 1725 1725 1622 1420.0 28.0 131 509 97.7	24 1326 1326 1622 1420.0 21.6 103 525 76.5	31 562 562 1622 1420.0 9.4 48 538 34.5	27 523 523 1622 1420.0 8.5 43 538 32.1	12 247 247 1622 1420.0 8.3 42 538 15.1	6 114 1622 1420.0 8.2 42 538 7.0	7 131 131 1622 1420.0 8.3 42 538 8.0	14 1008 1008 1622 1420.0 16.4 82 538 60.8	801 801 1622 1420.0 13.0 65 538 48.0	1027 1027 1622 1420.0 17.9 86 529 59.6
DISCH KCFS POWER AVE POWER MW PEAK POW MW	366 80 127 12604 12603 1 3122 1350.0 10.0	7.9 66 350	11.5 97 355	21.9 185 356	52 4 1298 3549 1355.2 21.8 184 356	23.5 198 356	23.2 196 356	16 18 10 1713 1713 0 3549 1355.2 27.9 235 356	27.2 226 342	-12 7 31 506 1410 -903 2296 1337.5 23.7 182 284 131.3	7.1 52 285	7.8 57 285	-1 05 108 108 0 2296 1337.5 7.8 7.8 57 285 9.6	-2 15 123 2296 1337.5 7.8 57 285 10.9	3 13 992 719 273 2569 1342.1 11.7 87 306	-7 3 791 90 2659 1343.5 11.4 87 312 65.0	15 3 1039 575 464 3123 1350.0 10.0 79 339
 -GAVINS POINT NAT INFLOW DEPLETION CHAN STOR EVAPORATION RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	1240.8 1229 114 -1 47 13670 13670 358 1206.0 12.5	23.6 89 0 4 329 329 358 1206.0 11.0	16.3 42 0 -7 194 194 358 1206.0 14.0	40.0 53 0 -20 425 425 358 1206.0 23.8	132.8 123 5 0 1416 1416 358 1206.0 23.8	147.6 134 19 -3 1556 1556 358 1206.0 25.3	141.3 141 24 0 1500 1500 358 1206.0 25.2	174.7 78 39 -9 3 1740 1740 1740 358 1206.0 28.3	167.8 78 10 1 9 1735 1722 13 371 1206.5 28.0	56 -5 7 11 1466 1440 26 397	38.9 107 2 31 10 564 564 397 1207.5 9.2	20.6 46 5 -1 5 268 268 268 397 1207.5 9.0	21 2 0 2 125 125 397	25 3 0 2 143 143 397	64.9 69 10 -7 5 766 766 766 397 1207.5 12.5	67 1 1 768 768 397	55.3 100 3 678 717 -39 358 1206.0 12.5
POWER AVE POWER MW PEAK POW MW ENERGY GWH	572.6	39 114 13.9	49 114 8.2	82 114 17.6	82 114 58.7	87 114 64.4	86 114 62.1	96 114 71.6	96 115 71.3	84 117 60.8	33 117 24.3	32 117 11.6	32 117 5.4	32 117 6.2	44 78 32.9	44 78 33.0	44 76 30.6
GAVINS POINT NAT INFLOW DEPLETION REGULATED FLOW KAF KCFS	664 254	44 6	21 3 212 15.2	26 4 448 25.1	93 21 1488 25.0	173 35 1694 27.5	128 30 1598 26.8	57 37 1760 28.6	26 35 1713 27.9	18 23 1435 24.1	17 10 571 9.3	12 6 274 9.2	5 3 128 9.2	6 3 146 9.2	12 12 766 12.5	-6 13 749 12.2	32 14 735 12.8
TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION STORAGE SYSTEM POWER	16904 2595 -6 1471 32793	969 66 63 33393	452 31 -1 33601	581 40 -20 33674	1793 163 -28 33788	2289 431 -34 33919	3939 1269 -16 34975	2115 1000 -1 93 34236	839 262 7 287 32821	697 -153 59 352 31942	838 -25 50 304 31981	395 -98 -1 138 32061	184 -46 0 64 32099	211 -52 -38 74 32104	435 -118 -50 159 31682	435 -114 -11 31472	732 -62 14 31545
AVE POWER MW PEAK POW MW ENERGY GWH DAILY GWH	6240.7 NI-SUM	520 1976 187.3 12.5 15MAR	634 1976 106.6 15.2 22MAR	767 1975 165.8 18.4 31MAR	808 1974 581.7 19.4 30APR	898 1973 667.8 21.5 31MAY	895 1989 644.3 21.5 30JUN	1040 1971 773.6 25.0 31JUL	922 1952 685.8 22.1 31AUG	610 1912 438.9 14.6 30SEP	389 1914 289.4 9.3 310CT	390 1916 140.4 9.4 15NOV	389 1917 65.4 9.3 22NOV	448 1918 86.1 10.8 30NOV	658 1890 489.4 15.8 31DEC	616 1896 458.3 14.8 31JAN	661 1907 459.9 15.9 29FEB

DATE OF STU									WER DEC	ILE RUN	OFF SIM	ULATION	99001	9901		AGE	1
	FEB08	11	200		SHOKIEN	NAVIGA VALUE			XCEPT A	S INDIC	ATED			20	STUDY	NO	23
		15MAR		31MAR	30APR	31MAY	3 OJUN	31JUL	31AUG	30SEP	310CT	15 <b>N</b> OV	22NOV			31JAN	28FEB
FORT PEC NAT INFLOW DEPLETION EVAPORATIO MOD INFLOW RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	5615 504 N 361 4750 4871	1 257 149 108 7745 2191.3	120 1 69 50 7795 2191.6 5.0	1 154 89 65 7860	567 82 485 387 98 7958 2192.8 6.5	526 461 65 8023 2193.3	568 476 92 8115	178 22 283 492 - 209 7906 2192.4	-34 69 244 492 -248 7658 2190.6	266 -129 86 309 344 -35 7623 2190.4 5.8	352 -63 75 340 255 85 7708 2191.0 4.1	175 -35 34 175 123 52 7759 2191.4 4.1	81 -16 81 58 24 7783 2191.5 4.1	93 -18 18 93 79 14 7797 2191.6 5.0	298 -110 40 368 461 -93 7704 2191.0 7.5	353 492 -139 7565	-92 395 444 -49 7516 2189.6
POWER AVE POWER I PEAK POW MI ENERGY GWH		55 115 20.0	56 116 9.4	56 117 12.1	73 118 52.4	84 118 62.6	90 119 64.9	117		64 114 46.0	46 115 34.2	46 116 16.6	46 116 7.8	56 116 10.7	83 115 61.9	88 114 65.5	88 113 58.9
GARRISON NAT INFLOW DEPLETION CHAN STOR EVAPORATION	8444 951 0 1 429	35	146 2	187 3	810 14 -17	1045 202 -11	2337 744 -6	540 26	82	320 -138 25 103	451 -17 18 90	187 -112 41	87 ~52 19	99 -60 -10 22	125 -112 -28 46	185 -87 -6	258 -60
REG INFLOW RELEASE STOR CHANGI STORAGE ELEV FTMSL DISCH KCFS POWER	9137	490 417 74 9211 1801.7 14.0	213 167 46 9257 1802.0 12.0	273 214 59 9316 1802.3 12.0	1166 1101 65 9380 1802.6 18.5	1293 1383 -91 9290 1802.1 22.5	2063 1190 873 10163 1806.5 20.0	327 10490		724 671 53 10247 1806.9 11.3	651 706 -55 10192 1806.6 11.5	381 342 39 10231 1806.8 11.5	178 159 18 10250 1806.9 11.5	207 270 -63 10187 1806.6 17.0	624 1138 -514 9673 1804.1 18.5	758 1199 -441 9233 1801.8 19.5	762 1027 -265 8967 1800.5 18.5
AVE POWER N PEAK POW MW ENERGY GWH		135 337 48.6	116 338 19.5	116 339 25.1	179 341 128.9	217 339 161.4	196 355 141.3	176 360 131.2	172 355 127.6	114 356 81.9	116 355 86.2	116 356 41.7	116 356 19.5	171 355 32.8	183 346 136.4	189 338 140.9	177 333 119.0
OAHE NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE	1263 641 0 12379 12511 5 -132 9668	238 23 25 656 428 229 9897	111 11 278 278 278 0 9896	143 14 343 362 -20 9877	220 48 -36 1237 1243 -7 9870	120 68 -22 1413 1404 9 8880	259 135 14 1328 1231 97 9977	99 160 14 22 1007 1729 -723 9254	25 106 3 66 901 1521 -621 8633	77 26 34 82 674 568 106 8740	6 -9 -1 73 647 404 243 8983	-6 2 33 301 259 42 9024	-3 1 140 120 20 9044	-3 1 -32 18 216 137 78 9123	-58 12 -9 39 1020 1022 -2 9120	-14 17 -6 1162 802 360 9481	50 27 6 1056 1001 55 9536
ELEV FTMSL DISCH KCFS POWER AVE POWER M PEAK POW MW	1	14.4 150 519	1570.9 20.0 209 519	1570.8 20.3 212 518	1570.7 20.9 218 518	1570.8 22.8 238 518	1571.3 20.7 216 521	1567.3 28.1 290 500	24.7 248 482	1564.3 9.5 95 485	1565.7 6.6 66 492	1566.0 8.7 88 494	1566.1 8.7 88 494	8.7 88 496	16.6 169 496	1568.6 13.0 134 507	1568.9 18.0 186 508
ENERGY GWH BIG BENL EVAPORATION REG INFLOW RELEASE STORAGE ELEV FTMSL DISCH KCFS	129 12382 12382 12382 1622	53.9 428 428 1622 1420.0 14.4	35.1 278 278 1622 1420.0 20.0	45.8 362 1622 1420.0 20.3	156.8 1243 1243 1622 1420.0 20.9	176.9 1404 1404 1622 1420.0 22.8	155.6 1231 1231 1622 1420.0 20.7	215.4 8 1722 1722 1622 1420.0 28.0	184.9 24 1497 1497 1622 1420.0 24.3	68.7 31 537 537 1622 1420.0 9.0	49.4 27 377 1622 1420.0 6.1	31.8 12 247 247 1622 1420.0 8.3	14.8 6 114 114 1622 1420.0 8.2	16.9 7 131 131 1622 1420.0 8.3	125.6 14 1008 1008 1622 1420.0 16.4	802 802 1622 1420.0 13.0	124.7 1001 1622 1420.0 18.0
POWER AVE POWER M PEAK POW MW ENERGY GWH		68 518 24.5	94 511 15.8	95 509 20.5	98 509 70.4	107 509 79.5	97 509 69.8	131 509 97.5	115 518 85.7	46 538 32.9	31 538 23.2	42 538 15.2	42 538 7.0	42 538 8.0	82 538 60.8	65 538 48.1	86 529 58.1
FORT RANDA NAT INFLOW DEPLETION EVAPORATION RELEASE STOR CHANGE STORAGE ELEV FTMSL DISCH KCFS	404 80 131 12575 12574 1 3123	74 1 500 232 268 3391 1353.3 7.8	35 1 171 141 3532 1355.0 12.3	44 1 406 389 17 3549 1355.2 21.8	58 4 1297 1297 3549 1355.2 21.8	47 9 1442 1442 3549 1355.2 23.4	161 12 1380 1380 3549 1355.2 23.2	18 10 1712 1712 0 3549 1355.2 27.8	48 15 31 1499 1673 - 174 3375 1353.1 27.2	-13 7 33 483 1409 -925 2450 1340.2 23.7	-69 1 284 437 -153 2297 1337.5 7.1	-4 10 232 232 0 2297 1337.5 7.8	-2 0 5 108 0 2297 1337.5 7.8	-2 1 5 123 123 0 2297 1337.5 7.8	3 13 992 719 273 2570 1342.1 11.7	-8 3 791 701 90 2660 1343.5 11.4	16 3 1014 550 464 3124 1350.0 9.9
POWER AVE POWER M PEAK POW MW ENERGY GWH		65 350 23.3	104 355 17.5	184 356 39.8	184 356 132.8	198 356 147.4	196 356 141.1	235 356 174.6	227 349 169.3	186 296 134.0	53 285 39.3	57 285 20.6	57 285 9.6	57 285 10.9	87 306 65.0	87 312 65.0	79 339 52.9
GAVINS POI NAT INFLOW DEPLETION CHAN STOR EVAPORATION REG INFLOW RELEASE STOR CHANGE STORAGE	1242 114 -1 47 13655 13655	90 0 4 327 327 358	42 0 -9 205 205 358	54 0 -18 425 425 358	124 5 0 1416 1416 358	136 19 -3 1556 1556 358	143 24 0 1500 1500 358	79 39 -9 3 1740 1740 358	79 10 1735 1722 13 371	57 -5 7 11 1466 1440 26 397	108 2 31 10 564 564 397	47 5 -1 268 268 397	22 2 0 125 125 397	25 3 2 143 143 397	69 10 -7 5 766 766 397	67 1 768 768 397	101 3 654 693 ~39 358
ELEV FTMSL DISCH KCFS POWER AVE POWER M PEAK POW MW		1206.0 11.0 39 114	1206.0 14.7 51 114	1206.0 23.8 82 114	1206.0 23.8 82 114	1206.0 25.3 87 114	1206.0 25.2 86 114	1206.0 28.3 96 114	1206.5 28.0 96 115	1207.5 24.2 84 117	1207.5 9.2 33 117	1207.5 9.0 32 117	1207.5 9.0 32 117	1207.5 9.0 32 117	1207.5 12.5 44 78	1207.5 12.5 44 78	1206.0 12.5 44 76
ENERGY GWH	571.9	13.9	8.6	17.6	58.7	64.4	62.1	71.6	71.3	60.8	24.3	11.6	5.4	6.2	32.9	33.0	29.6
GAVINS POI NAT INFLOW DEPLETION REGULATED FL KAF KCFS	730 255	48 6	23 3	29 4 450 25.2	102 21 1497 25.2	191 35 1712 27.8	141 30 1611 27.1	63 38 1765 28.7	29 35 1716 27.9	20 23 1437 24.1	18 10 572 9.3	13 6 275 9.2	6 3 128 9.2	7 3 147 9.2	13 12 767 12.5	-7 13 748 12.2	35 14 714 12.8
TOTAL NAT INFLOW DEPLETION CHAN STOR EVAPORATION STORAGE	17698 2545 -1 1445 31545	1020 37 64 32223	476 17 3 32460	612 22 -18 32581	1881 174 -54 32737	2401 669 -37 32721	4138 1474 9 33783	2219 973 5 91 33178	878 210 4 281 31853	727 -216 65 346 31079	866 -76 48 299 31198	411 -134 -2 135 31331	192 -62 63 31393	219 -71 -42 72 31423	447 ~185 -44 157 31087	449 -180 -11 30957	763 -108 8 31123
SYSTEM POWE AVE POWER M PEAK POW MW ENERGY GWH DAILY GWH	W	511 1954 184.1 12.3	630 1953 105.8 15.1	745 1954 160.9 17.9	833 1956 600.0 20.0	931 1955 692.3 22.3	882 1975 634.7 21.2	1018 1957 757.2 24.4	947 1934 704.7 22.7	589 1907 424.3 14.1	345 1902 256.5 8.3	382 1905 137.4 9.2	381 1906 64.0 9.1	445 1907 85.5 10.7	649 1880 482.6 15.6	607 1887 451.9 14.6	659 1898 443.1 15.8
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	310CT	15NOV	22NOV	30NOV	31DEC	31JAN	28FEB

DATE OF STUDY	01/27/0	06			2005-20	06 AOP	EXTENSI	ONS, LO	WER DEC	ILE RUN	OFF SIM	ULATION	99001	9901	9901 P	AGE	1
TIME OF STUDY		11			SHORTEN			ASON 61 00 AF EX		S INDIC	ATED				STUDY	NO	24
	INI-SUM	15MAR	200 22MAR		30APR	31MAY	30JUN	31JUL	31AUG	30SEP	310CT	15NOV	22NOV	20 30NOV		31JAN	28FEB
FORT PECK NAT INFLOW DEPLETION	5748 432	264 -10	123 -5	158 -6	580 63	882 316	1123 511	495 185	285 -29	273 -130	361 -64	179 -35	83 -16	95 -19	305 -111	231 -127	310 -92
EVAPORATION MOD INFLOW RELEASE	366 4950 4914	274 119	128 56	164 71	517 298	566 400	612 536	23 287 523	70 244 492	87 316 332	77 348 245	35 179 146	16 83 83	19 95 127	40 376 492	358 523	402 472
STOR CHANGE STORAGE	36 7516	155 7671	72 7743	93 7836	219 8056	166 8222	76 8298	-235 8063	-248 7815	-16 7799	103 7902	32 7934	0 7934	-32 7903	-116 7787	-165 7622	-70 7552
ELEV FTMSL DISCH KCFS POWER	2189.6 8.0	2190.7 4.0	2191.2 4.0	2191.9 4.0	2193.5 5.0	2194.7 6.5	2195.2 9.0	2193.6 8.5	2191.8 8.0	2191.7 5.6	2192.4 4.0	2192.6 4.9	2192.6 6.0	2192.4 8.0	2191.6 8.0	2190.3 8.5	2189.8 8.5
AVE POWER MW PEAK POW MW ENERGY GWH	66E 2	44 115	44 115 7.5	45 116 9.6	56 119	74 121	102 121 73.6	96 119 71.6	90 116	62 116	45 117 33.2	55 118 19.9	67 118	89 117 17.2	89 116	94 114	93 113 62.7
GARRISON		15.9			40.5	54.8			66.6	44.8			11.3		66.3	69.8	
NAT INFLOW DEPLETION CHAN STOR	8762 1005 -6	324 -3 46	151 -1	194 -2	840 -2 -12	1084 203 -17	2425 748 -29	1533 557 6	433 95 6	332 -131 27	468 -11 18	194 -100 -10	90 -46 -12	103 -53 -23	130 -109	192 -83 -6	268 -57 0
EVAPORATION REG INFLOW	434 12232 12152	492	208	268	1128	1263	2184	26 1478	84 752	104 718	91 651	41 388	19 189	22 239	47 684	792	797
RELÉASE STOR CHANGE STORAGE	80 8967	417 76 9043	167 42 9085	214 53 9138	893 235 9374	1107 157 9530	1190 994 10524	1199 279 10803	1168 -416 10387	686 32 10419	709 -58 10361	431 -44 10317	208 -20 10298	254 -15 10283	1168 -484 9799	1230 -438 9361	1111 -314 9047
ELEV FTMSL DISCH KCFS POWER	1800.5 18.5	1800.9 14.0	1801.1 12.0	1801.4 12.0	1802.6 15.0	1803.4 18.0	1808.2 20.0	1809.5 19.5	1807.5 19.0	1807.7 11.5	1807.4 11.5	1807.2 14.5	1807.1 15.0	1807.0 16.0	1804.7 19.0	1802.5 20.0	1800.9 20.0
AVE POWER MW PEAK POW MW		134 334	115 335	116 336	145 341	175 343	199 361	199 366	193 358	117 359	117 358	147 357	151 357	161 357	189 348	195 340	192 334
OAHE	1457.3	48.2	19.4	25.0	104.4	130.2	143.1	147.9	143.8	84.3	87.1	52.8	25.4	31.0	140.7	145.2	129.0
NAT INFLOW DEPLETION CHAN STOR	1323 654 -7	249 23 26	116 11 11	149 14	231 48 -17	126 69 -17	271 139 -11	103 165 3	26 109 3	81 27 45	7 -10	-7 2 -17	-3 1 -3	-3 1 -6	-61 12 -17	-15 17 -6	52 27
EVAPORATION REG INFLOW	342 12472	668	283	350	1059	1147	1311	21 1119	64 1024	80 705	71 655	33 373	15 186	18 226	39 1039	1192	1136
RELEASE STOR CHANGE STORAGE	12466 6 9536	415 253 9789	268 15 9804	361 -11 9793	1238 -179 9614	1401 -254 9360	1218 93 9452	1728 -610 8842	1517 -493 8349	425 279 8629	552 103 8731	259 114 8845	120 66 8911	137 89 9000	1021 18 9018	804 388 9406	1000 136 9542
ELEV FTMSL DISCH KCFS								1564.9 28.1									
POWER AVE POWER MW PEAK POW MW		145 516	201 516	210 516	216 510	234 503	210 506	284 488	244 473	71 482	90 485	88 488	87 490	88 493	168 493	133 505	185 508
ENERGY GWH	1534.4	52.1	33.8	45.4	155.2	174.1	151.1	211.5	181.6	51.1	66.8	31.5	14.7	16.8	124.9	99.3	124.5
EVAPORATION REG INFLOW	129 12337	415	268	361	1238	1401	1218	8 1721	24 1493	31 394	27 525	12 247	6 114	7 131	14 1007	804	1000
RELEASE STORAGE ELEV FTMSL	12337 1622 1420.0	415 1622 1420.0	268 1622 1420.0	361 1622 1420.0	1238 1622 1420.0	1401 1622 1420.0	1218 1622 1420.0	1721 1622 1420.0	1493 1622 1420.0	394 1622 1420.0	525 1622 1420.0	247 1622 1420.0	114 1622 1420.0	131 1622 1420.0	1007 1622 1420.0	804 1622 1420.0	1000 1622 1420.0
DISCH KCFS POWER	18.0	14.0	19.3	20.2 95	20.8 97	22.8 107	20.5 96	28.0 131	24.3 115	6.6 34	8.5 43	8.3 42	8.2 42	8.2	16.4 82	13.1 65	18.0 86
AVE POWER MW PEAK POW MW ENERGY GWH	714.5	66 518 23.8	91 511 15.2	509 20.4	509 70.1	509 79.4	509 69.0	509 97.5	518 85.5	538 24.2	538 32.2	538 15.1	538 7.0	538 8.0	538 60.7	538 48.2	529 58.0
FORT RANDALL NAT INFLOW	433	80	37	48	62	50	174	19	52	-15	-75	- 4	-2	- 2		- 9	17
DEPLETION EVAPORATION REG INFLOW	80 128 12551	1 494	1 305	1 408	4 1296	9 1442	12 1380	18 10 1712	15 31 1499	7 32 330	1 22 426	1 10 232	0 5 108	1 5 123	3 13 991	3 792	3 1014
RELEASE STOR CHANGE	12552	232 262	158 147	391 17	1296	1442	1380	1712 0	1673 -174	1409 -1079	427 0	232 0	108	123	719 272	701 91	550 464
STORAGE ELEV FTMSL DISCH KCFS	3124 1350.0 9.9	3385 1353.3 7.8	3532 1355.0 11.4	3549 1355.2 21.9	3549 1355.2 21.8	3549 1355.2 23.4	3549 1355.2 23.2	3549 1355.2 27.8	3375 1353.1 27.2	2296 1337.5 23.7	2296 1337.5 6.9	2296 1337.5 7.8	2296 1337.5 7.8	2296 1337.5 7.8	2568 1342.1 11.7	2659 1343.5 11.4	3123 1350.0 9.9
POWER AVE POWER MW PEAK POW MW		65	96	185	184 356	198 356	196 356	235 356	227 349	184 284	51 285	57 285	57 285	57 285	87 306	87 312	79 339
ENERGY GWH	1238.7	350 23.3	355 16.2	356 39.9	132.6	147.4	141.1	174.6	169.2	132.4	37.9	20.6	9.6	10.9	64.9	65.0	52.9
GAVINS POINT NAT INFLOW DEPLETION	1246 114	91 0	42 0	54 0	125 5	136 19	143 24	79 39	79 10	57 -5	108 2	47 5	22 2	25 3	70 10	68 1	101
CHAN STOR EVAPORATION REG INFLOW	-1 47 13636	4 327	-7 194	-20 425	0 1416	-3 1556	0 1500	-9 3 1740	1 9 1735	7 11 1466	31 10 553	-2 5 268	0 2 125	0 2 143	-7 5 767	1 769	3 654
RELEASE STOR CHANGE	13636	327	194	425	1416	1556	1500	1740	1722 13	1440 26	553	268	125	143	767	769	693 -39
STORAGE ELEV FTMSL DISCH KCFS	358 1206.0 12.5	358 1206.0 11.0	358 1206.0 14.0	358 1206.0 23.8	358 1206.0 23.8	358 1206.0 25.3	358 1206.0 25.2	358 1206.0 28.3	371 1206.5 28.0	397 1207.5 24.2	397 1207.5 9.0	397 1207.5 9.0	397 1207.5 9.0	397 1207.5 9.0	397 1207.5 12.5	397 1207.5 12.5	358 1206.0 12.5
POWER AVE POWER MW PEAK POW MW		39 114	49 114	82 114	82 114	87 114	86 114	96 114	96 115	84 117	32 117	32 117	32 117	32 117	44 78	44 78	44 76
ENERGY GWH	571.1	13.9	8.2	17.6	58.7	64.4	62.1	71.6	71.3	60.8	23.9	11.6	5.4	6.2	33.0	33.0	29.6
NAT INFLOW DEPLETION	785 255	52 6	24 3	31 4	110 21	205 35	151 30	68 38	31 35	21 23	20 10	14 6	6 3	7 3	14 12	-7 13	38 14
REGULATED FLOW KAF KCFS	14166	373 12.5	215 15.5	452 25.3	1505 25.3	1726 28.1	1621 27.2	1770 28.8	1718 27.9	1438 24.2	563 9.2	276 9.3	129 9.3	147 9.3	769 12.5	749 12.2	717 12.9
TOTAL NAT INFLOW	18297	1060	494	636	1948	2483	4287	2297	906	749	889	422	197	225	458	460	786
DEPLETION CHAN STOR EVAPORATION	2540 -24 1446	18 76	8 4	11 -20	139 -28	651 -37	1464 -39	1002 0 91	235 10 282	-209 68 346	-72 49 299	-122 -29 136	-57 -15 63	-65 -28 73	-183 -25 157	-176 -11	-105 3
STORAGE SYSTEM POWER	31123	31868	32144	32296	32572	32641	33804	33237	31919	31161	31309	31411	31458	31500 469	31190 659	31067 619	31244 680
AVE POWER MW PEAK POW MW ENERGY GWH	6181.3	492 1947 177.2	597 1947 100.2	731 1948 158.0	780 1950 561.5	874 1947 650.2	889 1968 640.0	1041 1952 774.7	965 1931 717.9	552 1896 397.7	378 1900 281.1	421 1903 151.5	437 1905 73.4	1907 90.1	1880 490.5	1887 460.6	1900 456.7
DAILY GWH		11.8	14.3	17.6	18.7	21.0	21.3 30JUN	25.0 31 <b>JUL</b>	23.2 31AUG	13.3 30SEP	9.1 310CT	10.1 15NOV	10.5 22NOV	11.3 30NOV	15.8 31DEC	14.9 31JAN	16.3 28FEB
11	NI-SOM	ISMAR	ZZMAR	STHAK	JUMPR	JINAI	3 3 0 0 M	21000	2 INO 0	0.0001							

DATE OF STUDY 01/27/06	2005-20	06 AOP EXTENSI	ONS, LOWER DECI	LE RUNOFF SIMU	LATION 99001	9901 9901 PA	AGE 1
TIME OF STUDY 10:29:11 28FEB10	SHORTEN	NAVIGATION SE VALUES IN 10	ASON 61-DAYS 00 AF EXCEPT AS	INDICATED		STUDY 2011	NO 25
INI-SUM 15MAR	22MAR 31MAR 30APR	31MAY 30JUN	31JUL 31AUG	30SEP 310CT	15NOV 22NOV	30NOV 31DEC	31JAN 28FEB
NAT INFLOW 5919 272 DEPLETION 443 -10 EVAPORATION 372	127 163 598 -5 -6 63	909 1156 317 515	509 294 192 -25 23 71	281 371 -130 -67 88 78	184 86 -36 -17 35 17	98 314 -19 -111 19 41	238 319 -128 -92
MOD INFLOW 5104 282 RELEASE 4870 119 STOR CHANGE 234 163	131 169 535 56 71 298 76 98 237	592 641 430 506 162 135	294 248 523 492 -228 -244	323 360 336 255 -14 106	184 86 130 69 54 16	98 384 127 492 -29 -108	366 411 523 444 -157 -33
STORAGE 7552 7715 ELEV FTMSL 2189.8 2191.0	7790 7888 8125 2191.6 2192.3 2194.0	8287 8422 2195.2 2196.1 7.0 8.5	8194 7950	7937 8042	8097 8113	8084 7976 2193.7 2192.9 8.0 8.0	7820 7786 2191.8 2191.6 8.5 8.0
DISCH KCFS 8.5 4.0 POWER AVE POWER MW 44 PEAK POW MW 115	45 45 56	80 97	97 90	63 47	49 57 119 119	90 90 119 118	95 89 116 116
PEAK POW MW 115 ENERGY GWH 664.1 15.9 GARRISON	116 117 120 7.5 9.7 40.6	121 123 59.2 69.9	120 118 72.1 67.1	118 119 45.7 34.8	17.8 9.5	17.3 66.9	70.6 59.7
NAT INFLOW 9185 340 DEPLETION 1031 0 CHAN STOR 6 52	158 204 881 0 0 2 -11	1136 2542 203 764 -23 -17	1607 454 573 100 0 6	349 491 -134 -16 26 17	203 95 -103 -48 -2 -7	108 136 -55 -111 -34	201 281 -85 -58 -6 6
EVAPORATION 439 REG INFLOW 12591 511 RELEASE 12320 417	214 275 1165 167 214 893	1341 2267 1138 1190	27 85 1530 766 1199 1168	106 92 740 687 952 754	41 19 391 185 416 194	22 47 234 692 286 1138	803 789 1168 1027
STOR CHANGE 271 95 STORAGE 9047 9142	48 61 272 9189 9251 9523 1801.6 1801.9 1803.3	203 1077 9726 10803 1804.3 1809.5	331 -402 11133 10731	-212 -67 10519 10452	-25 -9 10428 10419	-51 -446 10368 9922 1807.4 1805.3	-365 -238 9557 9318 1803.5 1802.3
DISCH KCFS 20.0 14.0 POWER AVE POWER MW 134	12.0 12.0 15.0 116 116 146	18.5 20.0 181 201	19.5 19.0 201 196	16.0 12.3 163 125	14.0 14.0 142 142	18.0 18.5 182 185	19.0 18.5 187 180
PEAK POW MW 336 ENERGY GWH 1489.8 48.4	337 338 343 19.5 25.1 105.0	347 366 134.7 144.4	371 364 149.5 145.6	361 360 117.6 92.9	359 359 51.1 23.8	358 350 34.9 137.6	344 339 139.0 120.7
OAHE NAT INFLOW 1408 265 DEPLETION 666 24 CUNNERS	123 159 245 11 14 49	134 288 70 142 -20 -9	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	86 7 27 -10 18 22	-7 -3 1 0 -10 0	-3 -64 1 12 -23 -3	-16 56 17 27 -3 3
CHAN STOR 10 34 EVAPORATION 352 REG INFLOW 12719 692	11 -17 290 359 1072	1182 1328	22 65 1121 1022	82 74 946 718	34 16 364 175 259 120	18 40 240 1018	-3 3 1132 1059 804 998
RELEASE 12420 408 STOR CHANGE 299 283 STORAGE 9542 9825	265 356 1232 25 3 -160 9851 9854 9694	1395 1200 -213 128 9481 9608	1726 1512 -605 -490 9003 8513	426 558 520 160 9033 9192	105 54 9298 9352	103 -4 9455 9451	328 61 9780 9841
DISCH KCFS 18.0 13.7 POWER	1570.6 1570.6 1569.7 19.1 19.9 20.7	1568.6 1569.3 22.7 20.2	28.1 24.6	7.2 9.1	8.7 8.7	8.7 16.6	13.1 18.0
AVE POWER MW 143 PEAK POW MW 517 ENERGY GWH 1541.6 51.3	199         208         215           517         517         513           33.4         44.8         154.8	234 208 507 510 174.0 149.6	286 245 493 478 212.6 182.3	72 92 494 498 51.9 68.8	89 89 501 503 32.1 14.9	89 171 506 506 17.1 127.2	136 187 515 517 100.8 125.7
BIG BEND EVAPORATION 129 REG INFLOW 12291 408	265 356 1232	1395 1200	8 24 1719 1488	31 27 395 531	12 6 247 114	7 14 131 1008	804 998
RELEASE 12291 408 STORAGE 1622 1622	265 356 1232 1622 1622 1622 1420.0 1420.0 1420.0	1395 1200 1622 1622 1420.0 1420.0	1719 1488 1622 1622	395 531 1622 1622	247 114 1622 1622	131 1008 1622 1622	804 998 1622 1622 1420.0 1420.0
DISCH KCFS 18.0 13.7 POWER AVE POWER MW 65	19.1 19.9 20.7 89 93 97	22.7 20.2 106 94	28.0 24.2 131 114	6.6 8.6 34 44	42 42	42 82	13.1 18.0 65 86
PEAK POW MW 518 ENERGY GWH 711.9 23.4	511 509 509 15.0 20.2 69.8	509 509 79.0 68.0	509 518 97.4 85.2	538 538 24.3 32.6	538 538 15.2 7.0	538 538 8.0 60.8	538 529 48.2 57.9
FORT RANDALL NAT INFLOW 476 88 DEPLETION 80 1	41 53 68 1 1 4	55 191 9 12	21 57 18 15	-16 -82 7 1	-4 -2 1 0	-2 1 3	-10 19 3 3
EVAPORATION 128 REG INFLOW 12548 495 RELEASE 12548 232	305 407 1296 158 390 1296	1441 1379 1441 1379	10 31 1712 1499 1712 1673	32 22 330 425 1409 426	10 5 232 107 232 107	5 13 123 992 123 719	791 1014 701 550
STOR CHANGE         1         262           STORAGE         3123         3385           ELEV FTMSL         1350.0         1353.3	147 17 3532 3549 3549 1355.0 1355.2 1355.2	3549 3549 1355.2 1355.2	0 -174 3549 3375 1355.2 1353.1	-1078 0 2297 2296 1337.5 1337.5 1	0 0 2296 2296 .337.5 1337.5	0 273 2296 2569 1337.5 1342.1	90 464 2659 3123 1343.5 1350.0
DISCH KCFS 9.9 7.8 POWER AVE POWER MW 65	11.4 21.9 21.8 96 185 184	23.4 23.2 198 196	27.8 27.2 235 227	23.7 6.9 184 51	7.8 7.7 57 57	7.7 11.7 57 87	11.4 9.9 87 79
PEAK POW MW 350 ENERGY GWH 1238.3 23.3	355 356 356 16.2 39.9 132.6	356 356 147.3 141.0	356 349 174.6 169.3	284 285 132.4 37.8	285 285 20.6 9.5	285 306 10.9 64.9	312 339 65.0 52.9
GAVINS POINT NAT INFLOW 1252 91 DEPLETION 114 0	42 55 125 0 0 5 -7 -20 0	137 144 19 24 -3 0	79 79 39 10 -9 1	57 109 -5 2 7 31	47 22 5 2 -2 0	25 70 3 10 0 -7	68 102 1 1 3
CHAN STOR -1 4 EVAPORATION 47 REG INFLOW 13638 328	194 425 1416	1556 1500	3 9 1740 1735	11 10 1466 553	5 2 268 125	2 5 143 767	769 655 769 694
RELEASE 13638 328 STOR CHANGE STORAGE 358 358	194 425 1416 358 358 358	1556 1500 358 358	1740 1722 13 358 371	1440 553 26 397 397	268 125 397 397	143 767 397 397	-39 397 358
DISCH KCFS 12.5 11.0 POWER	1206.0 1206.0 1206.0 14.0 23.8 23.8	25.3 25.2	28.3 28.0	24.2 9.0	9.0 9.0	9.0 12.5	12.5 12.5
AVE POWER MW 39 PEAK POW MW 114 ENERGY GWH 571.2 13.9	49         82         82           114         114         114           8.2         17.6         58.7	87 86 114 114 64.4 62.1	96 96 114 115 71.6 71.3	84 32 117 117 60.8 23.9	32 32 117 117 11.6 5.4	32 44 117 78 6.2 33.0	44 44 78 76 33.0 29.6
GAVINS POINT - SIOUX CITY- NAT INFLOW 862 57 DEPLETION 263 7	27 34 121 3 4 22	225 166 35 31	74 34 38 36	23 22 24 10	15 7 6 3	8 16 3 13	-8 41 14 14
REGULATED FLOW AT SIOUX CITY KAF 14237 378 KCFS 12.7		1746 1635 28.4 27.5	1776 1720 28.9 28.0	1439 565 24.2 9.2	277 129 9.3 9.3	148 770 9.3 12.5	747 721 12.1 13.0
TOTAL NAT INFLOW 19102 1112 DEPLETION 2597 21	519 667 2038 10 13 145	2596 4487 653 1488	2400 946 1029 248	780 918 -211 -80	438 204 -126 -59	234 472 -67 -184	473 818 -178 -106
CHAN STOR 4 90 EVAPORATION 1467 STORAGE 31244 32047	4 -20 -28 32343 32521 32871	-46 -25 33023 34362	-6 10 92 285 33859 32562	41 69 351 303	-14 -7 138 64 32137 32199	-57 -10 74 160 32222 31938	-8 11 31834 32049
SYSTEM POWER AVE POWER MW 490 PEAK POW MW 1950	593 728 780 1951 1952 1955	885 882 1955 1978	1045 969 1964 1943	601 391 1911 1917	412 418 1920 1921	492 659 1923 1896	614 665 1904 1917
ENERGY GWH 6216.8 176.3 DAILY GWH 11.8	99.7 157.3 561.6 14.2 17.5 18.7	658.6 635.0 21.2 21.2	777.8 720.6 25.1 23.2	432.7 290.6 14.4 9.4	148.3 70.2 9.9 10.0	94.5 490.4 11.8 15.8	456.6 446.6 14.7 15.9
INI-SUM 15MAR	22MAR 31MAR 30APR	31MAY 30JUN	31JUL 31AUG	30SEP 31OCT	15NOV 22NOV	30NOV 31DEC	31JAN 28FEB

DATE OF STUDY 01/27/06 TIME OF STUDY 10:29:11		006 AOP EXTENS	IONS, LOWER DEC	ILE RUNOFF SIMU	LATION 99001	9901 9901 P STUDY	AGE 1 NO 26
28FEB11 INI-SUM 15MAR	2011 22MAR 31MAR 30APF	VALUES IN 10	000 AF EXCEPT A		15NOV 22NOV	2012 30NOV 31DEC	
FORT PECK NAT INFLOW 5961 274 DEPLETION 454 -10 EVAPORATION 353 MOD INFLOW 5154 284 RELEASE 4903 119 STOR CHANGE 251 165 STORAGE 7786 7951 ELEV FTMSL 2191.6 2192.8	128 164 602 -5 -6 63 132 170 533 17 29 242 8028 8126 8362 2193.3 2194.0 2195.7	3 318 519 9 597 649 8 461 506 1 136 139 8 8504 8643	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	283 374 -130 -68 91 79 322 363 357 275 -35 88 8190 8278 2194.5 2195.1	185 86 -35 -16 23 11 197 92 137 69 61 23 8338 8361 2195.5 2195.7	99 317 -19 -110 12 42 105 385 127 492 -22 -107 8339 8232 2195.5 2194.8	366 422 523 460 -157 -38 8076 8037
DISCH KCFS 8.0 4.0 POWER AVE POWER MW 45 PEAK POW MW 118	4.0 4.0 5.0 45 45 57 118 120 122	) 7.5 8.5 86 98 123 125	5 8.0 7.5 92 86 5 123 121	6.0 4.5 68 51 120 121	4.6 5.0 53 57 122 122	8.0 8.0 91 91 122 121	8.5 8.0 96 90 119 119
ENERGY GWH 676.9 16.1 GARRISON NAT INFLOW 9293 344	7.6 9.8 41.1 160 206 891			49.1 37.9 353 496	18.9 9.6 205 96	17.5 67.8	71.5 62.7 204 284
DEPLETION         1144         0           CHAN STOR         0         46           EVAPORATION         420           REG INFLOW         12632         509           RELEASE         12316         387           STOR CHANGE         9318         9441           ELEV FTMSL         1802.3         1802.9           DISCH KCFS         18.5         13.0	160         0         2           0         0         2           -11         -11           216         278         117           167         214         893           49         64         283           9490         9554         9836           1803.5         1803.5         1804.5           12.0         12.0         15.0	2 203 774 -28 -11 5 1380 2293 1076 1190 304 1102 5 10140 11242 1806.3 1811.4	614 106 6 6 28 87 1482 733 1199 1168 283 -435 11525 11090 1812.7 1810.8	-137 -20 17 17 108 94 756 714 952 691 -197 23 10894 10916	-111 -52 -1 -5 27 13 424 200 351 164 73 36 10990 11025	-59 -83 -33 14 49 248 663 286 1199 -38 -536 10988 10452 1810.3 1807.8 18.0 19.5	-55 -37 -6 6 776 787 1230 1150 -454 -364 9998 9634
POWER AVE POWER MW 127 PEAK POW MW 342 ENERGY GWH 1513.1 45.5	117 118 148 343 344 349 19.7 25.4 106.3	354 373	377 370	166 116 367 367 119.2 86.5	122 123 369 369 44.0 20.6	186 199 369 360 35.7 148.2	200 197 352 345 149.1 137.2
OAHE NAT INFLOW 1429 269 DEPLETION 661 24 CHAN STOR -7 31 EVAPORATION 333 REG INFLOW 12724 662 RELEASE 12412 406 SIDR CHANGE 312 257	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	71 145 -14 -14 1127 1324 1394 1196 -267 128	173 116 3 3 22 67 1119 1018 1726 1510 -608 -493	87 7 28 -10 18 27 84 76 945 660 426 560 518 99	$ \begin{array}{cccc} -7 & -3 \\ 1 & 0 \\ -3 & 22 & 10 \\ 318 & 150 \\ 249 & 116 \\ 69 & 34 \\ \end{array} $	$\begin{array}{cccc} -4 & -65 \\ 1 & 12 \\ -35 & -8 \\ 12 & 41 \\ 234 & 1073 \\ 132 & 1022 \\ 102 & 511 \\ \end{array}$	-16 56 18 28 -3 1193 1178 804 1022 389 156
DISCH KCFS 18.0 13.6 POWER	10121 10128 9974 1572.0 1572.1 1571.3 19.0 19.8 20.7	1569.8 1570.5 22.7 20.1	1567.1 1564.2 28.1 24.6	9253 9352 1567.3 1567.9 7.2 9.1 73 93	8.4 8.3	9558 9608 1569.0 1569.3 8.3 16.6 86 172	9997 10153 1571.4 1572.2 13.1 17.8 136 187
AVE POWER MW 143 PEAK POW MW 524 ENERGY GWH 1553.6 51.5	199 209 217 525 525 521 33.5 45.1 156.1	513 517	288 247 499 485 214.4 183.9	500 503 52.4 69.6	86 86 505 506 31.0 14.4	509 510 16.5 127.8	522 526 101.5 130.0
BIG BEND EVAPORATION 120 REG INFLOW 12292 406 RELEASE 12292 406 STORAGE 1622 1622 ELEV FTMSL 1420.0 1420.0 DISCH KCFS 18.0 13.6 POWER	263 354 1230 263 354 1230 1622 1622 1622 1420.0 1420.0 1420.0 19.0 19.8 20.7	1394 1196 1622 1622	1719 1486 1622 1622	31 27 395 533 395 533 1622 1622 1420.0 1420.0 6.6 8.7	8         4           241         112           241         1622           1622         1622           1420.0         1420.0           8.1         8.1	4 14 128 1008 128 1008 1622 1622 1420.0 1420.0 8.1 16.4	804         1022           804         1022           1622         1622           1420.0         1420.0           13.1         17.8
AVE POWER MW 65 PEAK POW MW 518 ENERGY GWH 712.0 23.2	89 93 97 511 509 509 14.9 20.1 69.7	106 94 509 509 79.0 67.8	131 114 509 518 97.4 85.1	34 44 538 538 24.3 32.7	41 41 538 538 14.8 6.9	41 82 538 538 7.9 60.8	65 85 538 529 48.2 59.3
FORT RANDALL NAT INFLOW 489 90 DEPLETION 80 1 EVAPORATION 121 REG INFLOW 12570 494 RELEASE 12570 232	42 54 70 1 1 4 305 407 1296 158 390 1296	9 12 1441 1379	21 59 18 15 10 31 1712 1499 1712 1673	$ \begin{array}{cccc} -16 & -84 \\ 7 & 1 \\ 32 & 22 \\ 330 & 425 \\ 1409 & 426 \\ \end{array} $	-4 -2 1 0 6 3 230 107 230 107	-2 1 3 13 122 992 122 719	-10 20 3 3 791 1039 701 575
STOR CHANGE         0         262           STORAGE         3123         3385           ELEV FTMSL         1350.0         1353.3           DISCH KCFS         9.9         7.8           POWER         1000000000000000000000000000000000000	147 17 3532 3549 3549 1355.0 1355.2 1355.2 11.4 21.9 21.8	1355.2 1355.2	0 -174 3549 3375 1355.2 1353.1 27.8 27.2	-1078 0 2297 2297 1337.5 1337.5 1 23.7 6.9	$\begin{array}{ccc} 0 & 0 \\ 2296 & 2296 \\ 1337.5 & 1337.5 \\ 7.7 & 7.7 \end{array}$	0 273 2296 2569 1337.5 1342.1 7.7 11.7	90 464 2659 3123 1343.5 1350.0 11.4 10.0
AVE POWER MW 65 PEAK POW MW 350 ENERGY GWH 1240.4 23.3	96 185 184 355 356 356 16.2 39.9 132.6		235 227 356 349 174.6 169.3	184 51 284 285 132.4 37.8	57 56 285 285 20.4 9.5	56 87 285 306 10.8 65.0	87 79 312 339 65.0 55.3
-GAVINS POINT NAT INFLOW 1252 91 DEPLETION 114 0 CHAN STOR -1 4 EVAPORATION 44 REG INFLOW 13663 328	42 55 125 0 0 5 ~7 -20 0 194 425 1416	19 24 -3 0 1556 1500	79 79 39 10 -9 1 3 9 1740 1735	$\begin{array}{cccc} 57 & 109 \\ -5 & 2 \\ 7 & 31 \\ 11 & 10 \\ 1466 & 553 \end{array}$	47 22 5 2 -2 0 3 1 268 125	25 70 3 10 0 -7 2 5 143 767	68 102 1 3 769 680
	194 425 1416 358 358 358 1206.0 1206.0 1206.0	1206.0 1206.0				143 767 397 397 1207.5 1207.5	769 719 -39 397 358 1207.5 1206.0
DISCH KCFS 12.5 11.0 POWER AVE POWER MW 39 PEAK POW MW 114 ENERGY GWH 572.3 13.9	14.0 23.8 23.8 49 82 82 114 114 114 8.2 17.6 58.7	25.3 25.2 87 86 114 114 64.4 62.1	28.3 28.0 96 96 114 115 71.6 71.3	24.2 9.0 84 32 117 117 60.8 23.9	9.0 9.0 32 32 117 117 11.6 5.4	9.0 12.5 32 44 117 78 6.2 33.0	12.5 12.5 44 44 78 76 33.0 30.7
GAVINS POINT - SIOUX CITY- NAT INFLOW 879 58 DEPLETION 266 7		230 169	76 35 39 36	24 22 24 11	15 7 6 3	8 16 3 13	-8 42 14 14
REGULATED FLOW AT SIOUX CITY KAF 14276 379 KCFS 12.7		1750 1638 28.5 27.5	1777 1721 28.9 28.0	1440 564 24.2 9.2	277 129 9.3 9.3	148 770 9.3 12.5	747 747 12.1 13.0
TOTAL NAT INFLOW 19303 1125 DEPLETION 2739 21 CHAN STOR -19 81 EVAPORATION 1391 STORACE 32049 32855	525 675 2060 10 13 145 -1 -20 -28 33151 33337 33707	2624 4537 656 1505 -45 -25 33880 35249	2427 958 1082 263 -1 10 93 290 34723 33417	788 924 -213 -84 31 75 357 309 32652 32861	441 206 -133 -62 -6 -4 89 41 33064 33157	235 475 -71 -155 -69 -16 47 163 33199 32880	478 825 -145 -93 -8 8 32749 32928
SYSTEM POWER AVE POWER MW 482 PEAK POW MW 1966 ENERGY GWH 6268.2 173.6 DAILY GWH 11.6	596 731 784 1966 1968 1971 100.1 157.9 564.6 14.3 17.5 18.8	887 887 1971 1994 659.7 638.7 21.3 21.3	1046 969 1979 1959 778.4 720.7 25.1 23.2	609 388 1926 1932 438.2 288.4 14.6 9.3	391 395 1935 1937 140.8 66.4 9.4 9.5	4936751939191394.7502.511.816.2	629 683 1921 1934 468.3 475.2 15.1 16.4
	22MAD 21MAD 201					30NOV 31DEC	31 TAN 29FEB

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