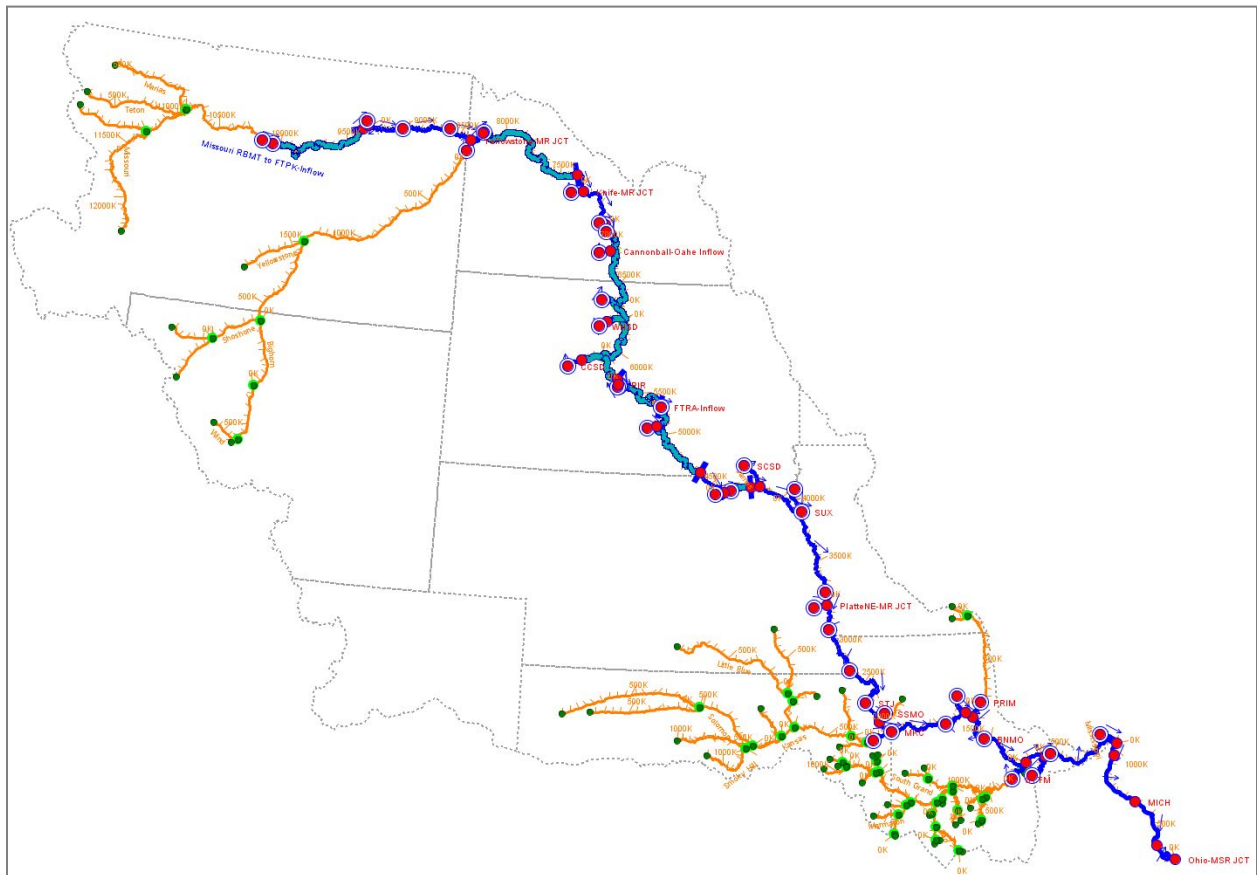




**US Army Corps  
of Engineers** ®

## Missouri River Mainstem HEC-ResSim Modeling for the ENDAWS EIS: FINAL

### Mainstem Missouri River Reservoir Simulation Scenarios Technical Report



MISSOURI RIVER BASIN WATER MANAGEMENT

NORTHWESTERN DIVISION

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## TABLE OF CONTENTS

|                                                                  |      |
|------------------------------------------------------------------|------|
| TABLE OF CONTENTS .....                                          | i    |
| LIST OF FIGURES .....                                            | ii   |
| LIST OF TABLES.....                                              | iii  |
| 1 Introduction .....                                             | 1-1  |
| 2 USBR Scenarios .....                                           | 2-1  |
| 2.1 No Project Year 2017 .....                                   | 2-1  |
| 2.2 No Project Year 2075.....                                    | 2-2  |
| 2.3 ENDAWS Scenario 1 .....                                      | 2-7  |
| 2.4 ENDAWS Scenario 2 .....                                      | 2-7  |
| 2.5 ENDAWS Scenario 3 .....                                      | 2-7  |
| 3 Methodology .....                                              | 3-7  |
| 4 Results.....                                                   | 4-8  |
| 4.1 System Storage, Service Level, and Navigation End Date ..... | 4-8  |
| 4.2 Pool Elevation.....                                          | 4-13 |
| 4.3 Releases.....                                                | 4-17 |
| 4.4 River Flow.....                                              | 4-24 |
| 5 Summary .....                                                  | 5-29 |
| 6 References .....                                               | 6-30 |
| 7 Appendix A: Duration Curve Tables .....                        | 7-31 |
| 8 Appendix B: ENDAWS Depletions .....                            | 8-37 |

## LIST OF FIGURES

|                                                                                                                                                                                    |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Figure 4-1: Duration curves of the change in System relative to NP2075 for each scenario. ...                                                                                      | 4-9  |
| Figure 4-2: System storage during the 1930's drought. ....                                                                                                                         | 4-10 |
| Figure 4-3: The top plot shows Gavins Point releases during 1994, a flood evacuation year. The bottom plot shows Gavins Point releases during 2015, a winter evacuation year. .... | 4-11 |
| Figure 4-4: Duration curves of the change in service level relative to NP2075 for each scenario. ....                                                                              | 4-12 |
| Figure 4-5: Duration curves of the change in navigation end date relative to NP2075 for each scenario. ....                                                                        | 4-13 |
| Figure 4-6: Duration curves of the change in Fort Peck pool elevation relative to NP2075 for each scenario. ....                                                                   | 4-14 |
| Figure 4-7: Duration curves of the change in Garrison pool elevation relative to NP2075 for each scenario. ....                                                                    | 4-15 |
| Figure 4-8: Garrison pool elevation compared to the minimum operation elevation for the Garrison Diversion Unit. ....                                                              | 4-16 |
| Figure 4-9: Duration curves of the change in Oahe pool elevation relative to NP2075 for each scenario. ....                                                                        | 4-17 |
| Figure 4-10: Duration curves of the change in Fort Peck releases relative to NP2075 for each scenario. ....                                                                        | 4-18 |
| Figure 4-11: Fort Peck releases during 1965, a flood evacuation year. ....                                                                                                         | 4-19 |
| Figure 4-12: Duration curves of the change in Garrison releases relative to NP2075 for each scenario. ....                                                                         | 4-20 |
| Figure 4-13: Garrison releases during 1965, a flood evacuation year. ....                                                                                                          | 4-21 |
| Figure 4-14: Duration curves of the change in Oahe releases relative to NP2075 for each scenario. ....                                                                             | 4-22 |
| Figure 4-15: Duration curves of the change in Gavins Point releases relative to NP2075 for each scenario. ....                                                                     | 4-23 |
| Figure 4-16: Gavins Point releases during 1984, a flood evacuation year. ....                                                                                                      | 4-24 |
| Figure 4-17: Duration curves of the change in Bismarck ND flows relative to NP2075 for each scenario. ....                                                                         | 4-25 |
| Figure 4-18: Duration curves of the change in Sioux City, IA flows relative to NP2075 for each scenario. ....                                                                      | 4-26 |
| Figure 4-19: Duration curves of the change in Omaha, NE flows relative to NP2075 for each scenario. ....                                                                           | 4-27 |
| Figure 4-20: Duration curves of the change in Nebraska City, NE flows relative to NP2075 for each scenario. ....                                                                   | 4-28 |
| Figure 4-21: Duration curves of the change in Kansas City, MO flows relative to NP2075 for each scenario. ....                                                                     | 4-29 |

## LIST OF TABLES

|                                                                                                                                                                                       |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Table 2-1: Summary of storage tables for all mainstem projects. ....                                                                                                                  | 2-2  |
| Table 2-2: Withdrawals for future water supply and irrigation projects in the Missouri River Basin above Gavins Point. Positive values indicate removal of water from the river. .... | 2-4  |
| Table 2-3: Future water supply and irrigation projects in the Missouri River Basin above Gavins Point summarized by reach. ....                                                       | 2-5  |
| Table 2-4: Monthly temporal pattern for water supply depletions for all reaches. ....                                                                                                 | 2-6  |
| Table 2-5: Monthly temporal pattern for irrigation depletions for each reach. ....                                                                                                    | 2-6  |
| Table 4-1: Service level requirements. Summarized from Table VII-2 in the Master Manual (U.S. Army Corps of Engineers, 2018). ....                                                    | 4-8  |
| Table 4-2: Navigation season length requirements. Summarized from Table VII-3 in the Master Manual (U.S. Army Corps of Engineers, 2018). ....                                         | 4-13 |
| Table 7-1: Duration curves of the change in mainstem storage, service level, and navigation end date relative to NP2075 for each scenario. ....                                       | 7-32 |
| Table 7-2: Duration curves of the change in releases at Fort Peck, Garrison, and Oahe relative to NP2075 for each scenario. ....                                                      | 7-33 |
| Table 7-3: Duration curves of the change in pool elevation at Fort Peck, Garrison, and Oahe relative to NP2075 for each scenario. ....                                                | 7-34 |
| Table 7-4: Duration curves of the change in flow at Bismarck, ND, releases at Gavins Point, and flow at Sioux City, IA relative to NP2075 for each scenario. ....                     | 7-35 |
| Table 7-5: Duration curves of the change in flow at Omaha, NE; Nebraska City, NE; and Kansas City, MO relative to NP2075 for each scenario. ....                                      | 7-36 |
| Table 8-1: ENDAWS depletions. ....                                                                                                                                                    | 8-38 |

# **1 INTRODUCTION**

In response to a request from the Bureau of Reclamation (USBR), the U.S. Army Corps of Engineers (USACE) performed reservoir simulations to assess changes to the Missouri River system of reservoirs (System) and the Missouri River downstream of the System if additional water supply withdrawals were made from the Missouri River for the Eastern North Dakota Alternate Water Supply Project (ENDAWS). The results of this analysis will be included in the ENDAWS Environmental Impact Statement (EIS). The Missouri River Mainstem ResSim model (ResSim Model) was used to simulate the reservoir operations of the System for this study. The ResSim Model replaced the previous reservoir operations model, the Daily Routing Model, and is capable of simulating reservoir operations from 1 March 1930 through 28 February 2019. Nineteen computation points within the ResSim Model, including the six mainstem reservoirs, produce flows and reservoir data for each day of the simulated period-of-record (POR). Although this model produces flows at several Missouri River gage locations, it does not compute stage values. If stage is required for any analyses, a HEC-RAS model would need to be used along with the simulated reservoir releases to create stage values along the Missouri River. Reservoir storage capacities are based on a set point in time and do not change as the simulation progresses through the POR. Baseline storage curves are based on the most recent reservoir surveys: Fort Peck – 2007, Garrison – 2011, Oahe – 2010, Big Bend – 2012, Fort Randall – 2011, and Gavins Point – 2011. The ResSim Model can simulate future reservoir conditions by modifying the reservoir storage curves to reflect future storage loss due to sedimentation.

## **2 USBR SCENARIOS**

### **2.1 NO PROJECT YEAR 2017**

Five scenarios were provided by the USBR for analysis using the ResSim Model. The first scenario was a present condition, no project (NP2017). In this scenario, historic flows were adjusted based on the POR USBR depletions created by the USBR regional depletions model (U.S. Bureau of Reclamation, 2017). This model calculates how much water would be removed from the basin for a variety of purposes and sums the withdrawals by 8-digit hydrologic units (HUC8). The most recent set of depletions has a POR of 1930-2017. Since the POR for the ResSim Model is 1930-2018, the depletions sets are extended by holding the last year of the USBR depletions dataset constant for the additional years. For purposes of this study, the USBR regional depletions model was run for two basin conditions: historic and present. The historic basin condition represents depletions that would have occurred as intakes and other sources of withdrawals were built. For example, if an irrigation intake was installed in 1950, the intake would only contribute to withdrawals in the post-1950 period. The present basin condition represents depletions that would have occurred if all sources of current water withdrawals were present throughout the period. For example, if an irrigation intake was installed in 2017, the regional depletions model would include withdrawals for that intake for each year of the POR. Historic or observed flows at stream gages already include the effects of the historic depletions so in order to create a homogeneous flow dataset representative of one basin condition, the difference

between the historic and present depletions are used as an additional input in the ResSim Model. With this additional flow dataset, when the ResSim Model computes reservoir operations, it represents operations that would have occurred for the entire POR under current basin conditions. No other withdrawals are included in the NP2017 scenario. Reservoir storage capacities are represented by the baseline storage capacities described in the previous section.

## 2.2 NO PROJECT YEAR 2075

The second scenario was a future condition, no project (NP2075) scenario. This scenario was the same as the NP2017 scenario with two modifications. The first modification was the addition of future storage loss in the reservoirs due to sedimentation that would occur between the baseline storage curve years and year 2075. Using the second oldest and most recent storage tables, an annual rate of storage change was calculated per one-foot increments. The second oldest storage table was used instead of the oldest due a higher rate of sedimentation in the years between the closure date and the first storage survey. This rate of storage change could then be used to calculate a new storage table for future years. Table 2-1 summarizes the storage tables for the baseline and future conditions for each of the six mainstem projects.

**Table 2-1: Summary of storage tables for all mainstem projects.**

| Project   | Elevation (ft NGVD 29)<br>(Reservoir Zone) | Baseline<br>Storage<br>(acre-feet) | Future<br>Storage<br>(acre-feet) | Storage<br>Change per<br>Zone |
|-----------|--------------------------------------------|------------------------------------|----------------------------------|-------------------------------|
| Fort Peck | 2250.0<br>(Exclusive Flood Control)        | 18,462,840                         | 17,450,981                       | -18,049                       |
|           | 2246.0<br>(Annual Flood Control)           | 17,492,120                         | 16,498,310                       | -12,629                       |
|           | 2234.0<br>(Carryover Multi-Use)            | 14,788,340                         | 13,807,158                       | -493,387                      |
|           | 2160.0<br>(Permanent)                      | 4,087,903                          | 3,600,108                        | -487,795                      |
| Garrison  | 1854.0<br>(Exclusive Flood Control)        | 23,451,300                         | 22,554,852                       | 1,153                         |
|           | 1850.0<br>(Annual Flood Control)           | 21,956,050                         | 21,058,449                       | -10,847                       |
|           | 1837.5<br>(Carryover Multi-Use)            | 17,744,640                         | 16,857,886                       | -576,952                      |
|           | 1775.0<br>(Permanent)                      | 4,793,691                          | 4,483,889                        | -309,802                      |
| Oahe      | 1620.0<br>(Exclusive Flood Control)        | 22,971,040                         | 22,218,948                       | 13,233                        |
|           | 1617.0<br>(Annual Flood Control)           | 21,865,292                         | 21,099,967                       | 17,181                        |
|           | 1607.5<br>(Carryover Multi-Use)            | 18,665,257                         | 17,882,751                       | -480,727                      |
|           | 1540.0<br>(Permanent)                      | 5,311,400                          | 5,009,620                        | -301,780                      |
| Big Bend  | 1423.0                                     | 1,810,414                          | 1,687,946                        | 961                           |

| <b>Project</b> | <b>Elevation (ft NGVD 29)<br/>(Reservoir Zone)</b> | <b>Baseline<br/>Storage<br/>(acre-feet)</b> | <b>Future<br/>Storage<br/>(acre-feet)</b> | <b>Storage<br/>Change per<br/>Zone</b> |
|----------------|----------------------------------------------------|---------------------------------------------|-------------------------------------------|----------------------------------------|
|                | (Exclusive Flood Control)                          |                                             |                                           |                                        |
|                | 1422.0<br>(Annual Flood Control)                   | 1,749,418                                   | 1,625,989                                 | 1,200                                  |
|                | 1420.0<br>(Permanent)                              | 1,631,474                                   | 1,506,845                                 | -124,629                               |
| Fort Randall   | 1375.0<br>(Exclusive Flood Control)                | 5,293,512                                   | 4,710,255                                 | -1,857                                 |
|                | 1365.0<br>(Annual Flood Control)                   | 4,309,691                                   | 3,728,291                                 | -15,648                                |
|                | 1350.0<br>(Carryover Multi-Use)                    | 3,000,777                                   | 2,435,026                                 | -375,815                               |
|                | 1320.0<br>(Permanent)                              | 1,469,376                                   | 1,279,439                                 | -189,937                               |
| Gavins Point   | 1210.0<br>(Exclusive Flood Control)                | 425,863                                     | 247,155                                   | -11,838                                |
|                | 1208.0<br>(Annual Flood Control)                   | 370,285                                     | 203,416                                   | -25,224                                |
|                | 1204.5<br>(Permanent)                              | 287,595                                     | 145,950                                   | -141,645                               |

The USBR provided additional depletions for future scenarios that included any foreseeable water supply or irrigation projects beyond 2017, which are detailed in Table 2-2 and summarized in Table 2-3. The USBR also provided temporal patterns of water supply and irrigation withdrawals. The patterns for water supply depletions were constant for each reach (see Table 2-4), but the patterns for irrigation depletions varied by reach (see Table 2-5). Since the ResSim Model is a daily time step model, the annual depletions values were disaggregated into daily average values by first creating monthly time series with the temporal patterns in Table 2-4 and Table 2-5. Once monthly time series were created, daily time series were created by dividing the total monthly depletion evenly over each day of the month. The values were also multiplied by -1 for use in the ResSim Model since it treats water removed from the river as a negative value.

**Table 2-2: Withdrawals for future water supply and irrigation projects in the Missouri River Basin above Gavins Point. Positive values indicate removal of water from the river.**

| <b>Project</b>                              | <b>Withdrawals<br/>Maximum Use to 2075<br/>(acre-feet per year)</b> | <b>River Reach</b>    |
|---------------------------------------------|---------------------------------------------------------------------|-----------------------|
| <b>Public Surface Water Supply Projects</b> |                                                                     |                       |
| Rock Boys RWS                               | 8,802                                                               | Above Fort Peck       |
| City of Helena                              | 8,800                                                               | Above Fort Peck       |
| Blackfeet MR&I                              | 9,248                                                               | Above Fort Peck       |
| Crow MR&I                                   | 5,040                                                               | Fort Peck to Garrison |
| Ft Peck RWS                                 | 6,200                                                               | Fort Peck to Garrison |
| Southwest Pipeline Project                  | 10,000                                                              | Fort Peck to Garrison |
| Western Area Water Supply                   | 12,000                                                              | Fort Peck to Garrison |
| Northwest Area Water Supply <sup>1</sup>    | 15,000                                                              | Fort Peck to Garrison |
| South Central Regional Water Dist           | 800                                                                 | Garrison to Oahe      |
| Standing Rock RWS                           | 4,429                                                               | Garrison to Oahe      |
| Rapid City & Western Pennington County      | 10,000                                                              | Garrison to Oahe      |
| City of Pierre                              | 9,000                                                               | Oahe to Big Bend      |
| <b>Irrigated Agriculture Projects</b>       |                                                                     |                       |
| Canyon Ferry Temporary Irrigation           | 400                                                                 | Above Fort Peck       |
| Canyon Ferry Irrigation                     | 12,000                                                              | Above Fort Peck       |
| Chester Irrigation Project                  | 40,000                                                              | Above Fort Peck       |
| Tiber Irrigation Contracts                  | 44,000                                                              | Above Fort Peck       |
| Fort Belknap Settlement                     | 60,000                                                              | Above Fort Peck       |
| Blackfeet Indian Water Settlement           | 45,000                                                              | Above Fort Peck       |
| Crow Indian Water Settlement                | 150,000                                                             | Fort Peck to Garrison |
| Northern Cheyenne Settlement                | 57,500                                                              | Fort Peck to Garrison |
| Eastern Shoshone, Northern Arapaho          | 210,000                                                             | Fort Peck to Garrison |
| Alkali Creek Reservoir                      | 8,000                                                               | Fort Peck to Garrison |
| Bull Creek Reservoir                        | 14,500                                                              | Fort Peck to Garrison |



| <b>Project</b>                                                         | <b>Withdrawals<br/>Maximum Use to 2075<br/>(acre-feet per year)</b> | <b>River Reach</b>           |
|------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------|
| Meadowlark Lake Enlargement                                            | 2,791                                                               | Fort Peck to Garrison        |
| Leavitt Reservoir Expansion                                            | 6,604                                                               | Fort Peck to Garrison        |
| GDU Irrigation                                                         | 32,900                                                              | Fort Peck to Garrison        |
| GDU 28,000 Unidentified Acres                                          | 56,000                                                              | Fort Peck to Oahe            |
| Standing Rock Irrigation                                               | 800                                                                 | Garrison to Oahe             |
| Lake Andes Wagner Irrigation                                           | 10,000                                                              | Big Bend to Ft Randall       |
| <b>Other Projects</b>                                                  |                                                                     |                              |
| TransCanada Keystone Pipeline (temporary)                              | 512                                                                 | Oahe, Big Bend, Fort Randall |
| <sup>1</sup> This project is a complete diversion with no return flows |                                                                     |                              |

**Table 2-3: Future water supply and irrigation projects in the Missouri River Basin above Gavins Point summarized by reach.**

| <b>Missouri River Reaches</b> | <b>Public Surface Water Supply<br/>(Acre-Feet per Year)</b> | <b>Irrigated Agriculture<br/>(Acre-Feet per Year)</b> | <b>Other<br/>(Acre-Feet per Year)</b> | <b>Total<br/>(Acre-Feet per Year)</b> |
|-------------------------------|-------------------------------------------------------------|-------------------------------------------------------|---------------------------------------|---------------------------------------|
| Above Fort Peck               | 26,850                                                      | 201,400                                               | 0                                     | 228,250                               |
| Fort Peck to Garrison         | 48,240                                                      | 510,295                                               | 0                                     | 558,535                               |
| Garrison to Oahe              | 15,229                                                      | 28,800                                                | 0                                     | 44,029                                |
| Oahe to Big Bend              | 9,000                                                       | 0                                                     | 512                                   | 9,512                                 |
| Big Bend to Fort Randall      | 0                                                           | 10,000                                                | 0                                     | 10,000                                |
| Fort Randall to Gavins Point  | 0                                                           | 0                                                     | 0                                     | 0                                     |
| <b>Total</b>                  | <b>99,319</b>                                               | <b>750,495</b>                                        | <b>512</b>                            | <b>850,326</b>                        |

**Table 2-4: Monthly temporal pattern for water supply depletions for all reaches.**

| <b>Month</b> | <b>Monthly Diversion Rate<br/>(Percent)</b> |
|--------------|---------------------------------------------|
| January      | 3                                           |
| February     | 3                                           |
| March        | 6                                           |
| April        | 7                                           |
| May          | 10                                          |
| June         | 13                                          |
| July         | 18                                          |
| August       | 15                                          |
| September    | 11                                          |
| October      | 8                                           |
| November     | 3                                           |
| December     | 3                                           |

**Table 2-5: Monthly temporal pattern for irrigation depletions for each reach.**

| <b>Month</b> | <b>Above Fort<br/>Peck<br/>(Percent)</b> | <b>Fort peck to<br/>Garrison<br/>(Percent)</b> | <b>Garrison to<br/>Oahe<br/>(Percent)</b> | <b>Big Bend to<br/>Fort Randall<br/>(Percent)</b> |
|--------------|------------------------------------------|------------------------------------------------|-------------------------------------------|---------------------------------------------------|
| January      | 0                                        | 0                                              | 0                                         | 0                                                 |
| February     | 0                                        | 0                                              | 0                                         | 0                                                 |
| March        | 0                                        | 0                                              | 0                                         | 0                                                 |
| April        | 1                                        | 4                                              | 1                                         | 1                                                 |
| May          | 7                                        | 24                                             | 16                                        | 9                                                 |
| June         | 22                                       | 22                                             | 20                                        | 19                                                |
| July         | 34                                       | 24                                             | 28                                        | 32                                                |
| August       | 24                                       | 17                                             | 23                                        | 27                                                |
| September    | 11                                       | 8                                              | 11                                        | 12                                                |
| October      | 1                                        | 1                                              | 1                                         | 0                                                 |
| November     | 0                                        | 0                                              | 0                                         | 0                                                 |
| December     | 0                                        | 0                                              | 0                                         | 0                                                 |
| Total        | 100                                      | 100                                            | 100                                       | 100                                               |

## **2.3 ENDAWS SCENARIO 1**

The third scenario, ENDAWS Scenario 1 (AWS 1), included 119,500 acre-feet per year of depletions for the ENDAWS project split between the Garrison Diversion Unit and the Garrison to Oahe reach of the Missouri River in addition to all depletions from the NP2075 scenario. The Garrison Diversion Unit is a project that withdraws water from Garrison Reservoir into Lake Audubon. Lake Audubon then supplies water to the McClusky Canal. Water in the Garrison to Oahe reach would be withdrawn from an intake near Washburn, ND. The Garrison Diversion Unit was assigned 14,500 acre-feet per year and the remaining 105,000 acre-feet per year of water supply depletions were assigned to the Garrison to Oahe reach of the Missouri River. The USBR provided a monthly temporal pattern for the ENDAWS depletions for January 1931 – December 2018. To allow the ResSim Model to run for the entire available POR (1 March 1930 – 28 February 2019), the ENDAWS depletions data was extended. Values for 1931 were repeated for the entire year of 1930 and January and February of 2018 were repeated for January and February values for the year 2019. Reservoir storages were also the same as the NP2075 scenario, adjusted for sedimentation out to year 2075.

## **2.4 ENDAWS SCENARIO 2**

The fourth scenario, ENDAWS Scenario 2 (AWS 2), was similar to AWS 1 except all ENDAWS depletions (119,500 acre-feet per year) were assigned to the Garrison to Oahe reach of the Missouri River. Water withdrawals would again be made from an intake near Washburn, ND. In addition, all of the depletions from the NP2075 scenario are included. Reservoir storages were again adjusted to year 2075 by accounting for accumulated storage changes from each reservoir's baseline year.

## **2.5 ENDAWS SCENARIO 3**

The final scenario, ENDAWS Scenario 3 (AWS 3), assigned all ENDAWS depletions (119,500 acre-feet per year) to the Garrison Diversion Unit (Garrison Reservoir) in addition to all the depletions from the NP2075 scenario. Reservoir storages were again adjusted to year 2075 by accounting for accumulated storage changes from each reservoir's baseline year.

## **3 METHODOLOGY**

HEC-ResSim version 3.4 was used to run the ResSim Model. The ResSim Model contains project characteristics and multiple scripted rules that allow it to simulate reservoir system operations based on the 2018 Master Manual (U.S. Army Corps of Engineers, 2018). No operational changes were made for the scenarios in this study. Inflow time series were created to represent the various depletions described in Section 2, and each time series could be turned on or off depending on the scenario. The first year of the simulation for each scenario was assumed to have all the Carryover and Multiple Use storage available in the System, so the four main storage projects were at the top of the Carryover and Multiple Use Zone. On 1 March 1930, Fort Peck pool elevation was 2234.0 feet (NGVD 29); Garrison pool elevation was 1837.5 feet (NGVD 29); Oahe pool elevation was 1607.5 feet (NGVD 29); Fort Randall pool elevation was 1350.0 feet (NGVD

29). Big Bend and Gavins Point are reregulation projects, so they began the simulation at their guide curve elevations, 1420.5 feet (NGVD 29) and 1206.0 feet (NGVD 29), respectively.

## 4 RESULTS

The ResSim Model produces over 1,100 time series of output for each scenario. It would be difficult to present the results and analyze data for each of those time series; therefore, several time series were selected and displayed in this report to represent changes to operations that would occur as a result of each ENDAWS scenario. Pool elevation and releases were selected for the upper three large projects, Fort Peck, Garrison, and Oahe. These three projects contain 90 percent of the combined storage capacity in the System. As a result, these three projects experience the bulk of the impacts during periods of high runoff or extended drought. As previously noted, Big Bend and Gavins Point are reregulation projects and reservoir elevations will generally not change with variations in System inflows. Gavins Point releases were selected in addition to river flow for some of the gages in the ResSim Model: Bismarck, ND; Sioux City, IA; Omaha, NE; Nebraska City, NE; and Kansas City, MO. Three System parameters were chosen: navigation end date, service level, and System storage. To further simplify how the data was displayed, monthly average releases, end-of-month elevation, end-of-month storage, end-of-month service level, and navigation end date were used. A difference between the ENDAWS scenarios and the NP2075 scenario were calculated; then a duration curve of the differences was generated to summarize the changes to the System.

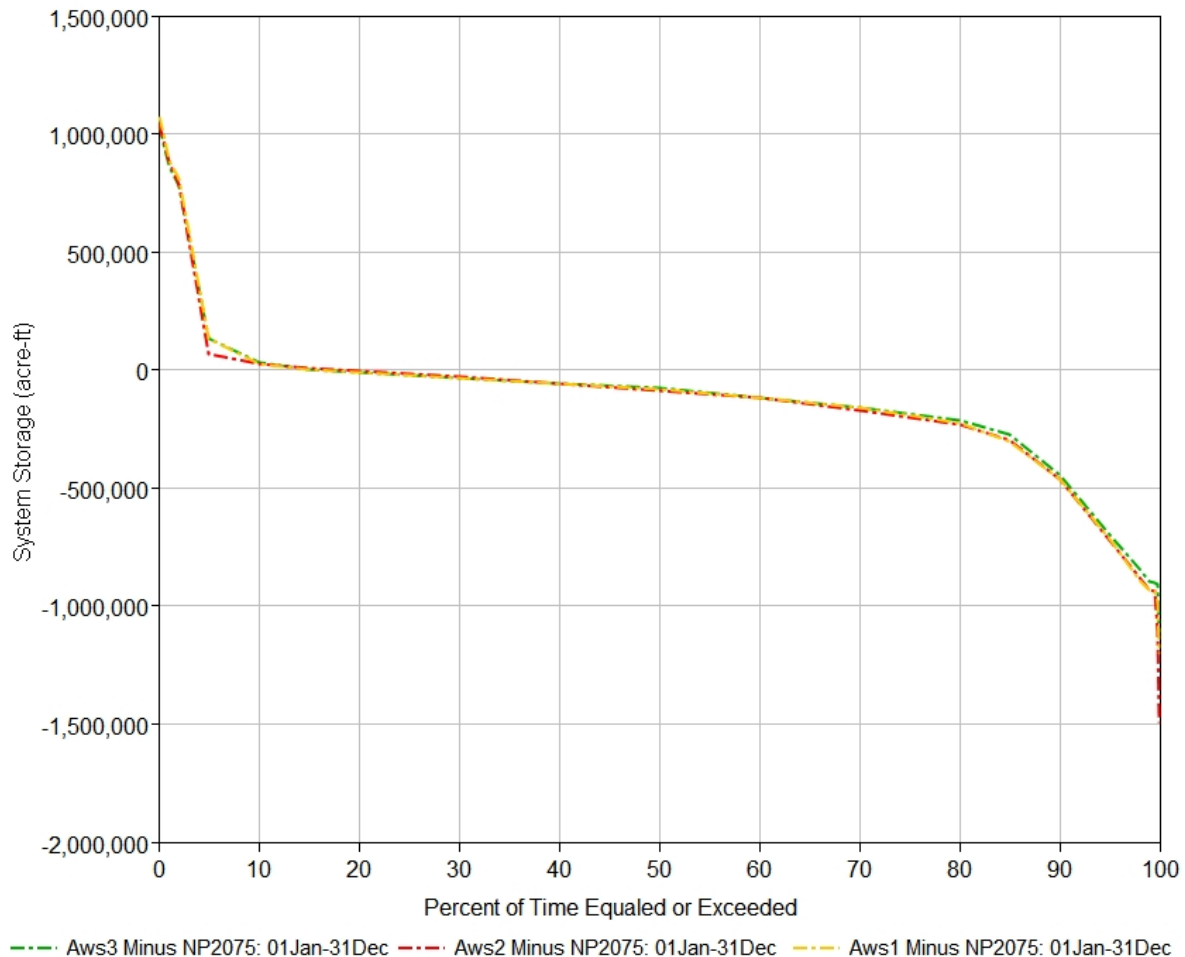
### 4.1 SYSTEM STORAGE, SERVICE LEVEL, AND NAVIGATION END DATE

System storage is the total storage of all six mainstem reservoirs. It is used in operations to set the level of navigation flow support (service level) for the river below Gavins Point and navigation season length (navigation end date). During persistent droughts when the upper three reservoirs draft into their respective Carryover and Multiple Use Zones, drought conservation measures are enacted. Primarily, the service level or navigation flow support is reduced and the navigation season length is shortened to conserve water. Service level is set on March 15 for the first half of the navigation season and reassessed on July 1 for the remainder of the navigation season. Table 4-1 summarizes how the service level for both assessment dates varies depending on System storage.

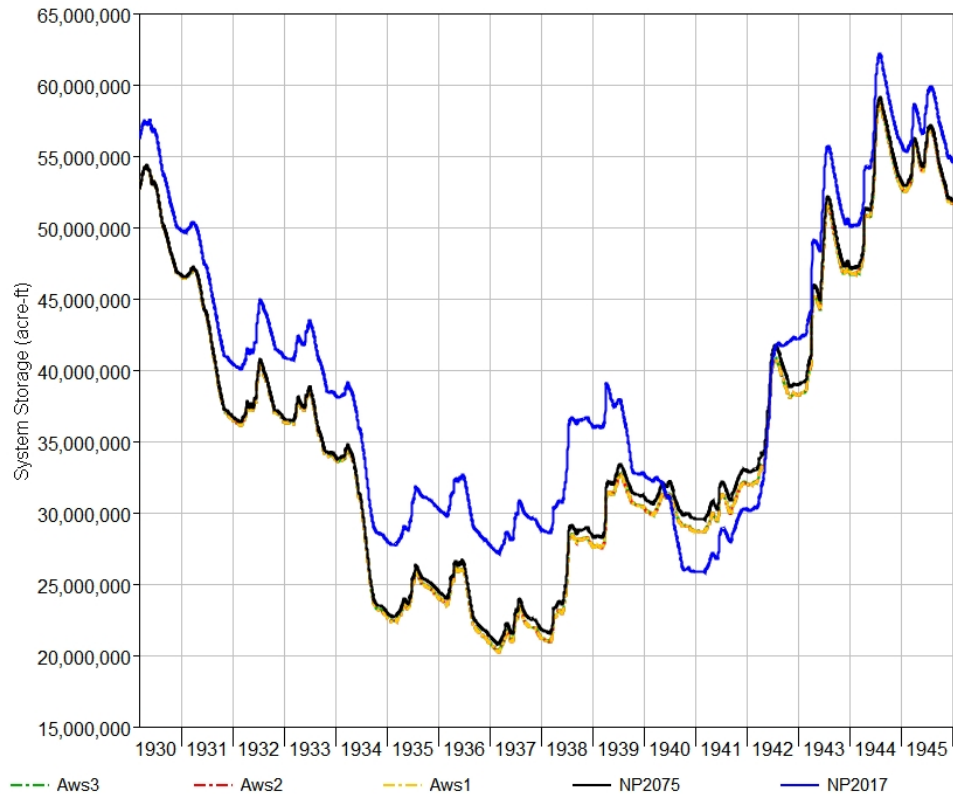
**Table 4-1: Service level requirements. Summarized from Table VII-2 in the Master Manual (U.S. Army Corps of Engineers, 2018).**

| Date     | Service Level<br>(kcfs) | Water in System Storage<br>(MAF) |
|----------|-------------------------|----------------------------------|
| March 15 | 35.0 (full-service)     | 54.5 or more                     |
| March 15 | 29.0 (minimum-service)  | 31.0 – 49.0                      |
| March 15 | No service              | 31.0 or less                     |
| July 1   | 35.0 (full-service)     | 57.0 or more                     |
| July 1   | 29.0 (minimum-service)  | 50.5 or less                     |

Figure 4-1 shows the duration curves of changes to System storage relative to the NP2075 scenario. The general trend is lower System storage due to the ENDAWS depletions, but approximately 85 percent of the POR has less than 0.5 million acre-feet (MAF) change in System storage. Extended droughts can cause System storage reductions greater than 0.5 MAF. Figure 4-2 shows the System storage for each scenario during the 1930's drought. By the fall of 1942, System storage is approximately 0.9 MAF less than the NP2075. The combination of drought conservation measures and increased runoff reduces the difference in System storage to less than 0.2 MAF by 1946.

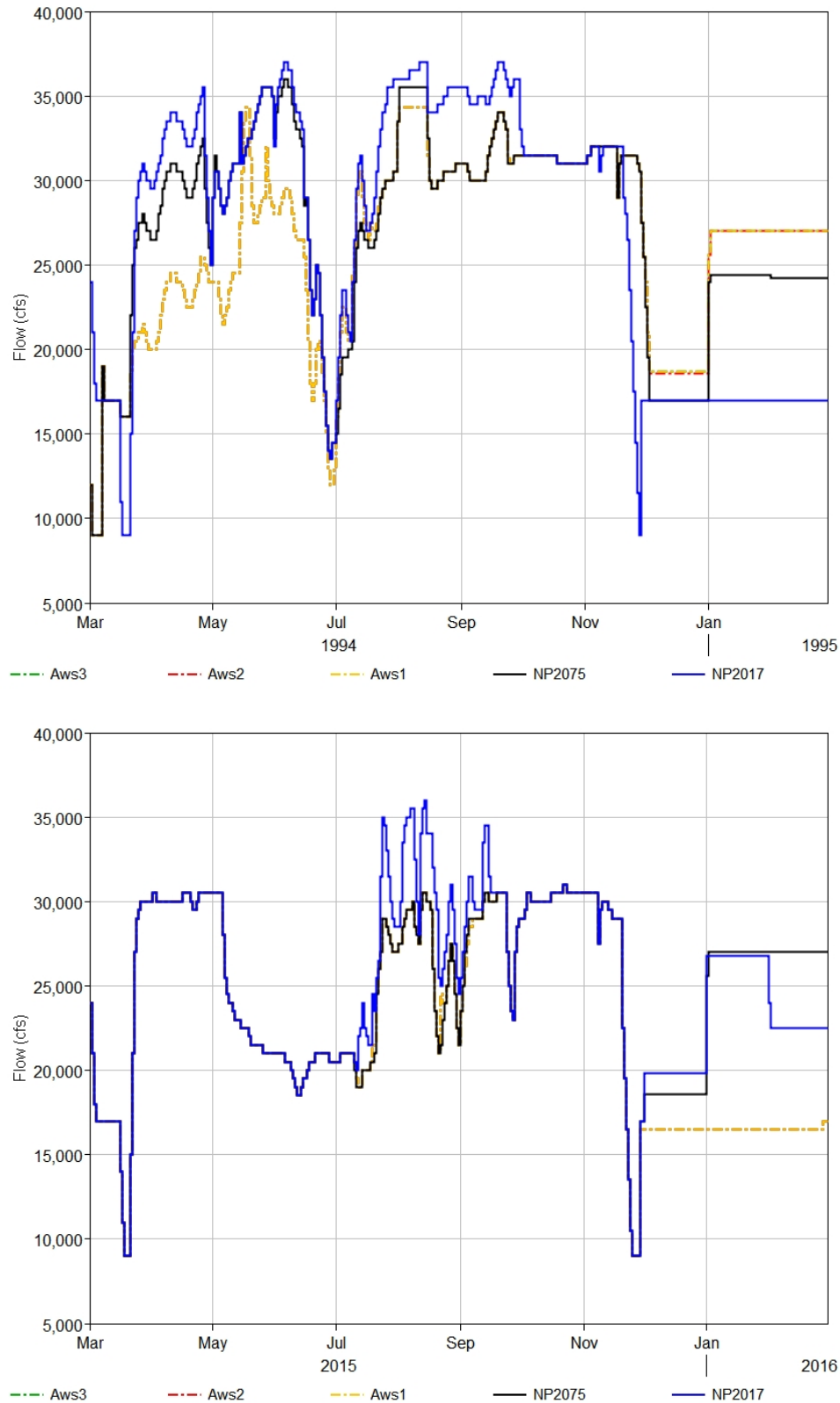


**Figure 4-1: Duration curves of the change in System relative to NP2075 for each scenario.**



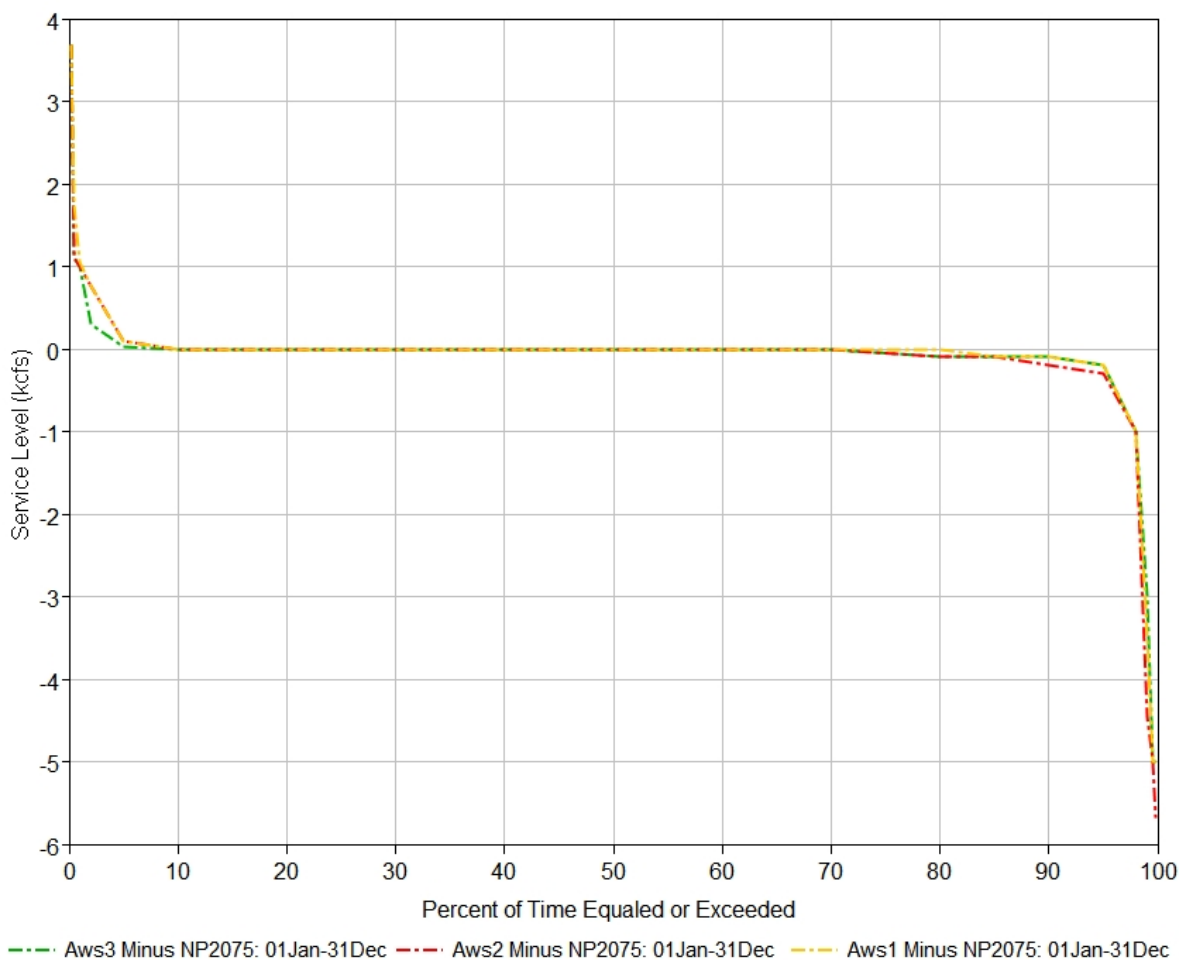
**Figure 4-2: System storage during the 1930's drought.**

Differences greater than +0.5 MAF occur during years where the ENDAWS scenarios decrease System storage enough to reduce navigation flow support (i.e. service level) or winter releases from Gavins Point. This typically occurs in flood evacuation years when different rules within the ResSim model are activated or when the evacuation service level is lower due to less System storage. The top plot of Figure 4-3 shows Gavins Point releases during 1994 where service level was increased above full service under the NP2075 scenario. Due to System storage being 0.15 to 0.18 MAF lower than NP2075 at the end of February, the service level calculation on March 15 results in full service during April and May for AWS 1, AWS 2, and AWS 3. For NP2075, service level is increased to 40 kcfs on March 15. The lower service level under AWS 1, AWS 2, and AWS 3 keeps more water in storage throughout 1994 and the extra water is evacuated during the winter. This can also occur during drier years when service level is reduced to an intermediate level or between full and minimum service. The bottom plot of Figure 4-3 shows Gavins Point releases during 2015 where System storage is lowered by 0.36 to 0.40 MAF by September 1 under the ENDAWS scenarios compared to the NP2075 scenario. This reduction in System storage results in a below normal winter release of 16.5 kcfs under AWS 1, AWS 2, and AWS 3. Under NP2075, winter releases are increased to 18.6 kcfs during December and 27.0 kcfs during January and February to evacuate storage. These differences in winter releases result in 1.0 MAF more water in storage on March 1, 2016 under the ENDAWS scenarios and full-service navigation flow support for the first half of the navigation season. An intermediate service level is specified for the first half of the navigation season for the NP2075 scenario.



**Figure 4-3: The top plot shows Gavins Point releases during 1994, a flood evacuation year. The bottom plot shows Gavins Point releases during 2015, a winter evacuation year.**

As mentioned previously, changes in System storage lead to changes in service level as more water is removed from the System. Figure 4-4 shows duration curves of the change in service level relative to NP2075. The curves show that service level changes by 1.0 kcfs or less for 98 percent of the POR. For less than 2 percent of the POR, the service level is either increased or decreased between 1 and 5 kcfs. The increases and decreases of service level greater than 1.0 kcfs generally occur during flood evacuation years when the service level has been increased above full service.



**Figure 4-4: Duration curves of the change in service level relative to NP2075 for each scenario.**

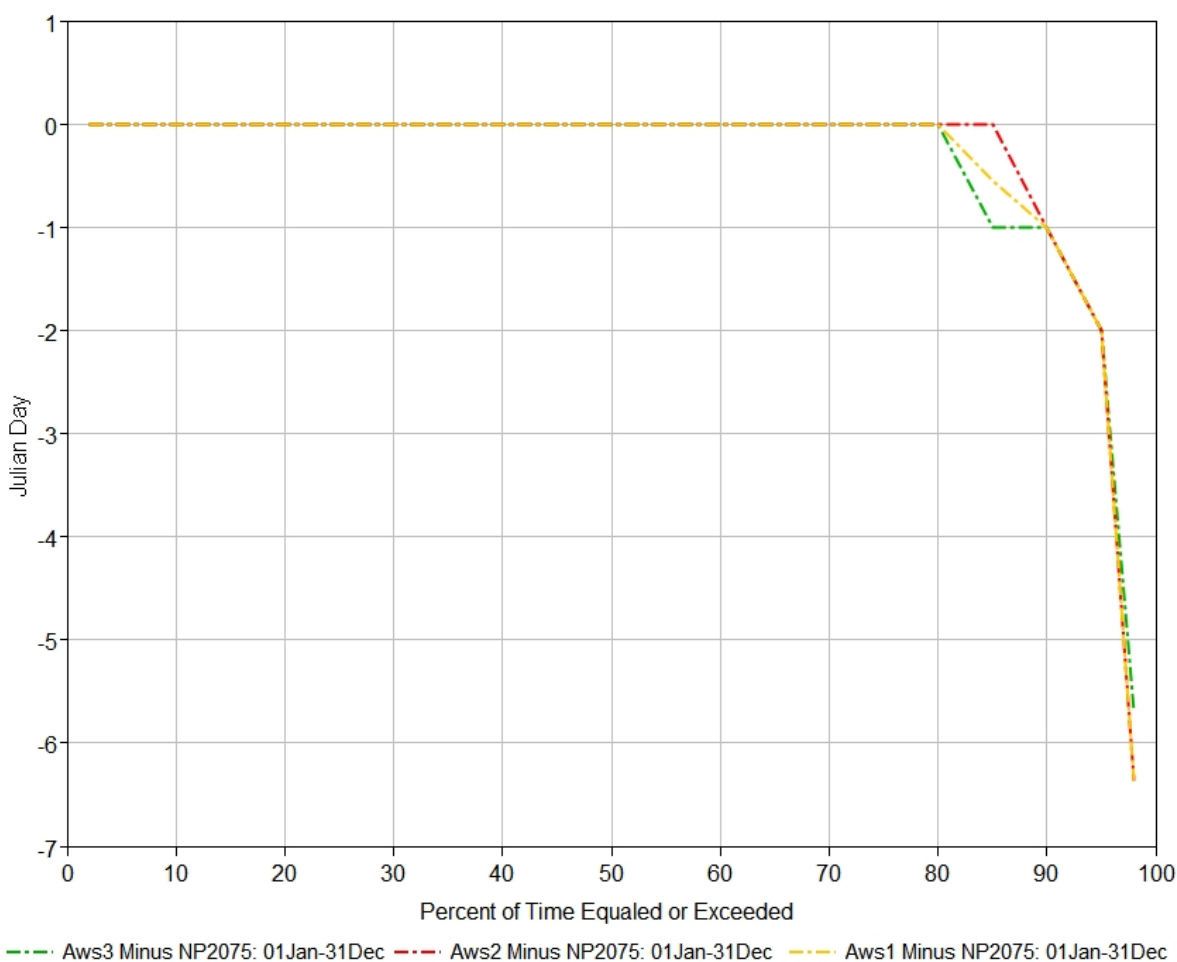
Navigation season lengths are determined by a System storage check on July 1, and the criteria are summarized in Table 4-2. Figure 4-5 shows duration curves for the change in navigation end date in Julian days, which show changes of 1 day or less for 90 percent of the POR. Only 3 years (1942, 1943, and 2015) in the POR have reductions in season length greater than 2 days. In 1942 and 1943, System storage is lower under the ENDAWS scenarios compared to the NP2075 scenario as the reservoirs continue to recover from the 1930's drought, and the navigation season is shorter by 4 days in both years under AWS 3. The navigation season is 5 days shorter in 1942 and 4 days shorter in 1943 under AWS 1 and AWS 2. In 2015, the navigation season is extended



by 10 days under the NP2075 scenario to evacuate storage, but a normal 8-month navigation season occurs under AWS 1, AWS 2, and AWS 3.

**Table 4-2: Navigation season length requirements. Summarized from Table VII-3 in the Master Manual (U.S. Army Corps of Engineers, 2018).**

| Date   | System Storage (MAF) | Season Closure Date at Mouth of the Missouri River |
|--------|----------------------|----------------------------------------------------|
| July 1 | 36.5 or less         | October 1 (6-month season)                         |
| July 1 | 41.0 – 46.8          | November 1 (7-month season)                        |
| July 1 | 51.5 or more         | December 1 (8-month season)                        |

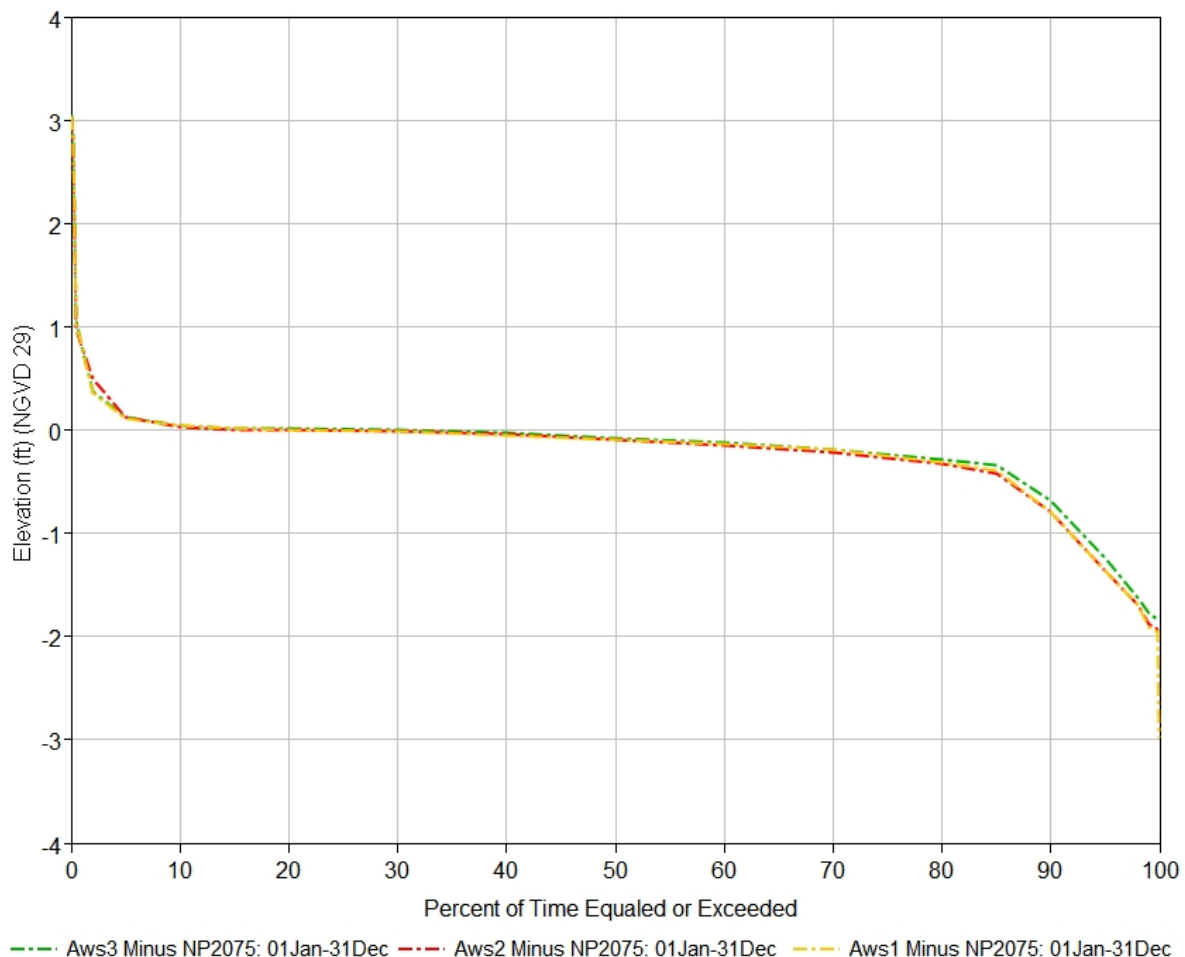


**Figure 4-5: Duration curves of the change in navigation end date relative to NP2075 for each scenario.**

## 4.2 POOL ELEVATION

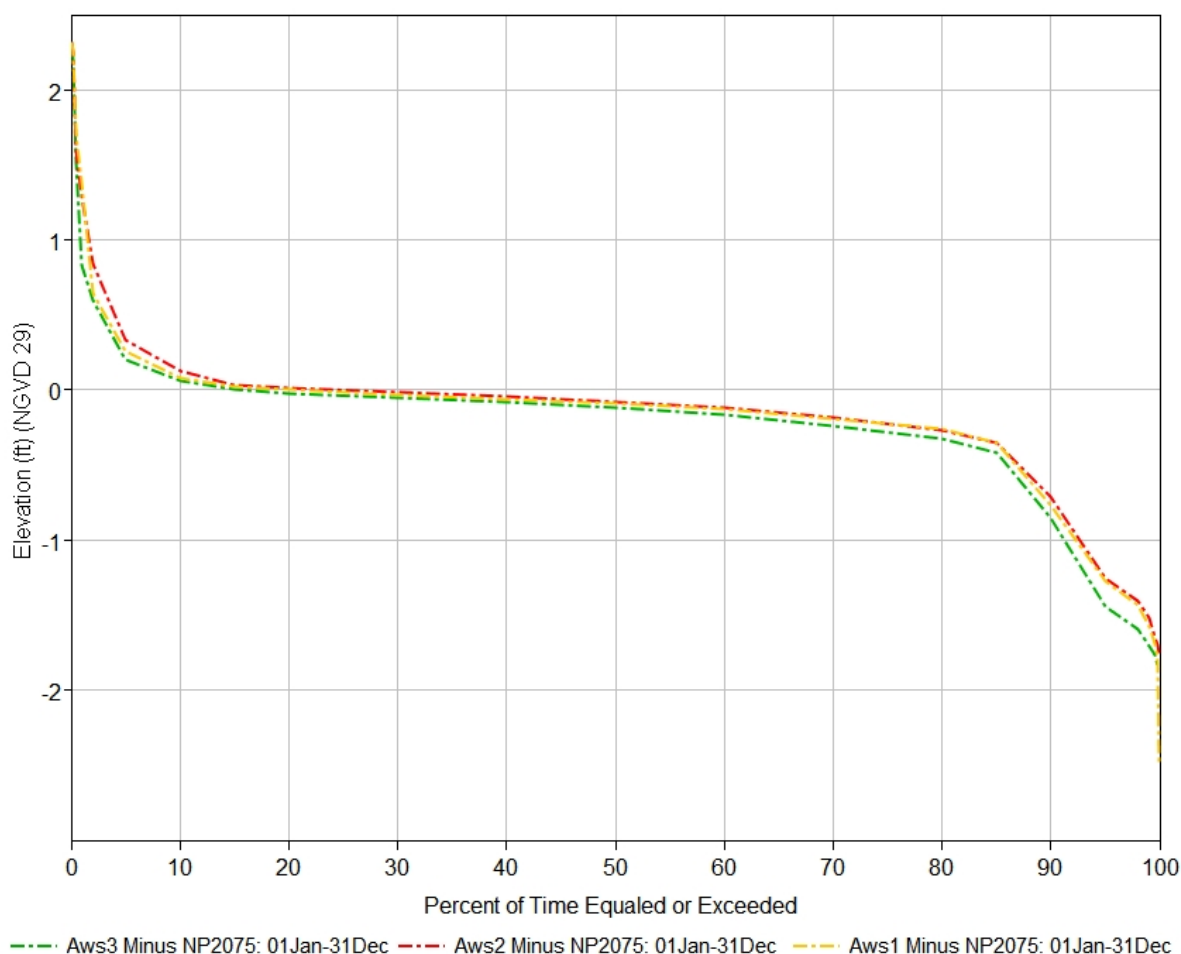
Pool elevations in the three largest reservoirs follow the same trend as with System storage since about 90 percent of the System storage resides in those reservoirs. At Fort Peck, 0.5 percent of the POR results in higher pool elevations of at least 1.0 foot under scenarios AWS 1, AWS 2, and

AWS 3 compared to NP2075. These changes occur during flood evacuation years. In these years, changes to System storage are caused by one of two reasons: different rules within the ResSim model being activated or changes to the evacuation service level due to changes in System storage at the start of the navigation season. The ResSim model has flood evacuation rules with thresholds that trigger evacuation releases other than those specified by the service level. If one of those thresholds is triggered in one alternative but not in the others, releases will be different, which causes a difference in pool elevations. Different evacuation service levels caused by changes to System storage can have a similar effect. If one scenario has a different service level, different releases from Gavins Point will cause changes to releases at all projects upstream. The general trend is lower pool elevations due to the ENDAWS depletions, but approximately 90 percent of the POR has less than 1.0-foot change in pool elevation. Extended droughts can cause pool elevation differences greater than 1.0 foot, which occurs during the 1930's drought. Since additional water supply depletions are not occurring from Fort Peck Reservoir, all scenarios are relatively the same as shown in Figure 4-6.



**Figure 4-6: Duration curves of the change in Fort Peck pool elevation relative to NP2075 for each scenario.**

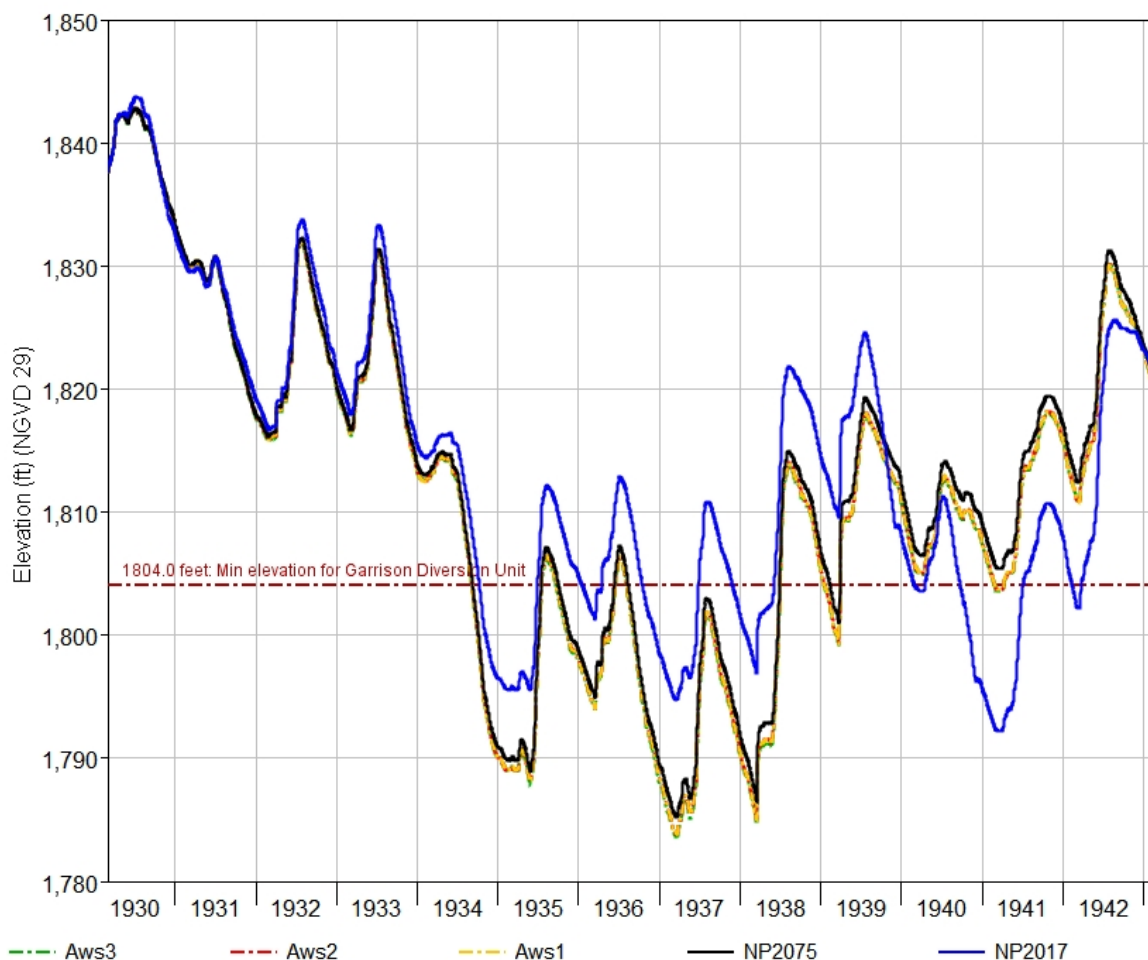
At Garrison Reservoir, 1.0 percent of the POR results in higher pool elevations of at least 1.0 foot under scenarios AWS 1, AWS 2, and AWS 3 compared to NP2075, which occur during flood evacuation years as previously explained. As with Fort Peck, the general trend is lower pool elevations, but approximately 88 percent of the POR has less than 1.0-foot change in pool elevation. The ENDAWS depletions in combination with extended droughts, such as the 1930's drought, results in reductions in Garrison pool elevation greater than 1.0 foot occurring for 5 percent of POR, as shown in Figure 4-7. AWS 3 results in approximately 0.1-foot lower pool elevations than AWS 1 and AWS 2 since all of the ENDAWS depletions are withdrawn from Garrison Reservoir via the Garrison Diversion Unit. Summer releases from Garrison Dam are typically set in May and held steady, if possible, during the endangered bird species' nesting season. As more water is withdrawn directly from Garrison Reservoir, the pool elevation is reduced because releases are not adjusted until the fall and winter.



**Figure 4-7: Duration curves of the change in Garrison pool elevation relative to NP2075 for each scenario.**

As previously explained, the Garrison Diversion Unit withdraws water from Garrison Reservoir into Lake Audubon, and water is then supplied to the McClusky Canal. Lake Audubon is impounded by the Snake Creek Embankment. A dam safety concern arises at the Snake Creek

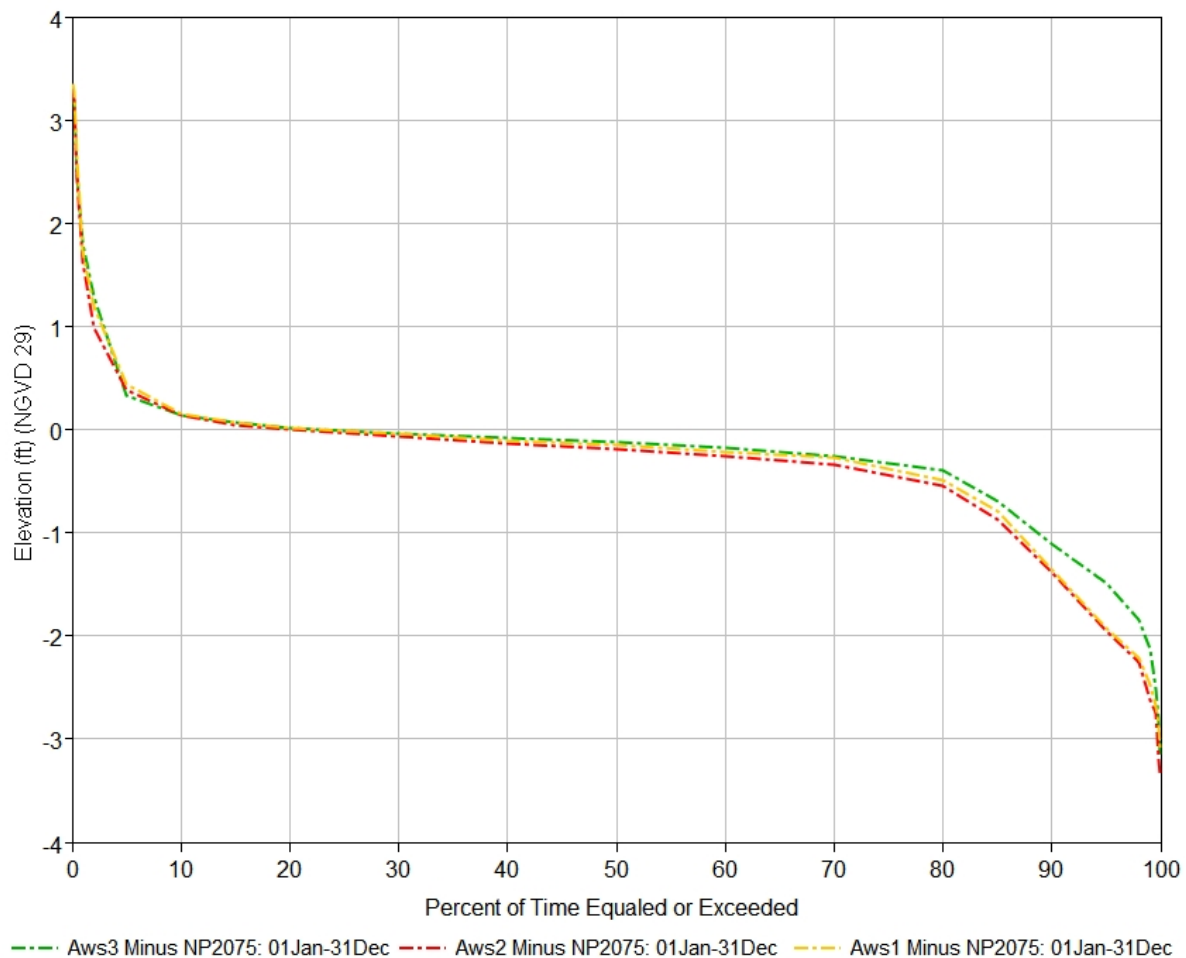
Embankment, when Garrison's pool elevation falls more than 43 feet below Lake Audubon's elevation. During drought conditions, Lake Audubon would need to be drawn down to maintain the 43-foot differential, which means there would be impacts to the Garrison Diversion Unit if Garrison's pool elevation falls below 1804.0 feet. Figure 4-8 shows the period between 1934 and 1942 when this threshold is not met. Under the NP2075 scenario, the pool elevation falls below 1804.0 feet for 1,287 days during this period. The pool elevation falls below 1804.0 feet for 1,376 days; 1,373 days; and 1,388 days under the AWS 1, AWS 2 and AWS 3 scenarios, respectively. Garrison pool elevation does not fall below 1804.0 feet during any other years in the POR for any of the alternatives.



**Figure 4-8: Garrison pool elevation compared to the minimum operation elevation for the Garrison Diversion Unit.**

At Oahe, 2.0 percent of the POR results in higher pool elevations of at least 1.0 foot under scenarios AWS 1, AWS 2, and AWS 3 compared to NP2075, which occur during flood evacuation years as previously explained. As with Fort Peck and Garrison, the general trend is lower pool elevations, but approximately 88 percent of the POR has less than 1.0-foot change in pool elevation. The ENDAWS depletions in combination with extended droughts, such as the 1930's drought, results in reductions of Oahe pool elevation greater than 1.0 foot occurring for 12 percent

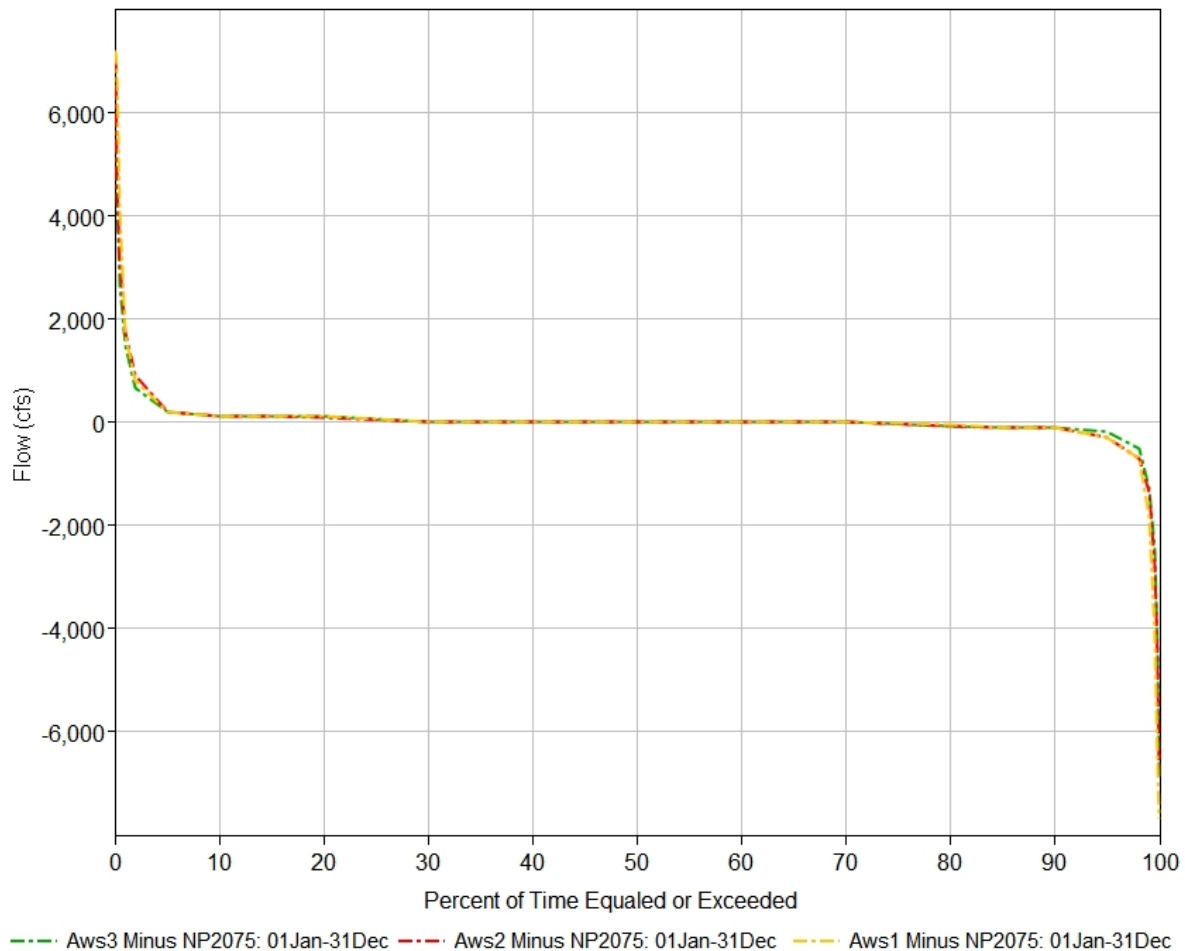
of POR, as shown in Figure 4-9. AWS 3 results in approximately 0.1- to 0.2-foot higher pool elevations than AWS 1 and AWS 2 since all of the ENDAWS depletions are withdrawn from Garrison Reservoir via the Garrison Diversion Unit. This occurs for the same reason as described for Garrison pool changes. Under all of the ENDAWS scenarios, the same volume of water is removed from the System, but the location is changed. Since Garrison releases are held steady during the summer and water is withdrawn below Garrison under AWS 1 and AWS 2 scenarios, the reduction in pool elevations occurs at the next downstream reservoir, Oahe.



**Figure 4-9: Duration curves of the change in Oahe pool elevation relative to NP2075 for each scenario.**

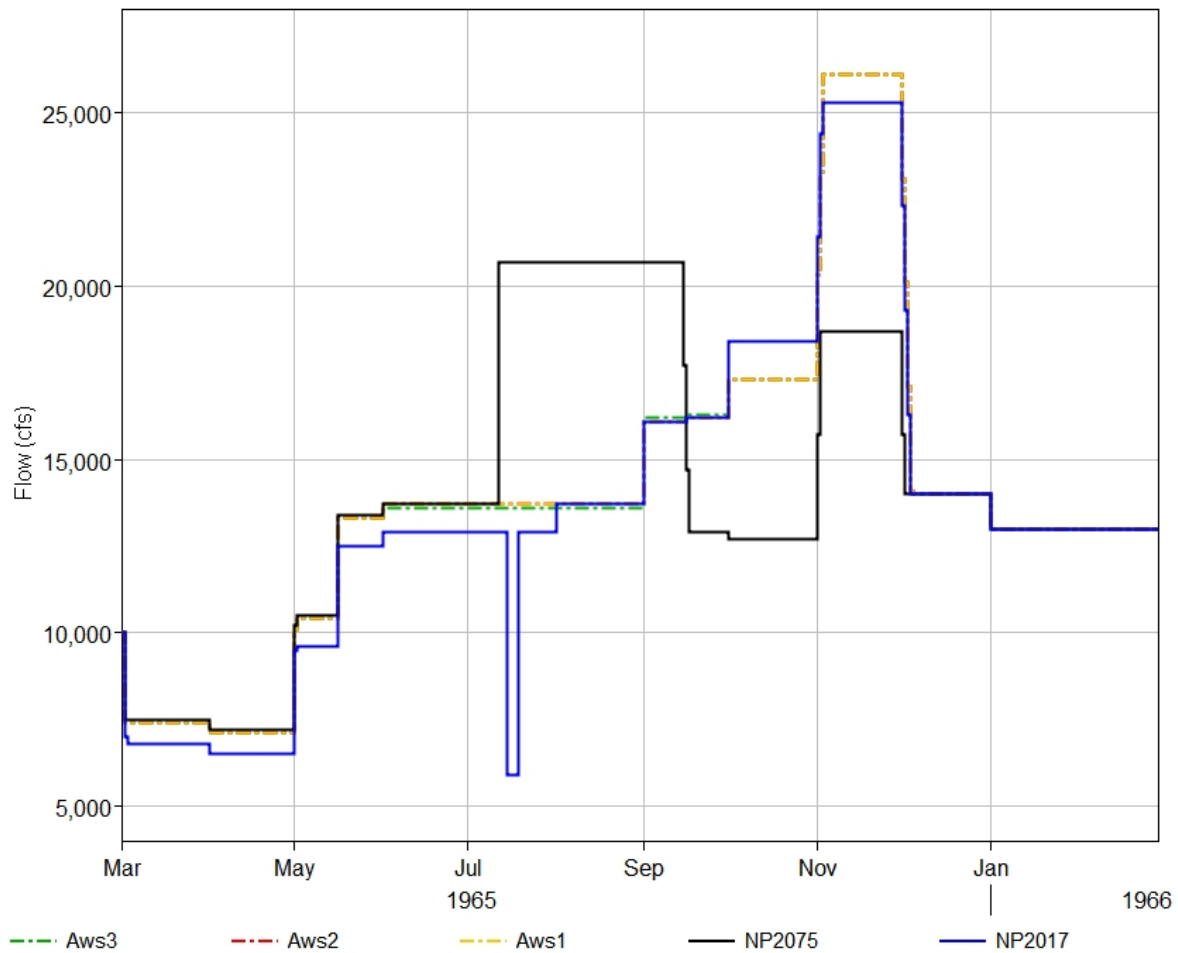
### 4.3 RELEASES

Releases from the mainstem projects under the AWS 1, AWS2, and AWS 3 scenarios are nearly identical to the NP2075 releases. Figure 4-10 shows the duration curves of differences in releases at Fort Peck and approximately 98 percent of the POR has a change less than 1.0 kcfs. There is approximately 1 percent of the POR with changes greater than 1.0 kcfs and 1 percent of the POR with changes less than -1.0 kcfs.



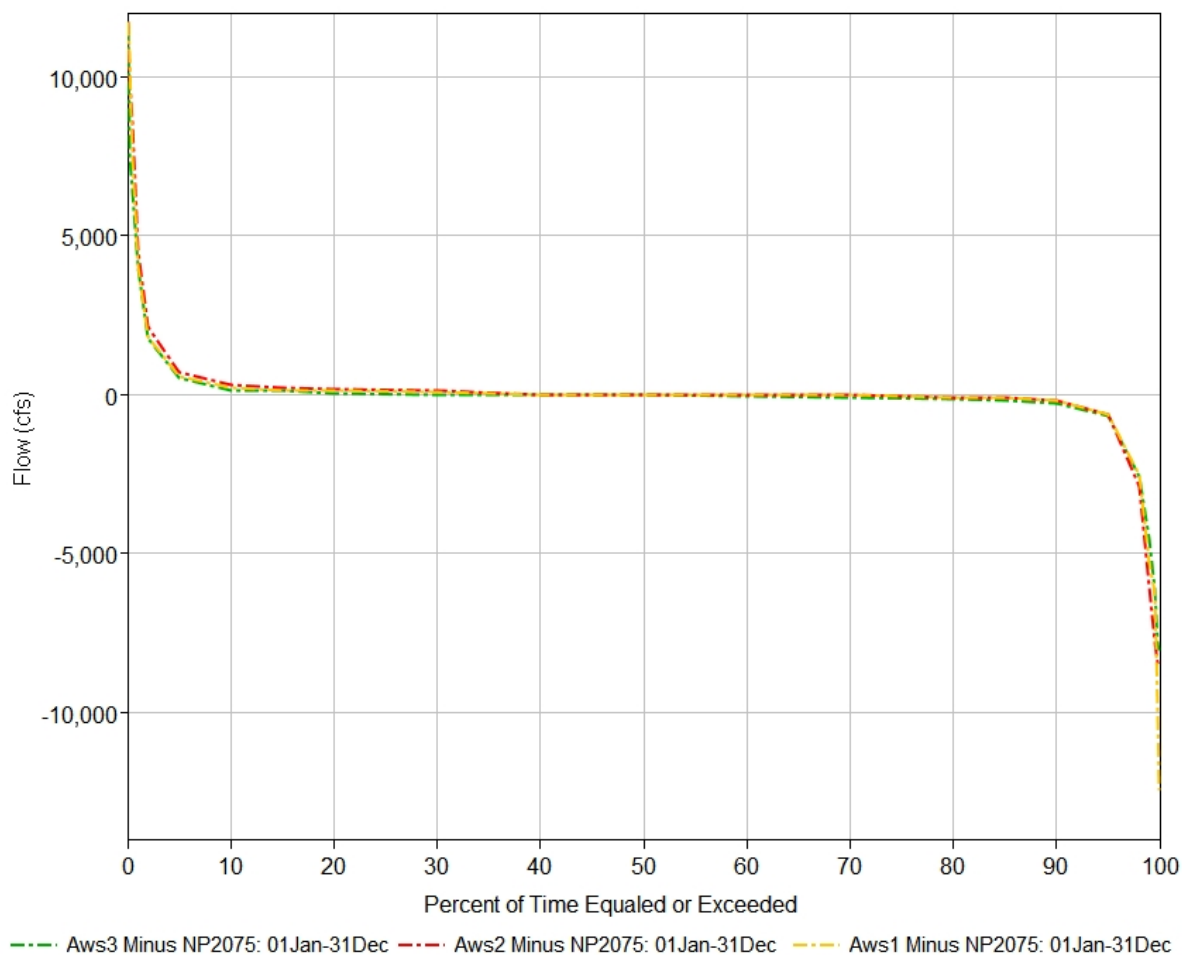
**Figure 4-10: Duration curves of the change in Fort Peck releases relative to NP2075 for each scenario.**

Changes greater than 1.0 kcfs occur during high runoff years when flood evacuation rules are activated at different times of the year. Figure 4-11 shows Fort Peck releases during 1965, a flood evacuation year. Under AWS 1, AWS 2, and AWS 3 scenarios, Fort Peck pool elevation is lower than the NP2075 scenario. This causes releases under the ENDAWS scenarios to remain lower than the NP2075 scenario during the summer because there is more storage available and the flood evacuation rules are not triggered within the model. However, releases under the ENDAWS scenarios are higher than the NP2075 scenario during the fall because the stored flood waters must still be evacuated prior to the start of next year's runoff season.



**Figure 4-11: Fort Peck releases during 1965, a flood evacuation year.**

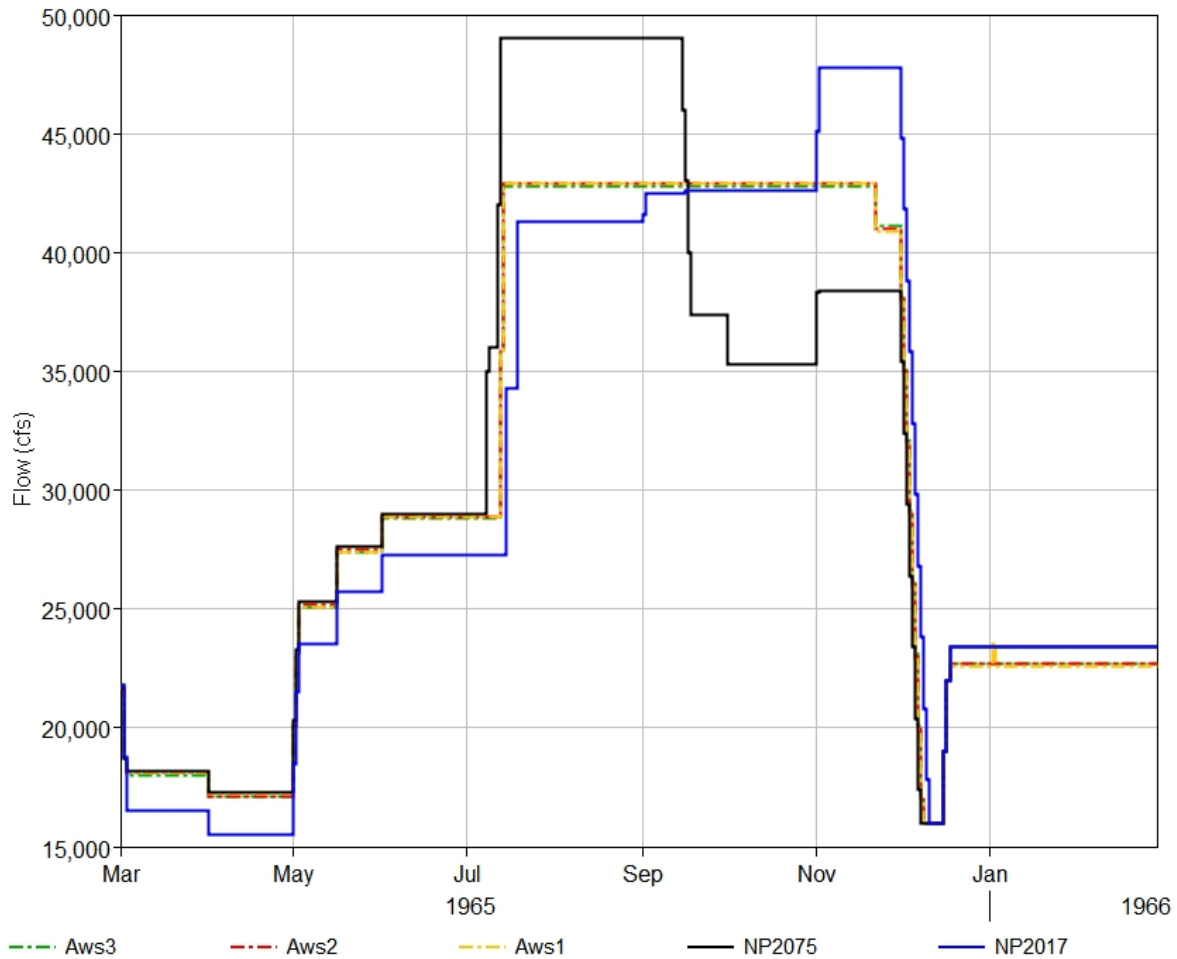
Figure 4-12 shows the duration curves of differences in releases at Garrison, which are similar to Fort Peck, approximately 96 percent of the POR has a change less than 1.0 kcfs. There is approximately 2 percent of the POR with changes greater than 1.0 kcfs and 2 percent of the POR with changes less than -1.0 kcfs. Each ENDAWS scenario has a similar effect on releases as shown in Figure 4-12.



**Figure 4-12: Duration curves of the change in Garrison releases relative to NP2075 for each scenario.**

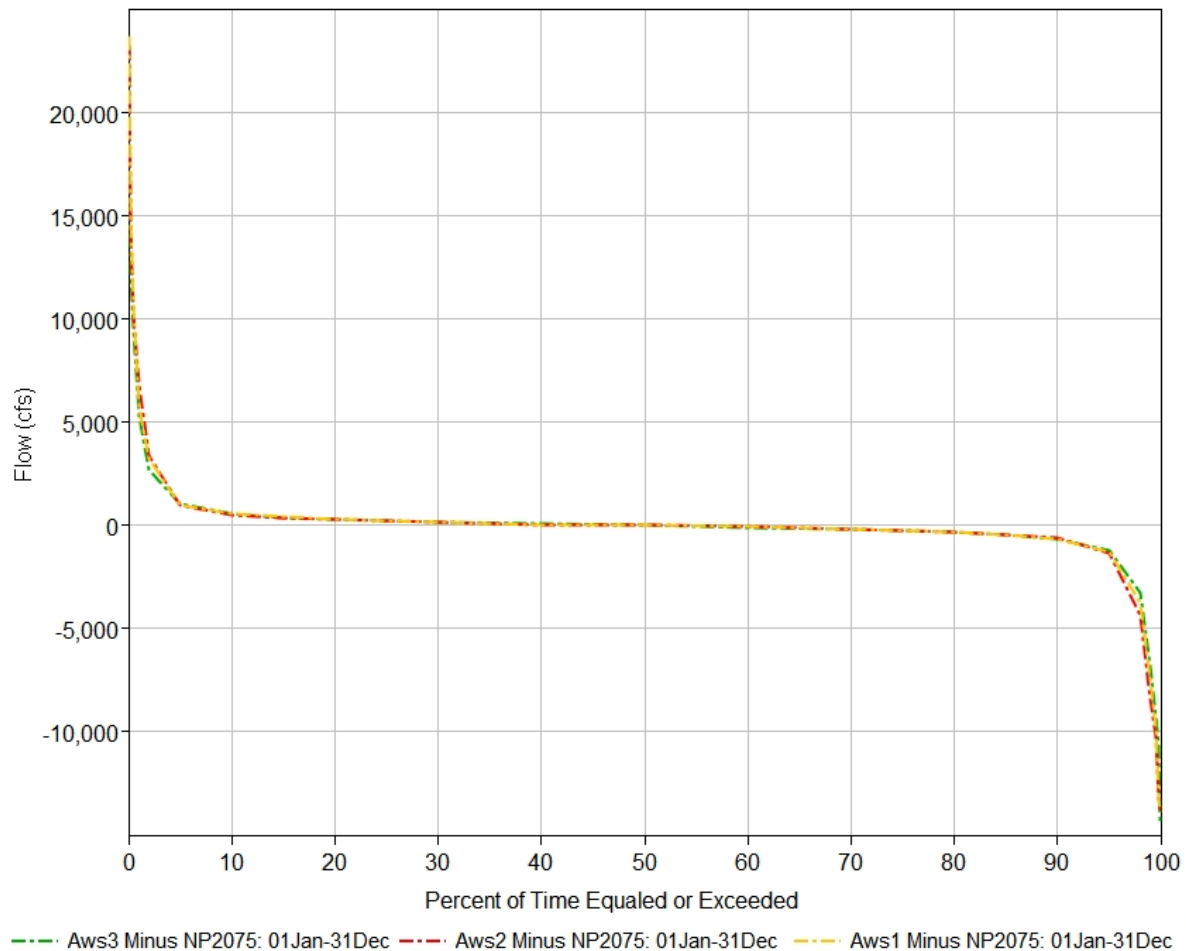
As with Fort Peck, changes greater than 1.0 kcfs occur during high runoff years. Figure 4-13 shows Garrison releases during 1965. Garrison Reservoir is lower under the AWS 1, AWS 2, and AWS 3 scenarios when compared to the NP2075 scenario. This causes higher flood evacuation releases during the summer under the NP2075 scenario versus the ENDAWS scenarios. Lower fall releases occur under the NP2075 scenario because more water was released earlier in the year and approximately the same stored flood waters need to be evacuated prior to the beginning of next year's runoff season.





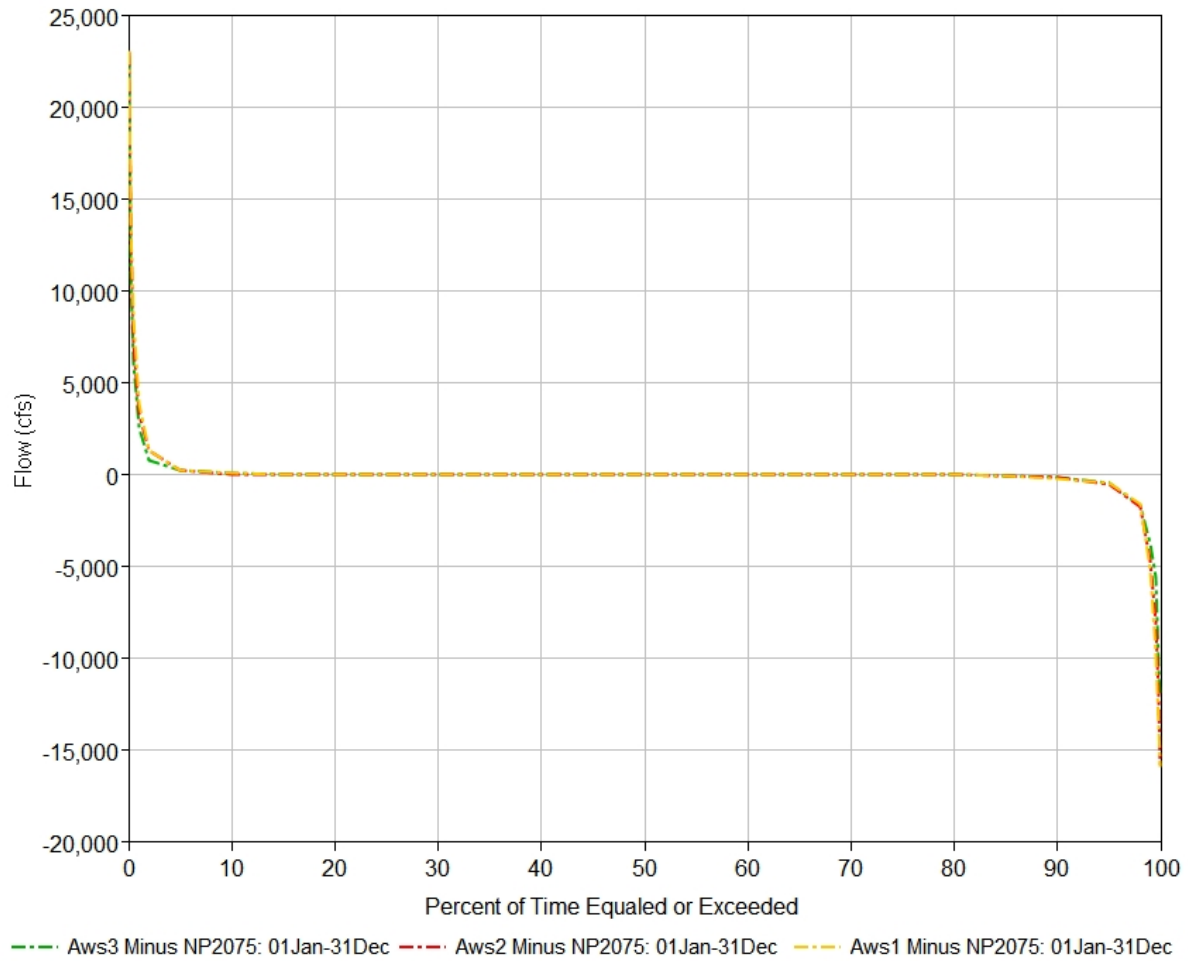
**Figure 4-13: Garrison releases during 1965, a flood evacuation year.**

Figure 4-14 shows the duration curves of differences in releases at Oahe and similar to Fort Peck and Garrison, approximately 93 percent of the POR has a change less than 1.0 kcfs. There is approximately 2 percent of the POR with changes greater than 1.0 kcfs and 5 percent of the POR with changes less than -1.0 kcfs. The differences greater than 1.0 kcfs are caused by release changes at Gavins Point, which are described in the next paragraph. In a typically year, Oahe is the most downstream reservoir with storage available to provide water for Gavins Point releases. If Gavins Point releases are increased or decreased, subsequent changes occur at Fort Randall, Big Bend, and Oahe. Gavins Point and Big Bend are regulation dams so their pools remain at a near constant elevation and although Fort Randall has some storage available to meet the water requirements at Gavins Point, typically the pool follows a seasonal guide curve, or specified pool elevations.

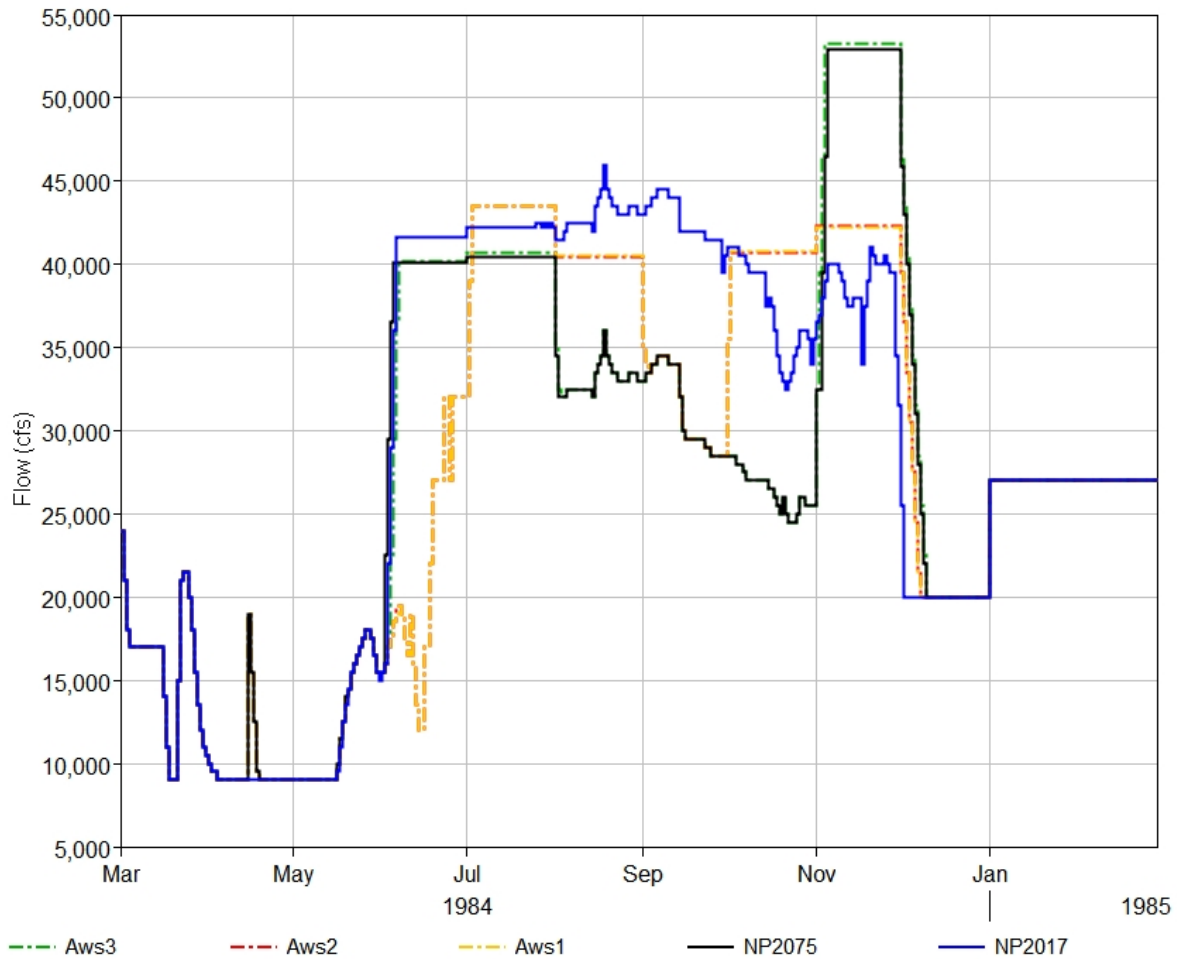


**Figure 4-14: Duration curves of the change in Oahe releases relative to NP2075 for each scenario.**

The additional ENDAWS depletions have a similar effect on Gavins Point releases as with the upper three reservoirs: Fort Peck, Garrison, and Oahe. Figure 4-15 shows that 96 percent of the POR has less than 1.0 kcfs difference in Gavins Point releases when compared to NP2075. The remaining 4 percent of the POR is split evenly between greater than a 1.0 kcfs change and less than a -1.0 kcfs change. The changes greater 1.0 kcfs occur during flood evacuation years and are caused by different flood evacuation rules being activated at different times or changes to evacuation service levels. Figure 4-16 shows Gavins Point releases during 1984 when evacuation rules are triggered at different times of the year for each alternative. Releases under the AWS 1 and AWS 2 scenarios are made to support navigation until July, when releases are increased to begin evacuating flood waters. Releases under the AWS 3 and NP2075 begin flood evacuation releases in June. Because releases were higher under the AWS 3 and NP2075 scenarios earlier in the year, the releases return to navigation support during the fall whereas releases under the AWS 1 and AWS 2 scenarios are made to evacuate flood waters.



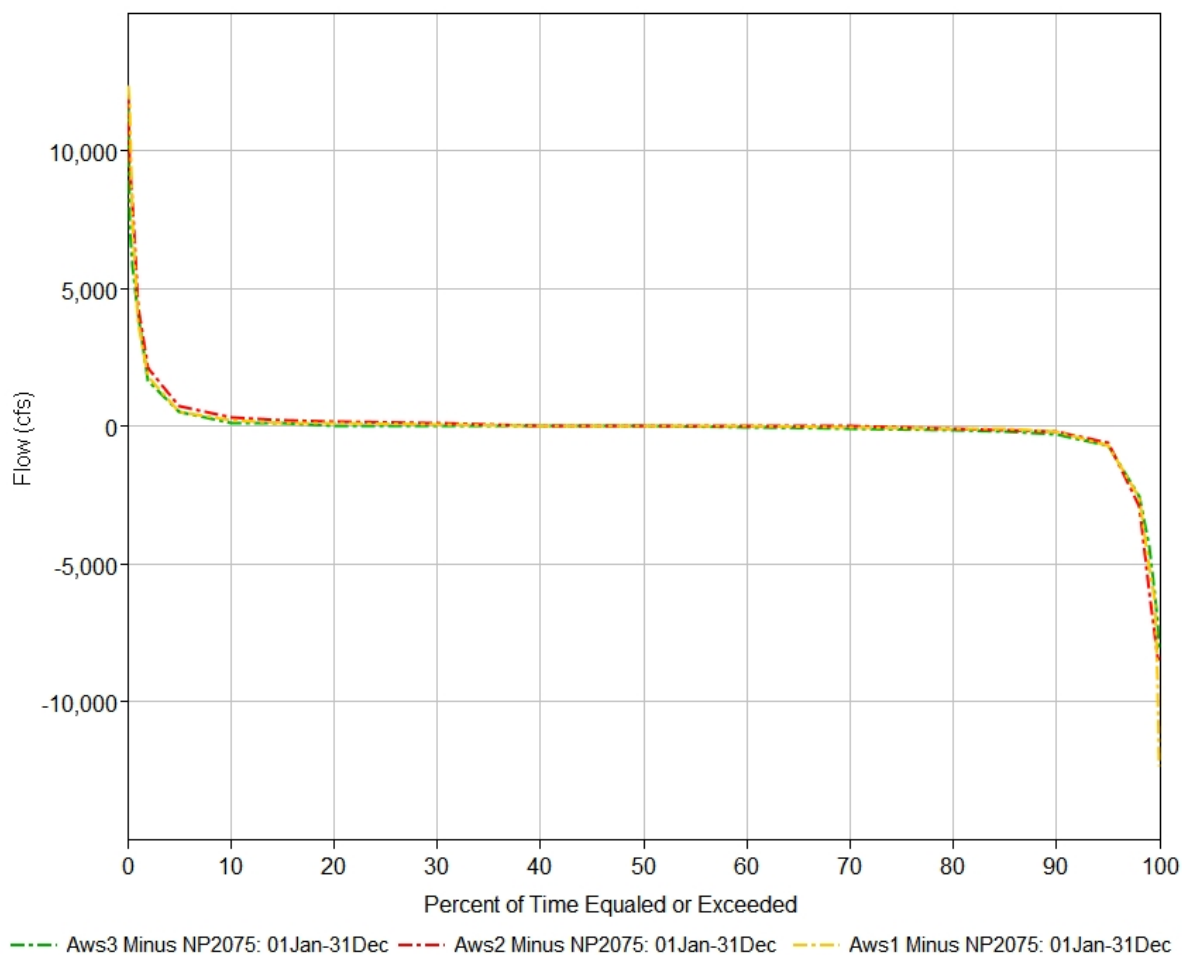
**Figure 4-15: Duration curves of the change in Gavins Point releases relative to NP2075 for each scenario.**



**Figure 4-16: Gavins Point releases during 1984, a flood evacuation year.**

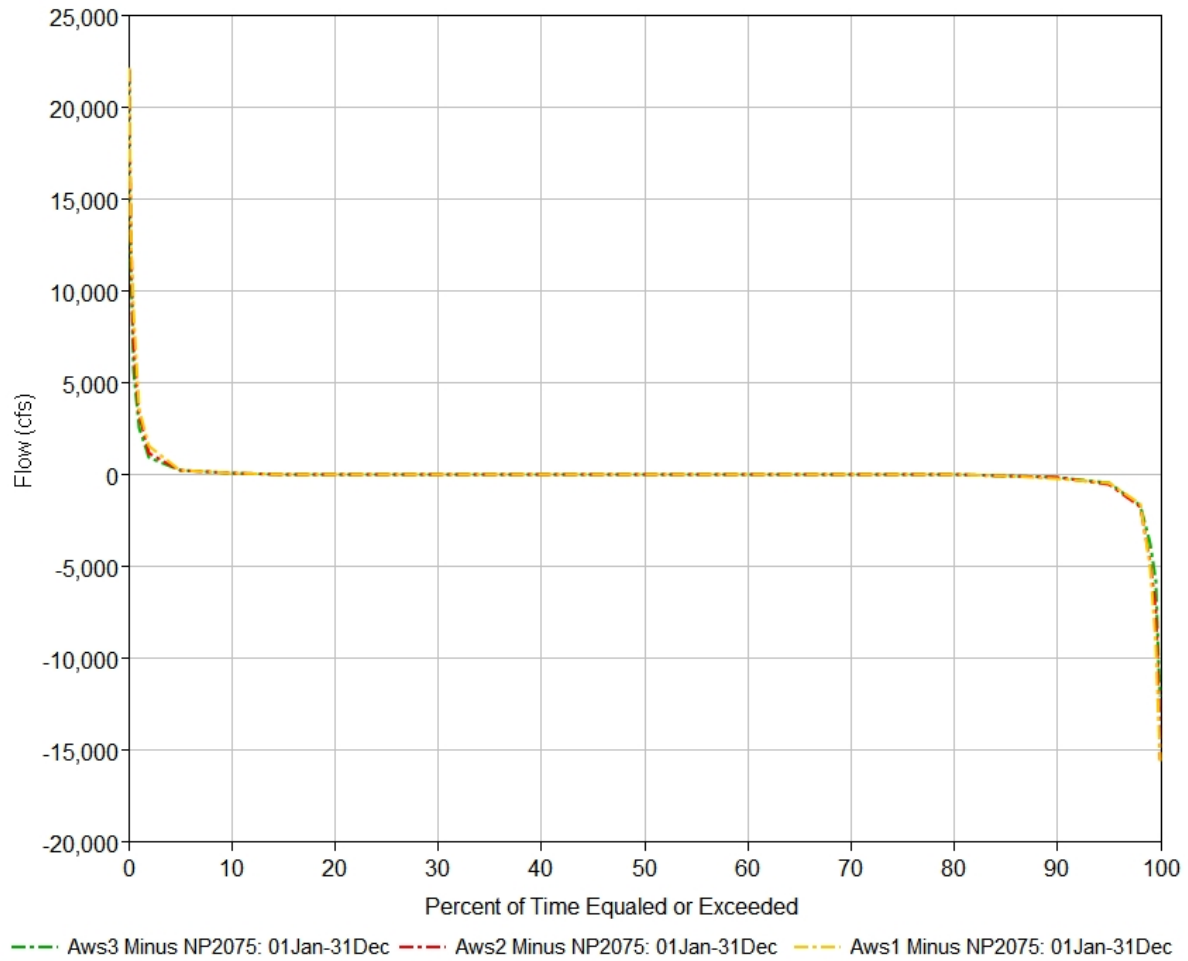
#### 4.4 RIVER FLOW

Differences in river flows will closely resemble the changes in releases at the nearest upstream reservoir. At Bismarck, the changes due to the additional water supply depletions in AWS 1, AWS 2, and AWS, 3 are nearly identical to the changes observed at Garrison, the nearest upstream reservoir. Ninety-six percent of the POR has changes less than 1.0 kcfs as shown in Figure 4-17. Changes greater than 1.0 kcfs occur because of the reasons described previously for Garrison releases.

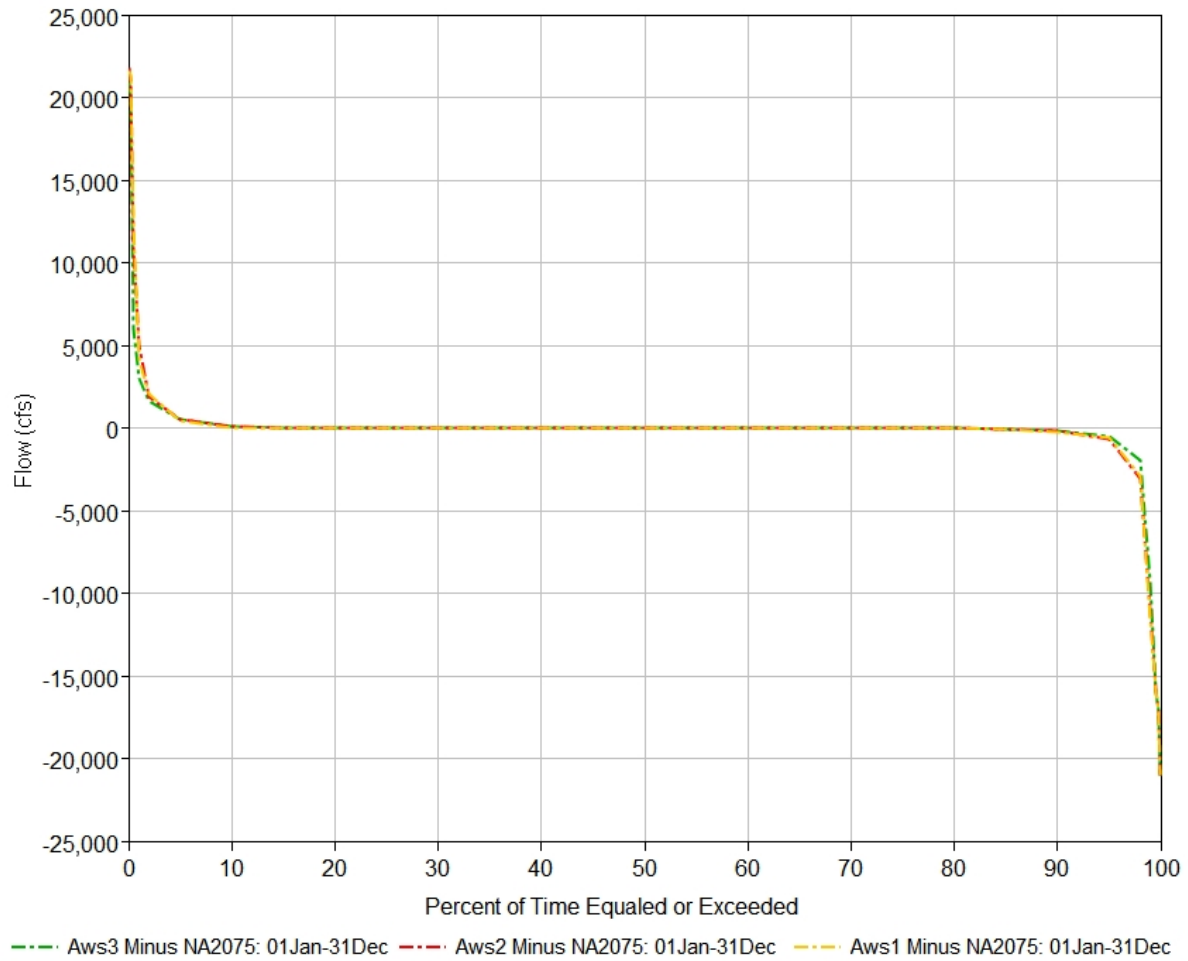


**Figure 4-17: Duration curves of the change in Bismarck ND flows relative to NP2075 for each scenario.**

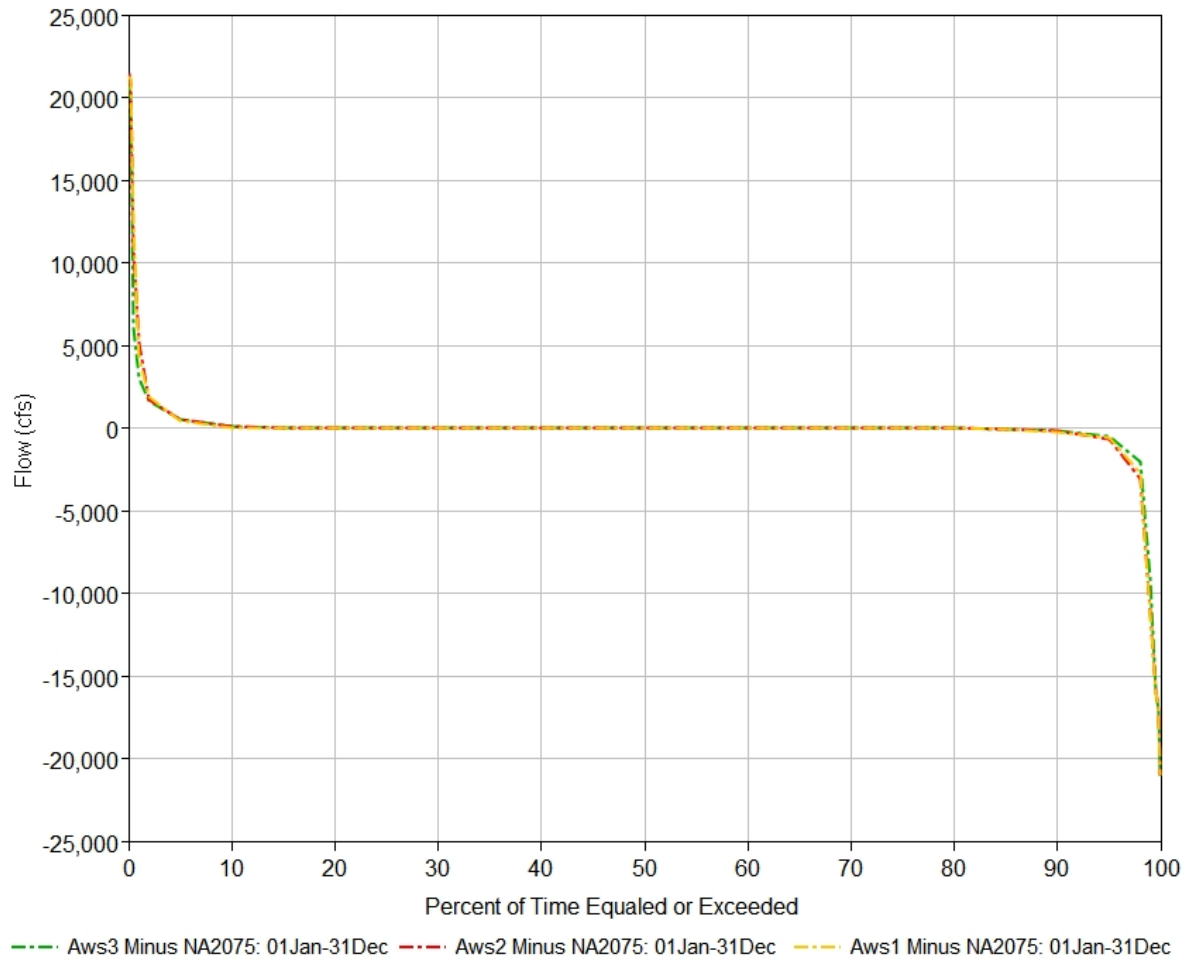
Figure 4-18 through Figure 4-21 show the duration curves of changes in river flow at Sioux City, IA; Omaha, NE; Nebraska City, NE; and Kansas City, MO, respectively. The changes due to the additional water supply depletions in AWS 1, AWS 2, and AWS, 3 are nearly identical to the changes observed at Gavins Point, the nearest upstream reservoir, with 96 percent of the POR having changes less than 1.0 kcfs. Changes greater than 1.0 kcfs occur because of the reasons described previously for Gavins Point releases.



**Figure 4-18: Duration curves of the change in Sioux City, IA flows relative to NP2075 for each scenario.**

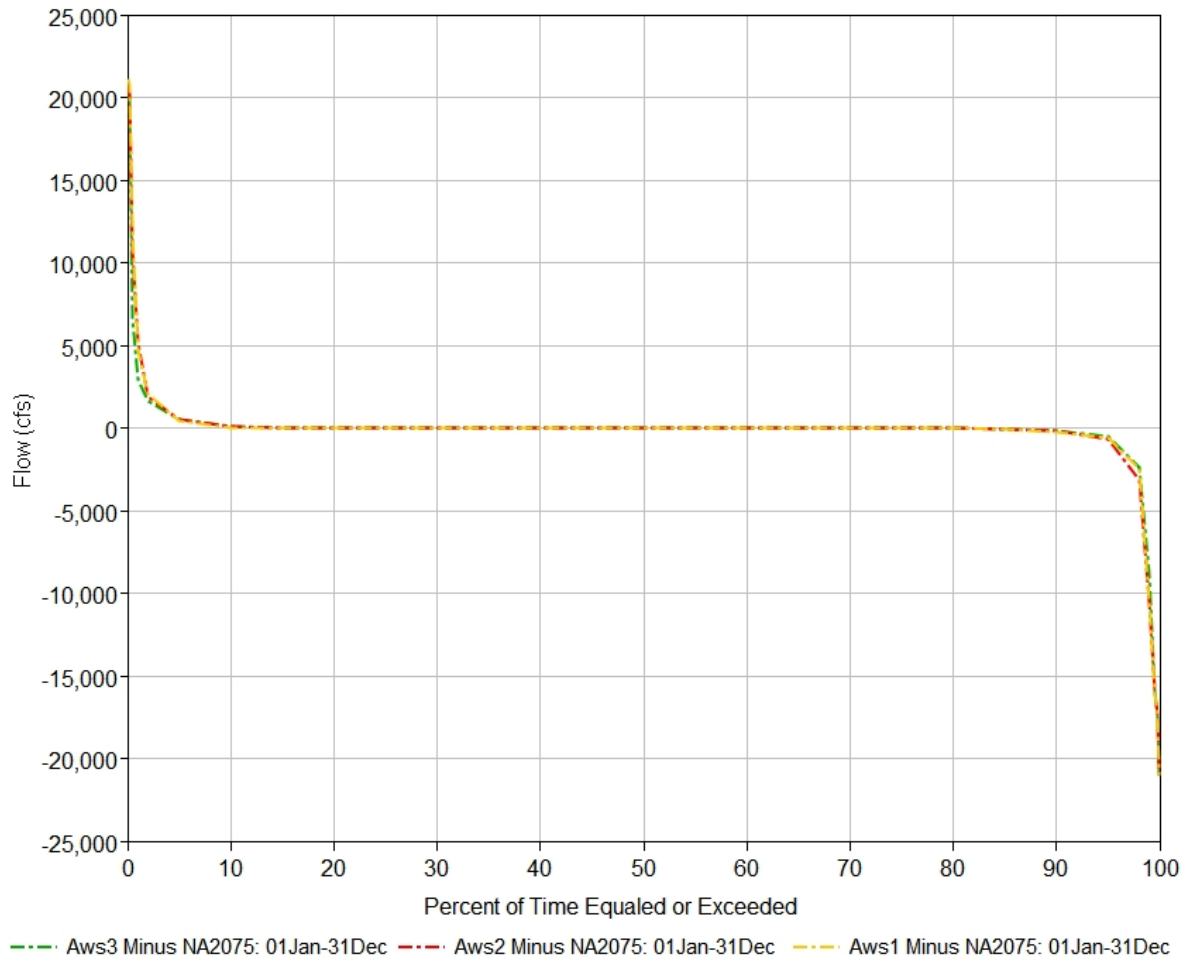


**Figure 4-19: Duration curves of the change in Omaha, NE flows relative to NP2075 for each scenario.**



**Figure 4-20: Duration curves of the change in Nebraska City, NE flows relative to NP2075 for each scenario.**





**Figure 4-21: Duration curves of the change in Kansas City, MO flows relative to NP2075 for each scenario.**

## 5 SUMMARY

In summary, the 119,500 acre-feet annual depletions for the ENDAWS project is 0.5 percent of the average annual runoff above Sioux City, Iowa. The additional ENDAWS withdrawals caused System storage to change by 0.5 MAF or less for 93 percent of the POR. Service level changed by 1.0 kcfs or less for 98 percent of the POR and navigation season length changed by 1 day or less for 90 percent of the POR. Approximately 88-90 percent of the POR have pool elevation changes at the upper three reservoirs less than 1.0 foot. Withdrawing the water from the Garrison Diversion lowers Garrison Reservoir approximately 0.1 foot over the POR compared to withdrawing the water from an intake on the Missouri River in the Garrison to Oahe reach. Impacts to the Garrison Diversion Unit could occur during extended droughts because the pool elevation of Garrison Reservoir falls below the threshold of 1804.0 feet for over 1,000 days during the 1930's drought. Approximately 93-98 percent of the POR have release changes less than 1.0 kcfs. Changes in river flows closely follow changes in releases from the next upstream reservoir.

Approximately 96 percent of the POR has flow changes less than 1.0 kcfs at Bismarck, ND; Sioux City, IA; Omaha, NE; Nebraska City, NE; and Kansas City, MO.

## **6 REFERENCES**

U.S. Army Corps of Engineers. (2018). *Missouri River Mainstem Reservoir System Master Water Control Manual*. Omaha: USACE.

U.S. Bureau of Reclamation. (2017). USBR Regional Depletions Model. USBR.

## **7 APPENDIX A: DURATION CURVE TABLES**

**Table 7-1: Duration curves of the change in mainstem storage, service level, and navigation end date relative to NP2075 for each scenario.**

|                             | Mainstem Storage         |                          |                          | Service Level            |                          |                          | Navigation End Date      |                          |                          |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                             | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 |
| Percent<br>Time<br>Exceeded | ac-ft                    | ac-ft                    | ac-ft                    | kcfs                     | kcfs                     | kcfs                     | unit                     | unit                     | unit                     |
| 0.1                         | 1072879                  | 1044429                  | 1037192                  |                          |                          |                          |                          |                          |                          |
| 0.2                         | 1046763                  | 1020129                  | 1011139                  | 2.2                      | 1.7                      | 1.7                      |                          |                          |                          |
| 0.5                         | 1000357                  | 970235                   | 961535                   | 1.2                      | 1.1                      | 1.2                      |                          |                          |                          |
| 1.0                         | 886332                   | 878109                   | 862651                   | 1.0                      | 1.0                      | 1.0                      |                          |                          |                          |
| 2.0                         | 806691                   | 783695                   | 776446                   | 0.5                      | 0.5                      | 0.3                      | 0                        | 0                        | 0                        |
| 5.0                         | 130283                   | 66241                    | 130815                   | 0.1                      | 0.1                      | 0.1                      | 0                        | 0                        | 0                        |
| 10.0                        | 26962                    | 24018                    | 32997                    | 0.0                      | 0.0                      | 0.0                      | 0                        | 0                        | 0                        |
| 15.0                        | 283                      | 7279                     | 3149                     | 0.0                      | 0.0                      | 0.0                      | 0                        | 0                        | 0                        |
| 20.0                        | -11629                   | -7133                    | -8112                    | 0.0                      | 0.0                      | 0.0                      | 0                        | 0                        | 0                        |
| 30.0                        | -33893                   | -27719                   | -33609                   | 0.0                      | 0.0                      | 0.0                      | 0                        | 0                        | 0                        |
| 40.0                        | -57762                   | -56285                   | -58118                   | 0.0                      | 0.0                      | 0.0                      | 0                        | 0                        | 0                        |
| 50.0                        | -83237                   | -88011                   | -78945                   | 0.0                      | 0.0                      | 0.0                      | 0                        | 0                        | 0                        |
| 60.0                        | -116296                  | -119287                  | -118956                  | 0.0                      | 0.0                      | 0.0                      | 0                        | 0                        | 0                        |
| 70.0                        | -157665                  | -171778                  | -162268                  | 0.0                      | 0.0                      | 0.0                      | 0                        | 0                        | 0                        |
| 80.0                        | -224592                  | -229215                  | -215461                  | -0.1                     | -0.1                     | -0.1                     | 0                        | 0                        | 0                        |
| 85.0                        | -301022                  | -299705                  | -273715                  | -0.1                     | -0.1                     | -0.1                     | -1                       | 0                        | -1                       |
| 90.0                        | -466681                  | -467078                  | -446895                  | -0.1                     | -0.2                     | -0.1                     | -1                       | -1                       | -1                       |
| 95.0                        | -717065                  | -721229                  | -700495                  | -0.3                     | -0.3                     | -0.3                     | -2                       | -2                       | -2                       |
| 98.0                        | -889665                  | -881052                  | -843981                  | -1.0                     | -1.0                     | -1.0                     | -6                       | -6                       | -6                       |
| 99.0                        | -929876                  | -931387                  | -894215                  | -3.0                     | -3.0                     | -2.8                     |                          |                          |                          |
| 99.5                        | -938956                  | -937416                  | -904254                  | -5.0                     | -5.0                     | -4.9                     |                          |                          |                          |
| 99.8                        | -983402                  | -1110117                 | -906982                  | -5.0                     | -5.6                     | -5.0                     |                          |                          |                          |
| 99.9                        | -1204170                 | -1493215                 | -1108932                 |                          |                          |                          |                          |                          |                          |

**Table 7-2: Duration curves of the change in releases at Fort Peck, Garrison, and Oahe relative to NP2075 for each scenario.**

|                             | Fort Peck Release        |                          |                          | Garrison Release         |                          |                          | Oahe Release             |                          |                          |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                             | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 |
| Percent<br>Time<br>Exceeded | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      |
| 0.1                         | 7192                     | 7038                     | 7033                     | 11730                    | 11705                    | 11514                    | 23673                    | 23204                    | 23188                    |
| 0.2                         | 6845                     | 4664                     | 4379                     | 10461                    | 9899                     | 7553                     | 14793                    | 14596                    | 12116                    |
| 0.5                         | 4128                     | 3129                     | 2642                     | 7477                     | 8530                     | 6361                     | 10618                    | 10221                    | 9415                     |
| 1.0                         | 1680                     | 1717                     | 1475                     | 4039                     | 4502                     | 3978                     | 5713                     | 6786                     | 5264                     |
| 2.0                         | 787                      | 900                      | 656                      | 1818                     | 2090                     | 1738                     | 3200                     | 3348                     | 2642                     |
| 5.0                         | 200                      | 200                      | 200                      | 557                      | 700                      | 500                      | 969                      | 952                      | 1002                     |
| 10.0                        | 100                      | 100                      | 100                      | 200                      | 300                      | 117                      | 555                      | 516                      | 532                      |
| 15.0                        | 100                      | 100                      | 100                      | 123                      | 200                      | 100                      | 403                      | 367                      | 371                      |
| 20.0                        | 100                      | 94                       | 100                      | 100                      | 145                      | 7                        | 294                      | 267                      | 267                      |
| 30.0                        | 0                        | 0                        | 0                        | 48                       | 100                      | 0                        | 129                      | 117                      | 133                      |
| 40.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 33                       | 32                       | 50                       |
| 50.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | -17                      | 0                        | 0                        |
| 60.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | -54                      | -83                      | -89                      | -97                      |
| 70.0                        | 0                        | 0                        | 0                        | -44                      | -14                      | -100                     | -200                     | -183                     | -198                     |
| 80.0                        | -55                      | -94                      | -74                      | -100                     | -100                     | -148                     | -355                     | -351                     | -339                     |
| 85.0                        | -100                     | -100                     | -100                     | -103                     | -128                     | -200                     | -477                     | -468                     | -452                     |
| 90.0                        | -100                     | -100                     | -100                     | -200                     | -200                     | -297                     | -694                     | -618                     | -679                     |
| 95.0                        | -300                     | -300                     | -200                     | -661                     | -653                     | -700                     | -1283                    | -1364                    | -1243                    |
| 98.0                        | -700                     | -700                     | -529                     | -2533                    | -2890                    | -2614                    | -3752                    | -4395                    | -3301                    |
| 99.0                        | -1862                    | -1362                    | -1275                    | -5302                    | -6053                    | -4554                    | -7445                    | -8430                    | -6816                    |
| 99.5                        | -4170                    | -2800                    | -2477                    | -6260                    | -7795                    | -6160                    | -9850                    | -10246                   | -9321                    |
| 99.8                        | -6664                    | -4675                    | -4513                    | -9844                    | -8460                    | -7865                    | -13148                   | -13201                   | -10664                   |
| 99.9                        | -7676                    | -6841                    | -6929                    | -12458                   | -8497                    | -8074                    | -13889                   | -13810                   | -14317                   |

**Table 7-3: Duration curves of the change in pool elevation at Fort Peck, Garrison, and Oahe relative to NP2075 for each scenario.**

|                             | Fort Peck Elevation      |                          |                          | Garrison Elevation       |                          |                          | Oahe Elevation           |                          |                          |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                             | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 |
| Percent<br>Time<br>Exceeded | ft                       | ft                       | ft                       | ft                       | ft                       | ft                       | ft                       | ft                       | ft                       |
| 0.1                         | 3.0                      | 3.0                      | 3.0                      | 3.3                      | 3.3                      | 3.2                      | 2.3                      | 2.3                      | 2.3                      |
| 0.2                         | 2.8                      | 2.8                      | 2.8                      | 3.3                      | 3.2                      | 3.2                      | 2.2                      | 2.2                      | 2.2                      |
| 0.5                         | 1.0                      | 1.0                      | 1.1                      | 2.6                      | 2.4                      | 2.5                      | 1.7                      | 1.6                      | 1.5                      |
| 1.0                         | 0.8                      | 0.8                      | 0.8                      | 1.7                      | 1.6                      | 1.8                      | 1.4                      | 1.3                      | 0.8                      |
| 2.0                         | 0.4                      | 0.5                      | 0.4                      | 1.2                      | 1.0                      | 1.3                      | 0.6                      | 0.8                      | 0.6                      |
| 5.0                         | 0.1                      | 0.1                      | 0.1                      | 0.4                      | 0.4                      | 0.3                      | 0.3                      | 0.3                      | 0.2                      |
| 10.0                        | 0.0                      | 0.0                      | 0.0                      | 0.2                      | 0.1                      | 0.1                      | 0.1                      | 0.1                      | 0.1                      |
| 15.0                        | 0.0                      | 0.0                      | 0.0                      | 0.1                      | 0.0                      | 0.1                      | 0.0                      | 0.0                      | 0.0                      |
| 20.0                        | 0.0                      | 0.0                      | 0.0                      | 0.0                      | 0.0                      | 0.0                      | 0.0                      | 0.0                      | 0.0                      |
| 30.0                        | 0.0                      | 0.0                      | 0.0                      | 0.0                      | -0.1                     | 0.0                      | 0.0                      | 0.0                      | -0.1                     |
| 40.0                        | -0.1                     | 0.0                      | 0.0                      | -0.1                     | -0.1                     | -0.1                     | -0.1                     | 0.0                      | -0.1                     |
| 50.0                        | -0.1                     | -0.1                     | -0.1                     | -0.2                     | -0.2                     | -0.1                     | -0.1                     | -0.1                     | -0.1                     |
| 60.0                        | -0.1                     | -0.1                     | -0.1                     | -0.2                     | -0.3                     | -0.2                     | -0.1                     | -0.1                     | -0.2                     |
| 70.0                        | -0.2                     | -0.2                     | -0.2                     | -0.3                     | -0.3                     | -0.3                     | -0.2                     | -0.2                     | -0.2                     |
| 80.0                        | -0.3                     | -0.3                     | -0.3                     | -0.5                     | -0.5                     | -0.4                     | -0.3                     | -0.3                     | -0.3                     |
| 85.0                        | -0.4                     | -0.4                     | -0.3                     | -0.8                     | -0.9                     | -0.7                     | -0.4                     | -0.4                     | -0.4                     |
| 90.0                        | -0.8                     | -0.8                     | -0.7                     | -1.4                     | -1.4                     | -1.1                     | -0.8                     | -0.7                     | -0.8                     |
| 95.0                        | -1.4                     | -1.4                     | -1.2                     | -1.9                     | -2.0                     | -1.5                     | -1.3                     | -1.3                     | -1.4                     |
| 98.0                        | -1.7                     | -1.7                     | -1.6                     | -2.2                     | -2.3                     | -1.8                     | -1.4                     | -1.4                     | -1.6                     |
| 99.0                        | -1.9                     | -1.9                     | -1.8                     | -2.5                     | -2.6                     | -2.1                     | -1.6                     | -1.5                     | -1.7                     |
| 99.5                        | -1.9                     | -1.9                     | -1.8                     | -2.7                     | -2.7                     | -2.5                     | -1.7                     | -1.6                     | -1.8                     |
| 99.8                        | -2.0                     | -1.9                     | -1.8                     | -2.9                     | -3.2                     | -2.8                     | -1.8                     | -1.7                     | -1.8                     |
| 99.9                        | -3.0                     | -2.0                     | -1.8                     | -3.1                     | -3.3                     | -3.2                     | -2.5                     | -1.8                     | -1.9                     |

**Table 7-4: Duration curves of the change in flow at Bismarck, ND, releases at Gavins Point, and flow at Sioux City, IA relative to NP2075 for each scenario.**

|                             | Bismarck Flow            |                          |                          | Gavins Point Release     |                          |                          | Sioux City Flow          |                          |                          |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                             | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 |
| Percent<br>Time<br>Exceeded | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      |
| 0.1                         | 12346                    | 12002                    | 11829                    | 23035                    | 22945                    | 22732                    | 22122                    | 22034                    | 21927                    |
| 0.2                         | 11699                    | 9525                     | 7339                     | 13728                    | 13724                    | 11043                    | 13310                    | 13210                    | 11842                    |
| 0.5                         | 7389                     | 8123                     | 5803                     | 8535                     | 7090                     | 6027                     | 8861                     | 7091                     | 5666                     |
| 1.0                         | 3749                     | 4368                     | 4035                     | 3818                     | 3262                     | 2473                     | 3497                     | 3213                     | 2501                     |
| 2.0                         | 1811                     | 2088                     | 1633                     | 1282                     | 1280                     | 719                      | 1538                     | 1147                     | 870                      |
| 5.0                         | 529                      | 722                      | 500                      | 200                      | 197                      | 200                      | 200                      | 226                      | 205                      |
| 10.0                        | 200                      | 300                      | 110                      | 5                        | 0                        | 17                       | 7                        | 5                        | 16                       |
| 15.0                        | 120                      | 200                      | 95                       | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 20.0                        | 100                      | 133                      | 12                       | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 30.0                        | 42                       | 95                       | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 40.0                        | 0                        | 8                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 50.0                        | 0                        | 0                        | -1                       | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 60.0                        | 0                        | 0                        | -56                      | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 70.0                        | -43                      | -15                      | -100                     | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 80.0                        | -100                     | -100                     | -139                     | -48                      | -33                      | -48                      | -50                      | -48                      | -49                      |
| 85.0                        | -111                     | -130                     | -200                     | -100                     | -100                     | -100                     | -100                     | -104                     | -100                     |
| 90.0                        | -218                     | -200                     | -285                     | -247                     | -217                     | -226                     | -236                     | -225                     | -230                     |
| 95.0                        | -714                     | -628                     | -700                     | -520                     | -544                     | -500                     | -536                     | -555                     | -500                     |
| 98.0                        | -2626                    | -2915                    | -2578                    | -1618                    | -1820                    | -1725                    | -1629                    | -1837                    | -1744                    |
| 99.0                        | -5104                    | -5981                    | -4360                    | -5197                    | -4740                    | -3826                    | -5114                    | -4781                    | -3796                    |
| 99.5                        | -6294                    | -7599                    | -6104                    | -9843                    | -8138                    | -5692                    | -9313                    | -7510                    | -5776                    |
| 99.8                        | -9210                    | -8418                    | -7111                    | -13479                   | -12058                   | -10464                   | -13477                   | -11981                   | -10439                   |
| 99.9                        | -12351                   | -8499                    | -8132                    | -15937                   | -15826                   | -12185                   | -15660                   | -15540                   | -12100                   |

**Table 7-5: Duration curves of the change in flow at Omaha, NE; Nebraska City, NE; and Kansas City, MO relative to NP2075 for each scenario.**

|                             | Omaha Flow               |                          |                          | Nebraska City Flow       |                          |                          | Kansas City Flow         |                          |                          |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                             | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 | AWS 1<br>Minus<br>NP2075 | AWS 2<br>Minus<br>NP2075 | AWS 3<br>Minus<br>NP2075 |
| Percent<br>Time<br>Exceeded | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      | cfs                      |
| 0.1                         | 21344                    | 21259                    | 21243                    | 21003                    | 20921                    | 20941                    | 19919                    | 19816                    | 19953                    |
| 0.2                         | 13006                    | 12782                    | 12554                    | 12869                    | 12597                    | 12837                    | 12679                    | 12175                    | 13699                    |
| 0.5                         | 9004                     | 7190                     | 5205                     | 8957                     | 7245                     | 5036                     | 8752                     | 7444                     | 4942                     |
| 1.0                         | 3068                     | 3299                     | 2596                     | 3028                     | 3403                     | 2587                     | 3600                     | 3617                     | 2781                     |
| 2.0                         | 1503                     | 1230                     | 874                      | 1505                     | 1174                     | 874                      | 1370                     | 1082                     | 849                      |
| 5.0                         | 200                      | 237                      | 210                      | 200                      | 240                      | 207                      | 205                      | 234                      | 207                      |
| 10.0                        | 8                        | 7                        | 20                       | 10                       | 10                       | 22                       | 13                       | 6                        | 26                       |
| 15.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 20.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 30.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 40.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 50.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 60.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 70.0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        | 0                        |
| 80.0                        | -55                      | -49                      | -51                      | -60                      | -50                      | -53                      | -60                      | -51                      | -51                      |
| 85.0                        | -104                     | -107                     | -99                      | -108                     | -108                     | -99                      | -118                     | -113                     | -99                      |
| 90.0                        | -234                     | -204                     | -211                     | -234                     | -208                     | -213                     | -238                     | -212                     | -213                     |
| 95.0                        | -539                     | -560                     | -513                     | -533                     | -558                     | -515                     | -526                     | -571                     | -506                     |
| 98.0                        | -1515                    | -1668                    | -1731                    | -1524                    | -1705                    | -1741                    | -1500                    | -1666                    | -1747                    |
| 99.0                        | -5116                    | -4793                    | -3770                    | -5162                    | -4786                    | -3759                    | -5208                    | -4820                    | -3896                    |
| 99.5                        | -8918                    | -7156                    | -5865                    | -8852                    | -7141                    | -5917                    | -8562                    | -7093                    | -6041                    |
| 99.8                        | -13090                   | -11827                   | -10413                   | -12849                   | -11696                   | -10399                   | -11909                   | -11257                   | -10351                   |
| 99.9                        | -15395                   | -15291                   | -11934                   | -15273                   | -15177                   | -11792                   | -14849                   | -14790                   | -11318                   |



## **8 APPENDIX B: ENDAWS DEPLETIONS**

**Table 8-1: ENDAWS depletions.**

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1930-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1930-02 | 165                                                                                  | 9166                                                 | 9166                         | 8055        | 1111                                    |
| 1930-03 | 162                                                                                  | 9962                                                 | 9962                         | 8732        | 1230                                    |
| 1930-04 | 34                                                                                   | 1994                                                 | 1994                         | 804         | 1190                                    |
| 1930-05 | 161                                                                                  | 9929                                                 | 9929                         | 8699        | 1230                                    |
| 1930-06 | 143                                                                                  | 8503                                                 | 8503                         | 7313        | 1190                                    |
| 1930-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1930-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1930-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1930-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1930-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1930-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1931-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1931-02 | 165                                                                                  | 9166                                                 | 9166                         | 8055        | 1111                                    |
| 1931-03 | 162                                                                                  | 9962                                                 | 9962                         | 8732        | 1230                                    |
| 1931-04 | 34                                                                                   | 1994                                                 | 1994                         | 804         | 1190                                    |
| 1931-05 | 161                                                                                  | 9929                                                 | 9929                         | 8699        | 1230                                    |
| 1931-06 | 143                                                                                  | 8503                                                 | 8503                         | 7313        | 1190                                    |
| 1931-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1931-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1931-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1931-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1931-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1931-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1932-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1932-02 | 165                                                                                  | 9493                                                 | 9493                         | 8343        | 1151                                    |
| 1932-03 | 84                                                                                   | 5191                                                 | 5191                         | 3961        | 1230                                    |
| 1932-04 | 32                                                                                   | 1883                                                 | 1883                         | 692         | 1190                                    |
| 1932-05 | 84                                                                                   | 5147                                                 | 5147                         | 3917        | 1230                                    |
| 1932-06 | 136                                                                                  | 8105                                                 | 8105                         | 6914        | 1190                                    |
| 1932-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1932-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1932-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1932-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1932-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1932-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1933-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1933-02 | 165                                                                                  | 9166                                                 | 9166                         | 8055        | 1111                                    |
| 1933-03 | 64                                                                                   | 3951                                                 | 3951                         | 2721        | 1230                                    |
| 1933-04 | 32                                                                                   | 1883                                                 | 1883                         | 692         | 1190                                    |
| 1933-05 | 77                                                                                   | 4720                                                 | 4720                         | 3490        | 1230                                    |
| 1933-06 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1933-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1933-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1933-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1933-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1933-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1933-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1934-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1934-02 | 165                                                                                  | 9166                                                 | 9166                         | 8055        | 1111                                    |
| 1934-03 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1934-04 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1934-05 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1934-06 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1934-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1934-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1934-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1934-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1934-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1934-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1935-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1935-02 | 165                                                                                  | 9166                                                 | 9166                         | 8055        | 1111                                    |
| 1935-03 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1935-04 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1935-05 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1935-06 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1935-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1935-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1935-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1935-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1935-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1935-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1936-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1936-02 | 165                                                                                  | 9493                                                 | 9493                         | 8343        | 1151                                    |
| 1936-03 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1936-04 | 32                                                                                   | 1883                                                 | 1883                         | 692         | 1190                                    |
| 1936-05 | 75                                                                                   | 4614                                                 | 4614                         | 3384        | 1230                                    |
| 1936-06 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1936-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1936-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1936-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1936-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1936-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1936-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1937-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1937-02 | 165                                                                                  | 9166                                                 | 9166                         | 8055        | 1111                                    |
| 1937-03 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1937-04 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1937-05 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1937-06 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1937-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1937-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1937-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1937-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1937-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1937-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1938-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1938-02 | 165                                                                                  | 9166                                                 | 9166                         | 8055        | 1111                                    |
| 1938-03 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1938-04 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1938-05 | 120                                                                                  | 7393                                                 | 7393                         | 6163        | 1230                                    |
| 1938-06 | 74                                                                                   | 4383                                                 | 4383                         | 3193        | 1190                                    |
| 1938-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1938-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1938-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1938-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1938-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily Total Missouri River Depletions (cfs) | AWS 3                                       | AWS 2                  | AWS 1    |                                |
|---------|-----------------------------------------------------------------------------|---------------------------------------------|------------------------|----------|--------------------------------|
|         |                                                                             | 100% Canal (Garrison Reservoir) (acre-feet) | 100% River (acre-feet) | River AF | Canal (CND 20 CFS) (acre-feet) |
| 1938-12 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1939-01 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1939-02 | 165                                                                         | 9166                                        | 9166                   | 8055     | 1111                           |
| 1939-03 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1939-04 | 118                                                                         | 7006                                        | 7006                   | 5815     | 1190                           |
| 1939-05 | 51                                                                          | 3140                                        | 3140                   | 1910     | 1230                           |
| 1939-06 | 165                                                                         | 9821                                        | 9821                   | 8630     | 1190                           |
| 1939-07 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1939-08 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1939-09 | 165                                                                         | 9821                                        | 9821                   | 8630     | 1190                           |
| 1939-10 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1939-11 | 165                                                                         | 9821                                        | 9821                   | 8630     | 1190                           |
| 1939-12 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1940-01 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1940-02 | 165                                                                         | 9493                                        | 9493                   | 8343     | 1151                           |
| 1940-03 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1940-04 | 165                                                                         | 9821                                        | 9821                   | 8630     | 1190                           |
| 1940-05 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1940-06 | 165                                                                         | 9821                                        | 9821                   | 8630     | 1190                           |
| 1940-07 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1940-08 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1940-09 | 165                                                                         | 9821                                        | 9821                   | 8630     | 1190                           |
| 1940-10 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1940-11 | 165                                                                         | 9821                                        | 9821                   | 8630     | 1190                           |
| 1940-12 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1941-01 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1941-02 | 165                                                                         | 9166                                        | 9166                   | 8055     | 1111                           |
| 1941-03 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1941-04 | 32                                                                          | 1902                                        | 1902                   | 712      | 1190                           |
| 1941-05 | 32                                                                          | 1958                                        | 1958                   | 728      | 1230                           |
| 1941-06 | 34                                                                          | 2048                                        | 2048                   | 858      | 1190                           |
| 1941-07 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1941-08 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1941-09 | 165                                                                         | 9821                                        | 9821                   | 8630     | 1190                           |
| 1941-10 | 165                                                                         | 10148                                       | 10148                  | 8918     | 1230                           |
| 1941-11 | 114                                                                         | 6797                                        | 6797                   | 5607     | 1190                           |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1941-12 | 96                                                                                   | 5928                                                 | 5928                         | 4698        | 1230                                    |
| 1942-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1942-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1942-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1942-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1942-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1942-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1942-07 | 58                                                                                   | 3549                                                 | 3549                         | 2319        | 1230                                    |
| 1942-08 | 72                                                                                   | 4441                                                 | 4441                         | 3211        | 1230                                    |
| 1942-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1942-10 | 40                                                                                   | 2477                                                 | 2477                         | 1247        | 1230                                    |
| 1942-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1942-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1943-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1943-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1943-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1943-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1943-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1943-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1943-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1943-08 | 42                                                                                   | 2573                                                 | 2573                         | 1343        | 1230                                    |
| 1943-09 | 67                                                                                   | 4007                                                 | 4007                         | 2817        | 1190                                    |
| 1943-10 | 72                                                                                   | 4424                                                 | 4424                         | 3194        | 1230                                    |
| 1943-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1943-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1944-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1944-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1944-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1944-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1944-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1944-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1944-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1944-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1944-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1944-10 | 52                                                                                   | 3223                                                 | 3223                         | 1993        | 1230                                    |
| 1944-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1944-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1945-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1945-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1945-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1945-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1945-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1945-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1945-07 | 56                                                                                   | 3470                                                 | 3470                         | 2240        | 1230                                    |
| 1945-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1945-09 | 154                                                                                  | 9151                                                 | 9151                         | 7960        | 1190                                    |
| 1945-10 | 47                                                                                   | 2909                                                 | 2909                         | 1679        | 1230                                    |
| 1945-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1945-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1946-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1946-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1946-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1946-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1946-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1946-06 | 34                                                                                   | 2047                                                 | 2047                         | 857         | 1190                                    |
| 1946-07 | 47                                                                                   | 2863                                                 | 2863                         | 1633        | 1230                                    |
| 1946-08 | 72                                                                                   | 4415                                                 | 4415                         | 3185        | 1230                                    |
| 1946-09 | 57                                                                                   | 3406                                                 | 3406                         | 2216        | 1190                                    |
| 1946-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1946-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1946-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1947-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1947-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1947-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1947-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1947-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1947-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1947-07 | 32                                                                                   | 1970                                                 | 1970                         | 740         | 1230                                    |
| 1947-08 | 100                                                                                  | 6165                                                 | 6165                         | 4934        | 1230                                    |
| 1947-09 | 105                                                                                  | 6241                                                 | 6241                         | 5051        | 1190                                    |
| 1947-10 | 45                                                                                   | 2770                                                 | 2770                         | 1539        | 1230                                    |
| 1947-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1947-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1948-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1948-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1948-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1948-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1948-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1948-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1948-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1948-08 | 69                                                                                   | 4244                                                 | 4244                         | 3014        | 1230                                    |
| 1948-09 | 73                                                                                   | 4334                                                 | 4334                         | 3144        | 1190                                    |
| 1948-10 | 81                                                                                   | 5003                                                 | 5003                         | 3773        | 1230                                    |
| 1948-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1948-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1949-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1949-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1949-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1949-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1949-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1949-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1949-07 | 41                                                                                   | 2516                                                 | 2516                         | 1286        | 1230                                    |
| 1949-08 | 36                                                                                   | 2196                                                 | 2196                         | 966         | 1230                                    |
| 1949-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1949-10 | 98                                                                                   | 6024                                                 | 6024                         | 4794        | 1230                                    |
| 1949-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1949-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1950-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1950-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1950-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1950-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1950-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1950-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1950-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1950-08 | 53                                                                                   | 3238                                                 | 3238                         | 2008        | 1230                                    |
| 1950-09 | 50                                                                                   | 2950                                                 | 2950                         | 1759        | 1190                                    |
| 1950-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1950-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |



| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1950-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1951-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1951-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1951-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1951-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1951-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1951-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1951-07 | 32                                                                                   | 1970                                                 | 1970                         | 740         | 1230                                    |
| 1951-08 | 79                                                                                   | 4889                                                 | 4889                         | 3659        | 1230                                    |
| 1951-09 | 32                                                                                   | 1880                                                 | 1880                         | 690         | 1190                                    |
| 1951-10 | 47                                                                                   | 2893                                                 | 2893                         | 1663        | 1230                                    |
| 1951-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1951-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1952-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1952-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1952-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1952-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1952-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1952-06 | 42                                                                                   | 2480                                                 | 2480                         | 1290        | 1190                                    |
| 1952-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1952-08 | 78                                                                                   | 4802                                                 | 4802                         | 3572        | 1230                                    |
| 1952-09 | 72                                                                                   | 4270                                                 | 4270                         | 3080        | 1190                                    |
| 1952-10 | 76                                                                                   | 4684                                                 | 4684                         | 3453        | 1230                                    |
| 1952-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1952-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1953-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1953-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1953-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1953-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1953-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1953-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1953-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1953-08 | 75                                                                                   | 4610                                                 | 4610                         | 3380        | 1230                                    |
| 1953-09 | 84                                                                                   | 4995                                                 | 4995                         | 3805        | 1190                                    |
| 1953-10 | 70                                                                                   | 4316                                                 | 4316                         | 3086        | 1230                                    |
| 1953-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1953-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1954-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1954-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1954-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1954-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1954-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1954-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1954-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1954-08 | 35                                                                                   | 2150                                                 | 2150                         | 920         | 1230                                    |
| 1954-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1954-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1954-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1954-12 | 35                                                                                   | 2162                                                 | 2162                         | 932         | 1230                                    |
| 1955-01 | 39                                                                                   | 2374                                                 | 2374                         | 1144        | 1230                                    |
| 1955-02 | 39                                                                                   | 2139                                                 | 2139                         | 1028        | 1111                                    |
| 1955-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1955-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1955-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1955-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1955-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1955-08 | 66                                                                                   | 4057                                                 | 4057                         | 2827        | 1230                                    |
| 1955-09 | 85                                                                                   | 5071                                                 | 5071                         | 3880        | 1190                                    |
| 1955-10 | 66                                                                                   | 4086                                                 | 4086                         | 2856        | 1230                                    |
| 1955-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1955-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1956-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1956-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1956-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1956-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1956-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1956-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1956-07 | 42                                                                                   | 2605                                                 | 2605                         | 1375        | 1230                                    |
| 1956-08 | 71                                                                                   | 4363                                                 | 4363                         | 3133        | 1230                                    |
| 1956-09 | 164                                                                                  | 9745                                                 | 9745                         | 8554        | 1190                                    |
| 1956-10 | 148                                                                                  | 9127                                                 | 9127                         | 7897        | 1230                                    |
| 1956-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1956-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1957-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1957-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1957-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1957-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1957-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1957-06 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1957-07 | 57                                                                                   | 3500                                                 | 3500                         | 2269        | 1230                                    |
| 1957-08 | 43                                                                                   | 2651                                                 | 2651                         | 1421        | 1230                                    |
| 1957-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1957-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1957-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1957-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1958-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1958-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1958-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1958-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1958-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1958-06 | 33                                                                                   | 1977                                                 | 1977                         | 787         | 1190                                    |
| 1958-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1958-08 | 65                                                                                   | 4017                                                 | 4017                         | 2787        | 1230                                    |
| 1958-09 | 79                                                                                   | 4725                                                 | 4725                         | 3534        | 1190                                    |
| 1958-10 | 70                                                                                   | 4295                                                 | 4295                         | 3065        | 1230                                    |
| 1958-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1958-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1959-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1959-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1959-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1959-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1959-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1959-06 | 66                                                                                   | 3921                                                 | 3921                         | 2731        | 1190                                    |
| 1959-07 | 54                                                                                   | 3296                                                 | 3296                         | 2066        | 1230                                    |
| 1959-08 | 100                                                                                  | 6120                                                 | 6120                         | 4890        | 1230                                    |
| 1959-09 | 72                                                                                   | 4304                                                 | 4304                         | 3113        | 1190                                    |
| 1959-10 | 62                                                                                   | 3811                                                 | 3811                         | 2581        | 1230                                    |
| 1959-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1959-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1960-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1960-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1960-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1960-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1960-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1960-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1960-07 | 34                                                                                   | 2090                                                 | 2090                         | 860         | 1230                                    |
| 1960-08 | 111                                                                                  | 6807                                                 | 6807                         | 5577        | 1230                                    |
| 1960-09 | 78                                                                                   | 4636                                                 | 4636                         | 3446        | 1190                                    |
| 1960-10 | 112                                                                                  | 6866                                                 | 6866                         | 5636        | 1230                                    |
| 1960-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1960-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1961-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1961-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1961-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1961-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1961-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1961-06 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1961-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1961-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1961-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1961-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1961-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1961-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1962-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1962-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1962-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1962-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1962-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1962-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1962-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1962-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1962-09 | 61                                                                                   | 3634                                                 | 3634                         | 2443        | 1190                                    |
| 1962-10 | 49                                                                                   | 3017                                                 | 3017                         | 1787        | 1230                                    |
| 1962-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily Total Missouri River Depletions (cfs) | AWS 3                                       | AWS 2                  | AWS 1    |                                |
|---------|-----------------------------------------------------------------------------|---------------------------------------------|------------------------|----------|--------------------------------|
|         |                                                                             | 100% Canal (Garrison Reservoir) (acre-feet) | 100% River (acre-feet) | River AF | Canal (CND 20 CFS) (acre-feet) |
| 1962-12 | 31                                                                          | 1928                                        | 1928                   | 698      | 1230                           |
| 1963-01 | 31                                                                          | 1933                                        | 1933                   | 703      | 1230                           |
| 1963-02 | 31                                                                          | 1747                                        | 1747                   | 636      | 1111                           |
| 1963-03 | 32                                                                          | 1939                                        | 1939                   | 709      | 1230                           |
| 1963-04 | 32                                                                          | 1882                                        | 1882                   | 692      | 1190                           |
| 1963-05 | 32                                                                          | 1938                                        | 1938                   | 708      | 1230                           |
| 1963-06 | 39                                                                          | 2313                                        | 2313                   | 1123     | 1190                           |
| 1963-07 | 58                                                                          | 3567                                        | 3567                   | 2337     | 1230                           |
| 1963-08 | 71                                                                          | 4343                                        | 4343                   | 3113     | 1230                           |
| 1963-09 | 74                                                                          | 4395                                        | 4395                   | 3205     | 1190                           |
| 1963-10 | 76                                                                          | 4663                                        | 4663                   | 3433     | 1230                           |
| 1963-11 | 31                                                                          | 1869                                        | 1869                   | 679      | 1190                           |
| 1963-12 | 31                                                                          | 1928                                        | 1928                   | 698      | 1230                           |
| 1964-01 | 31                                                                          | 1933                                        | 1933                   | 703      | 1230                           |
| 1964-02 | 31                                                                          | 1810                                        | 1810                   | 659      | 1151                           |
| 1964-03 | 32                                                                          | 1939                                        | 1939                   | 709      | 1230                           |
| 1964-04 | 32                                                                          | 1882                                        | 1882                   | 692      | 1190                           |
| 1964-05 | 32                                                                          | 1938                                        | 1938                   | 708      | 1230                           |
| 1964-06 | 39                                                                          | 2330                                        | 2330                   | 1139     | 1190                           |
| 1964-07 | 32                                                                          | 1950                                        | 1950                   | 720      | 1230                           |
| 1964-08 | 58                                                                          | 3558                                        | 3558                   | 2328     | 1230                           |
| 1964-09 | 31                                                                          | 1861                                        | 1861                   | 670      | 1190                           |
| 1964-10 | 31                                                                          | 1925                                        | 1925                   | 695      | 1230                           |
| 1964-11 | 31                                                                          | 1869                                        | 1869                   | 679      | 1190                           |
| 1964-12 | 31                                                                          | 1928                                        | 1928                   | 698      | 1230                           |
| 1965-01 | 31                                                                          | 1933                                        | 1933                   | 703      | 1230                           |
| 1965-02 | 31                                                                          | 1747                                        | 1747                   | 636      | 1111                           |
| 1965-03 | 32                                                                          | 1939                                        | 1939                   | 709      | 1230                           |
| 1965-04 | 32                                                                          | 1882                                        | 1882                   | 692      | 1190                           |
| 1965-05 | 32                                                                          | 1938                                        | 1938                   | 708      | 1230                           |
| 1965-06 | 32                                                                          | 1889                                        | 1889                   | 699      | 1190                           |
| 1965-07 | 32                                                                          | 1950                                        | 1950                   | 720      | 1230                           |
| 1965-08 | 31                                                                          | 1934                                        | 1934                   | 704      | 1230                           |
| 1965-09 | 31                                                                          | 1861                                        | 1861                   | 670      | 1190                           |
| 1965-10 | 31                                                                          | 1925                                        | 1925                   | 695      | 1230                           |
| 1965-11 | 31                                                                          | 1869                                        | 1869                   | 679      | 1190                           |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1965-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1966-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1966-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1966-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1966-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1966-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1966-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1966-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1966-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1966-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1966-10 | 36                                                                                   | 2193                                                 | 2193                         | 963         | 1230                                    |
| 1966-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1966-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1967-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1967-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1967-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1967-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1967-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1967-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1967-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1967-08 | 85                                                                                   | 5225                                                 | 5225                         | 3995        | 1230                                    |
| 1967-09 | 121                                                                                  | 7211                                                 | 7211                         | 6020        | 1190                                    |
| 1967-10 | 46                                                                                   | 2827                                                 | 2827                         | 1597        | 1230                                    |
| 1967-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1967-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1968-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1968-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1968-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1968-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1968-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1968-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1968-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1968-08 | 73                                                                                   | 4477                                                 | 4477                         | 3247        | 1230                                    |
| 1968-09 | 39                                                                                   | 2318                                                 | 2318                         | 1127        | 1190                                    |
| 1968-10 | 36                                                                                   | 2241                                                 | 2241                         | 1011        | 1230                                    |
| 1968-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1968-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1969-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1969-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1969-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1969-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1969-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1969-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1969-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1969-08 | 33                                                                                   | 2028                                                 | 2028                         | 798         | 1230                                    |
| 1969-09 | 112                                                                                  | 6645                                                 | 6645                         | 5454        | 1190                                    |
| 1969-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1969-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1969-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1970-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1970-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1970-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1970-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1970-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1970-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1970-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1970-08 | 96                                                                                   | 5883                                                 | 5883                         | 4653        | 1230                                    |
| 1970-09 | 118                                                                                  | 6995                                                 | 6995                         | 5804        | 1190                                    |
| 1970-10 | 69                                                                                   | 4261                                                 | 4261                         | 3031        | 1230                                    |
| 1970-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1970-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1971-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1971-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1971-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1971-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1971-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1971-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1971-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1971-08 | 77                                                                                   | 4752                                                 | 4752                         | 3522        | 1230                                    |
| 1971-09 | 47                                                                                   | 2791                                                 | 2791                         | 1600        | 1190                                    |
| 1971-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1971-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1971-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1972-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1972-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1972-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1972-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1972-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1972-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1972-07 | 52                                                                                   | 3220                                                 | 3220                         | 1990        | 1230                                    |
| 1972-08 | 42                                                                                   | 2571                                                 | 2571                         | 1341        | 1230                                    |
| 1972-09 | 62                                                                                   | 3715                                                 | 3715                         | 2524        | 1190                                    |
| 1972-10 | 46                                                                                   | 2838                                                 | 2838                         | 1608        | 1230                                    |
| 1972-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1972-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1973-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1973-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1973-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1973-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1973-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1973-06 | 32                                                                                   | 1927                                                 | 1927                         | 737         | 1190                                    |
| 1973-07 | 105                                                                                  | 6479                                                 | 6479                         | 5249        | 1230                                    |
| 1973-08 | 156                                                                                  | 9575                                                 | 9575                         | 8345        | 1230                                    |
| 1973-09 | 55                                                                                   | 3281                                                 | 3281                         | 2091        | 1190                                    |
| 1973-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1973-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1973-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1974-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1974-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1974-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1974-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1974-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1974-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1974-07 | 32                                                                                   | 1970                                                 | 1970                         | 740         | 1230                                    |
| 1974-08 | 58                                                                                   | 3575                                                 | 3575                         | 2345        | 1230                                    |
| 1974-09 | 56                                                                                   | 3331                                                 | 3331                         | 2140        | 1190                                    |
| 1974-10 | 56                                                                                   | 3469                                                 | 3469                         | 2239        | 1230                                    |
| 1974-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |



| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1974-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1975-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1975-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1975-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1975-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1975-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1975-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1975-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1975-08 | 57                                                                                   | 3502                                                 | 3502                         | 2272        | 1230                                    |
| 1975-09 | 60                                                                                   | 3550                                                 | 3550                         | 2360        | 1190                                    |
| 1975-10 | 41                                                                                   | 2508                                                 | 2508                         | 1278        | 1230                                    |
| 1975-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1975-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1976-01 | 52                                                                                   | 3220                                                 | 3220                         | 1990        | 1230                                    |
| 1976-02 | 38                                                                                   | 2208                                                 | 2208                         | 1057        | 1151                                    |
| 1976-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1976-04 | 32                                                                                   | 1902                                                 | 1902                         | 712         | 1190                                    |
| 1976-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1976-06 | 32                                                                                   | 1917                                                 | 1917                         | 726         | 1190                                    |
| 1976-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1976-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1976-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1976-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1976-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1976-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1977-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1977-02 | 165                                                                                  | 9166                                                 | 9166                         | 8055        | 1111                                    |
| 1977-03 | 143                                                                                  | 8805                                                 | 8805                         | 7575        | 1230                                    |
| 1977-04 | 46                                                                                   | 2735                                                 | 2735                         | 1545        | 1190                                    |
| 1977-05 | 106                                                                                  | 6543                                                 | 6543                         | 5313        | 1230                                    |
| 1977-06 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1977-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1977-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1977-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1977-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1977-11 | 68                                                                                   | 4063                                                 | 4063                         | 2873        | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1977-12 | 41                                                                                   | 2532                                                 | 2532                         | 1301        | 1230                                    |
| 1978-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1978-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1978-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1978-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1978-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1978-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1978-07 | 48                                                                                   | 2928                                                 | 2928                         | 1698        | 1230                                    |
| 1978-08 | 73                                                                                   | 4506                                                 | 4506                         | 3276        | 1230                                    |
| 1978-09 | 40                                                                                   | 2378                                                 | 2378                         | 1187        | 1190                                    |
| 1978-10 | 121                                                                                  | 7420                                                 | 7420                         | 6190        | 1230                                    |
| 1978-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1978-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1979-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1979-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1979-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1979-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1979-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1979-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1979-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1979-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1979-09 | 51                                                                                   | 3049                                                 | 3049                         | 1858        | 1190                                    |
| 1979-10 | 73                                                                                   | 4496                                                 | 4496                         | 3266        | 1230                                    |
| 1979-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1979-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1980-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1980-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1980-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1980-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1980-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1980-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1980-07 | 162                                                                                  | 9953                                                 | 9953                         | 8722        | 1230                                    |
| 1980-08 | 164                                                                                  | 10116                                                | 10116                        | 8886        | 1230                                    |
| 1980-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1980-10 | 59                                                                                   | 3636                                                 | 3636                         | 2406        | 1230                                    |
| 1980-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1980-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1981-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1981-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1981-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1981-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1981-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1981-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1981-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1981-08 | 57                                                                                   | 3511                                                 | 3511                         | 2281        | 1230                                    |
| 1981-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1981-10 | 35                                                                                   | 2163                                                 | 2163                         | 933         | 1230                                    |
| 1981-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1981-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1982-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1982-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1982-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1982-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1982-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1982-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1982-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1982-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1982-09 | 65                                                                                   | 3839                                                 | 3839                         | 2649        | 1190                                    |
| 1982-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1982-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1982-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1983-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1983-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1983-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1983-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1983-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1983-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1983-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1983-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1983-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1983-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1983-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1983-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1984-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1984-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1984-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1984-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1984-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1984-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1984-07 | 33                                                                                   | 2057                                                 | 2057                         | 827         | 1230                                    |
| 1984-08 | 116                                                                                  | 7162                                                 | 7162                         | 5932        | 1230                                    |
| 1984-09 | 89                                                                                   | 5290                                                 | 5290                         | 4100        | 1190                                    |
| 1984-10 | 54                                                                                   | 3302                                                 | 3302                         | 2072        | 1230                                    |
| 1984-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1984-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1985-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1985-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1985-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1985-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1985-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1985-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1985-07 | 53                                                                                   | 3278                                                 | 3278                         | 2047        | 1230                                    |
| 1985-08 | 94                                                                                   | 5797                                                 | 5797                         | 4567        | 1230                                    |
| 1985-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1985-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1985-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1985-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1986-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1986-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1986-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1986-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1986-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1986-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1986-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1986-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1986-09 | 33                                                                                   | 1977                                                 | 1977                         | 786         | 1190                                    |
| 1986-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1986-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1986-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1987-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1987-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1987-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1987-04 | 32                                                                                   | 1883                                                 | 1883                         | 692         | 1190                                    |
| 1987-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1987-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1987-07 | 40                                                                                   | 2484                                                 | 2484                         | 1254        | 1230                                    |
| 1987-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1987-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1987-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1987-11 | 31                                                                                   | 1870                                                 | 1870                         | 679         | 1190                                    |
| 1987-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1988-01 | 36                                                                                   | 2199                                                 | 2199                         | 969         | 1230                                    |
| 1988-02 | 32                                                                                   | 1853                                                 | 1853                         | 702         | 1151                                    |
| 1988-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1988-04 | 32                                                                                   | 1883                                                 | 1883                         | 692         | 1190                                    |
| 1988-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1988-06 | 44                                                                                   | 2632                                                 | 2632                         | 1442        | 1190                                    |
| 1988-07 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1988-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1988-09 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1988-10 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1988-11 | 165                                                                                  | 9821                                                 | 9821                         | 8630        | 1190                                    |
| 1988-12 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1989-01 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1989-02 | 165                                                                                  | 9166                                                 | 9166                         | 8055        | 1111                                    |
| 1989-03 | 78                                                                                   | 4821                                                 | 4821                         | 3591        | 1230                                    |
| 1989-04 | 32                                                                                   | 1902                                                 | 1902                         | 712         | 1190                                    |
| 1989-05 | 32                                                                                   | 1958                                                 | 1958                         | 728         | 1230                                    |
| 1989-06 | 34                                                                                   | 2039                                                 | 2039                         | 848         | 1190                                    |
| 1989-07 | 99                                                                                   | 6061                                                 | 6061                         | 4831        | 1230                                    |
| 1989-08 | 165                                                                                  | 10148                                                | 10148                        | 8918        | 1230                                    |
| 1989-09 | 63                                                                                   | 3725                                                 | 3725                         | 2535        | 1190                                    |
| 1989-10 | 67                                                                                   | 4150                                                 | 4150                         | 2920        | 1230                                    |
| 1989-11 | 58                                                                                   | 3434                                                 | 3434                         | 2243        | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1989-12 | 153                                                                                  | 9381                                                 | 9381                         | 8151        | 1230                                    |
| 1990-01 | 86                                                                                   | 5259                                                 | 5259                         | 4029        | 1230                                    |
| 1990-02 | 69                                                                                   | 3831                                                 | 3831                         | 2720        | 1111                                    |
| 1990-03 | 45                                                                                   | 2787                                                 | 2787                         | 1557        | 1230                                    |
| 1990-04 | 32                                                                                   | 1902                                                 | 1902                         | 712         | 1190                                    |
| 1990-05 | 32                                                                                   | 1958                                                 | 1958                         | 728         | 1230                                    |
| 1990-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1990-07 | 57                                                                                   | 3490                                                 | 3490                         | 2260        | 1230                                    |
| 1990-08 | 133                                                                                  | 8155                                                 | 8155                         | 6925        | 1230                                    |
| 1990-09 | 113                                                                                  | 6711                                                 | 6711                         | 5521        | 1190                                    |
| 1990-10 | 63                                                                                   | 3891                                                 | 3891                         | 2661        | 1230                                    |
| 1990-11 | 91                                                                                   | 5419                                                 | 5419                         | 4228        | 1190                                    |
| 1990-12 | 135                                                                                  | 8274                                                 | 8274                         | 7043        | 1230                                    |
| 1991-01 | 132                                                                                  | 8147                                                 | 8147                         | 6917        | 1230                                    |
| 1991-02 | 47                                                                                   | 2627                                                 | 2627                         | 1516        | 1111                                    |
| 1991-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1991-04 | 70                                                                                   | 4176                                                 | 4176                         | 2986        | 1190                                    |
| 1991-05 | 32                                                                                   | 1958                                                 | 1958                         | 728         | 1230                                    |
| 1991-06 | 34                                                                                   | 1996                                                 | 1996                         | 806         | 1190                                    |
| 1991-07 | 67                                                                                   | 4101                                                 | 4101                         | 2871        | 1230                                    |
| 1991-08 | 112                                                                                  | 6883                                                 | 6883                         | 5653        | 1230                                    |
| 1991-09 | 66                                                                                   | 3930                                                 | 3930                         | 2740        | 1190                                    |
| 1991-10 | 40                                                                                   | 2477                                                 | 2477                         | 1247        | 1230                                    |
| 1991-11 | 31                                                                                   | 1870                                                 | 1870                         | 679         | 1190                                    |
| 1991-12 | 36                                                                                   | 2183                                                 | 2183                         | 953         | 1230                                    |
| 1992-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1992-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1992-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1992-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1992-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1992-06 | 34                                                                                   | 2033                                                 | 2033                         | 842         | 1190                                    |
| 1992-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1992-08 | 73                                                                                   | 4469                                                 | 4469                         | 3239        | 1230                                    |
| 1992-09 | 54                                                                                   | 3237                                                 | 3237                         | 2047        | 1190                                    |
| 1992-10 | 44                                                                                   | 2694                                                 | 2694                         | 1464        | 1230                                    |
| 1992-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1992-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1993-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1993-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1993-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1993-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1993-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1993-06 | 34                                                                                   | 2048                                                 | 2048                         | 858         | 1190                                    |
| 1993-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1993-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1993-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1993-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1993-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1993-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1994-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1994-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1994-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1994-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1994-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1994-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1994-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1994-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1994-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1994-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1994-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1994-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1995-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1995-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1995-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1995-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1995-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1995-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1995-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1995-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1995-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1995-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1995-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 1995-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1996-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1996-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 1996-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1996-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1996-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1996-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1996-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1996-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1996-09 | 38                                                                                   | 2283                                                 | 2283                         | 1092        | 1190                                    |
| 1996-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1996-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1996-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1997-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1997-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1997-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1997-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1997-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1997-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1997-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1997-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 1997-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 1997-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1997-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 1997-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 1998-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 1998-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 1998-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 1998-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 1998-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 1998-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 1998-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 1998-08 | 50                                                                                   | 3103                                                 | 3103                         | 1873        | 1230                                    |
| 1998-09 | 49                                                                                   | 2944                                                 | 2944                         | 1754        | 1190                                    |
| 1998-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 1998-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |



| Date    | 2075 Demand Scenario<br>Average Daily Total Missouri River Depletions (cfs) | AWS 3                                       | AWS 2                  | AWS 1    |                                |
|---------|-----------------------------------------------------------------------------|---------------------------------------------|------------------------|----------|--------------------------------|
|         |                                                                             | 100% Canal (Garrison Reservoir) (acre-feet) | 100% River (acre-feet) | River AF | Canal (CND 20 CFS) (acre-feet) |
| 1998-12 | 31                                                                          | 1928                                        | 1928                   | 698      | 1230                           |
| 1999-01 | 31                                                                          | 1933                                        | 1933                   | 703      | 1230                           |
| 1999-02 | 31                                                                          | 1747                                        | 1747                   | 636      | 1111                           |
| 1999-03 | 32                                                                          | 1939                                        | 1939                   | 709      | 1230                           |
| 1999-04 | 32                                                                          | 1882                                        | 1882                   | 692      | 1190                           |
| 1999-05 | 32                                                                          | 1938                                        | 1938                   | 708      | 1230                           |
| 1999-06 | 32                                                                          | 1889                                        | 1889                   | 699      | 1190                           |
| 1999-07 | 32                                                                          | 1950                                        | 1950                   | 720      | 1230                           |
| 1999-08 | 31                                                                          | 1934                                        | 1934                   | 704      | 1230                           |
| 1999-09 | 31                                                                          | 1861                                        | 1861                   | 670      | 1190                           |
| 1999-10 | 31                                                                          | 1925                                        | 1925                   | 695      | 1230                           |
| 1999-11 | 31                                                                          | 1869                                        | 1869                   | 679      | 1190                           |
| 1999-12 | 31                                                                          | 1928                                        | 1928                   | 698      | 1230                           |
| 2000-01 | 31                                                                          | 1933                                        | 1933                   | 703      | 1230                           |
| 2000-02 | 31                                                                          | 1810                                        | 1810                   | 659      | 1151                           |
| 2000-03 | 32                                                                          | 1939                                        | 1939                   | 709      | 1230                           |
| 2000-04 | 32                                                                          | 1882                                        | 1882                   | 692      | 1190                           |
| 2000-05 | 32                                                                          | 1938                                        | 1938                   | 708      | 1230                           |
| 2000-06 | 32                                                                          | 1889                                        | 1889                   | 699      | 1190                           |
| 2000-07 | 32                                                                          | 1950                                        | 1950                   | 720      | 1230                           |
| 2000-08 | 31                                                                          | 1934                                        | 1934                   | 704      | 1230                           |
| 2000-09 | 31                                                                          | 1861                                        | 1861                   | 670      | 1190                           |
| 2000-10 | 31                                                                          | 1925                                        | 1925                   | 695      | 1230                           |
| 2000-11 | 31                                                                          | 1869                                        | 1869                   | 679      | 1190                           |
| 2000-12 | 31                                                                          | 1928                                        | 1928                   | 698      | 1230                           |
| 2001-01 | 31                                                                          | 1933                                        | 1933                   | 703      | 1230                           |
| 2001-02 | 31                                                                          | 1747                                        | 1747                   | 636      | 1111                           |
| 2001-03 | 32                                                                          | 1939                                        | 1939                   | 709      | 1230                           |
| 2001-04 | 32                                                                          | 1882                                        | 1882                   | 692      | 1190                           |
| 2001-05 | 32                                                                          | 1938                                        | 1938                   | 708      | 1230                           |
| 2001-06 | 32                                                                          | 1889                                        | 1889                   | 699      | 1190                           |
| 2001-07 | 32                                                                          | 1950                                        | 1950                   | 720      | 1230                           |
| 2001-08 | 31                                                                          | 1934                                        | 1934                   | 704      | 1230                           |
| 2001-09 | 31                                                                          | 1861                                        | 1861                   | 670      | 1190                           |
| 2001-10 | 31                                                                          | 1925                                        | 1925                   | 695      | 1230                           |
| 2001-11 | 31                                                                          | 1869                                        | 1869                   | 679      | 1190                           |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 2001-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2002-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2002-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2002-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2002-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2002-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2002-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2002-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2002-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2002-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2002-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2002-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2002-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2003-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2003-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2003-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2003-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2003-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2003-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2003-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2003-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2003-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2003-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2003-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2003-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2004-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2004-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 2004-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2004-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2004-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2004-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2004-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2004-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2004-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2004-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2004-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 2004-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2005-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2005-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2005-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2005-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2005-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2005-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2005-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2005-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2005-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2005-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2005-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2005-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2006-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2006-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2006-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2006-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2006-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2006-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2006-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2006-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2006-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2006-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2006-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2006-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2007-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2007-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2007-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2007-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2007-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2007-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2007-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2007-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2007-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2007-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2007-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 2007-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2008-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2008-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 2008-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2008-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2008-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2008-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2008-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2008-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2008-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2008-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2008-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2008-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2009-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2009-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2009-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2009-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2009-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2009-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2009-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2009-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2009-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2009-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2009-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2009-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2010-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2010-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2010-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2010-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2010-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2010-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2010-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2010-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2010-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2010-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2010-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 2010-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2011-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2011-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2011-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2011-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2011-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2011-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2011-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2011-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2011-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2011-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2011-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2011-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2012-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2012-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 2012-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2012-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2012-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2012-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2012-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2012-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2012-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2012-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2012-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2012-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2013-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2013-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2013-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2013-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2013-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2013-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2013-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2013-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2013-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2013-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2013-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 2013-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2014-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2014-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2014-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2014-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2014-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2014-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2014-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2014-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2014-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2014-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2014-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2014-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2015-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2015-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2015-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2015-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2015-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2015-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2015-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2015-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2015-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2015-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2015-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2015-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2016-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2016-02 | 31                                                                                   | 1810                                                 | 1810                         | 659         | 1151                                    |
| 2016-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2016-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2016-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2016-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2016-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2016-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2016-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2016-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2016-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |

| Date    | 2075 Demand Scenario<br>Average Daily<br>Total Missouri<br>River Depletions<br>(cfs) | AWS 3                                                | AWS 2                        | AWS 1       |                                         |
|---------|--------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------|-------------|-----------------------------------------|
|         |                                                                                      | 100% Canal<br>(Garrison<br>Reservoir)<br>(acre-feet) | 100%<br>River<br>(acre-feet) | River<br>AF | Canal<br>(CND 20<br>CFS)<br>(acre-feet) |
| 2016-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2017-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2017-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2017-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2017-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2017-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2017-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2017-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2017-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2017-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2017-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2017-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2017-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2018-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2018-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |
| 2018-03 | 32                                                                                   | 1939                                                 | 1939                         | 709         | 1230                                    |
| 2018-04 | 32                                                                                   | 1882                                                 | 1882                         | 692         | 1190                                    |
| 2018-05 | 32                                                                                   | 1938                                                 | 1938                         | 708         | 1230                                    |
| 2018-06 | 32                                                                                   | 1889                                                 | 1889                         | 699         | 1190                                    |
| 2018-07 | 32                                                                                   | 1950                                                 | 1950                         | 720         | 1230                                    |
| 2018-08 | 31                                                                                   | 1934                                                 | 1934                         | 704         | 1230                                    |
| 2018-09 | 31                                                                                   | 1861                                                 | 1861                         | 670         | 1190                                    |
| 2018-10 | 31                                                                                   | 1925                                                 | 1925                         | 695         | 1230                                    |
| 2018-11 | 31                                                                                   | 1869                                                 | 1869                         | 679         | 1190                                    |
| 2018-12 | 31                                                                                   | 1928                                                 | 1928                         | 698         | 1230                                    |
| 2019-01 | 31                                                                                   | 1933                                                 | 1933                         | 703         | 1230                                    |
| 2019-02 | 31                                                                                   | 1747                                                 | 1747                         | 636         | 1111                                    |