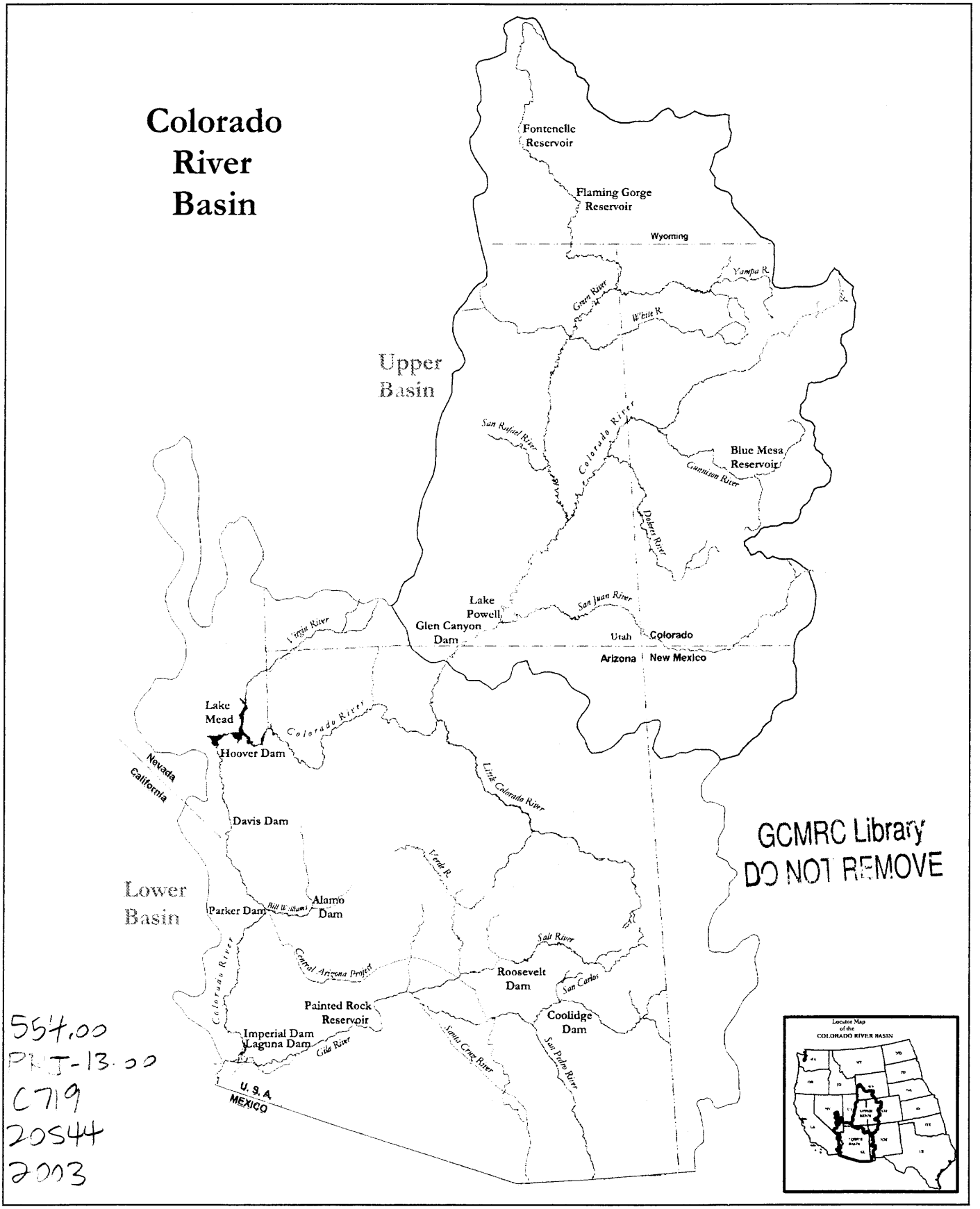
ANNUAL OPERATING PLAN
FOR
COLORADO RIVER RESERVOIRS
2003



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2003 ANNUAL OPERATING PLAN

FOR

COLORADO RIVER SYSTEM RESERVOIRS

INTRODUCTION

Authority

This 2003 annual operating plan (AOP) was developed in accordance with Section 602 of *The Colorado River Basin Project Act* (Public Law 90-537), and the *Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs Pursuant to the Colorado River Basin Project Act of September 30, 1968* (Operating Criteria), promulgated by the Secretary of the Interior (Secretary) pursuant thereto. In accordance with *The Colorado River Basin Project Act* and the Operating Criteria, the AOP must be developed and administered consistent with applicable Federal laws, *The Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Treaty Between the United States of America and Mexico*, signed February 3, 1944 (1944 U.S.-Mexico Water Treaty), interstate compacts, court decrees, the Record of Decision, Colorado River Interim Surplus Guidelines Final Environmental Impact Statement (Interim Surplus Guidelines) (66 FR 7772), and other documents relating to the use of the waters of the Colorado River, which are commonly and collectively known as "The Law of the River."

The Operating Criteria and Section 602 of *The Colorado River Basin Project Act* mandate consultation with representatives of the Governors of the seven Basin States and such other parties as the Secretary may deem appropriate in preparing the annual plan for operation of the Colorado River reservoirs. In addition, *The Grand Canyon Protection Act of 1992* (Title XVIII of Public Law 102-575) requires consultation to include the general public and others. Accordingly, the 2003 AOP was prepared by the Bureau of Reclamation (Reclamation) in consultation with the seven Basin States Governors' representatives; the Upper Colorado River Commission; Native American Tribes; appropriate Federal agencies; representatives of the academic and scientific communities, environmental organizations, and the recreation industry; water delivery contractors; contractors for the purchase of Federal power; others interested in Colorado River operations; and the general public, through the Colorado River Management Work Group (CRMWG).

Purpose

The purposes of the AOP are to determine: (1) the projected operation of the Colorado River reservoirs to satisfy project purposes under varying hydrologic and climatic conditions; (2) the quantity of water considered necessary as of September 30, 2003, to be in storage in the Upper Basin reservoirs as required by Section 602(a) of *The Colorado River Basin Project Act*; (3) water available for delivery pursuant to the 1944 U.S.-Mexico Water Treaty and Minute No. 242 of the International Boundary and Water Commission, United States and Mexico (IBWC); (4) whether the reasonable consumptive use requirements of mainstream users in the Lower Division States will be met under a "normal," "surplus," or "shortage" condition as outlined in Article III of the Operating Criteria; and (5) whether water apportioned to, but unused by one or more Lower Division States exists and can be used to satisfy beneficial consumptive use requests of mainstream users in other Lower Division States as provided in the 1964 U.S. Supreme Court Decree in *Arizona v. California* (Decree), and the Interim Surplus Guidelines.

Consistent with the above determinations and in accordance with other applicable provisions of "The Law of the River," the AOP was developed with "appropriate consideration of the uses of the reservoirs for all purposes, including flood control, river regulation, beneficial consumptive uses, power production, water quality control, recreation, enhancement of fish and wildlife, and other environmental factors" (Operating Criteria, Article I(2)).

Since the hydrologic conditions of the Colorado River Basin can never be completely known in advance, the AOP addresses the operations resulting from three different hydrologic scenarios: the probable maximum, most probable, and probable minimum reservoir inflow conditions. River operations under the plan are modified during the year as runoff predictions are adjusted to reflect existing snowpack, basin storage, and flow conditions.

Summary

Upper Basin Delivery. The minimum objective release criterion will control the annual release from Glen Canyon Dam during water year 2003 in accordance with Article II(2) of the Operating Criteria unless spill avoidance and/or the storage equalization criteria in Article II(3) is controlling.

Lower Basin Delivery. Downstream deliveries are expected to control the releases from Hoover Dam.

Taking into account (1) the existing water storage conditions in the basin, (2) the most probable near-term water supply conditions in the basin, and (3) that the beneficial consumptive use requirements of Colorado River mainstream users in the Lower Division States are expected to be more than 7.5 million acre-feet (maf) or 9,250 million cubic meters (mcm), and specifically (4) the Interim Surplus Guidelines, which implement Article III(3)(b) of the Operating Criteria, the Full Domestic Surplus condition is the criterion governing the operation of Lake Mead for calendar year 2003 in accordance with Article III(3)(b) of the Operating Criteria, Article II(B)(2) of the Decree, and Sections 2(B)(2) and 7 of the Interim Surplus Guidelines.

If it is determined, consistent with Section 5(B) of the Interim Surplus Guidelines, that the California contractors have not executed the Quantification Settlement Agreement by December 31, 2002, the Normal condition is the criterion governing the operation of Lake Mead for calendar year 2003 in accordance with Article III(3)(a) of the Operating Criteria, Article II(B)(1) of the Decree and the Interim Surplus Guidelines.

The suspension of surplus determinations under Section 2(B)(1) and 2(B)(2) of the Interim Surplus Guidelines will remain in effect until such time as California completes all required actions and complies with reductions in water use reflected in Section 5(C) of the Interim Surplus Guidelines.

In the event that the California contractors and the Secretary execute said agreements during calendar year 2003, consistent with Section 5(B) of the Interim Surplus Guidelines, the interim surplus determinations under Sections 2(B)(1) and 2(B)(2) will be reinstated, following appropriate consultations. In such event, the Full Domestic Surplus will govern the releases for use in the States

of Arizona, Nevada and California for the remainder of calendar year 2003.

Reclamation does not anticipate any available unused apportionment for calendar year 2003 at this time. However, if any unused apportionment is available, the Secretary shall allocate any available unused apportionments for calendar year 2003 in accordance with Article II(B)(6) of the Decree and Section 1(B) of the Interim Surplus Guidelines.

1944 U.S.-Mexico Water Treaty Delivery. A volume of 1.5 maf (1,850 mcm) of water will be available to be scheduled for delivery to Mexico during calendar year 2003 in accordance with Article 15 of the 1944 U.S.-Mexico Water Treaty and Minute No. 242 of the International Boundary and Water Commission.

2002 OPERATIONS SUMMARY AND RESERVOIR STATUS

Extremely dry hydrologic conditions were observed in the Colorado River basin in water year 2002. Basinwide precipitation was only 48 percent of average and snowpack accumulations were much below normal levels. As the spring snowmelt season began on April 1, 2002, snowpack levels throughout the Colorado River Basin were generally less than 50 percent of average. The situation was particularly severe in the central and southern portions of the Upper Colorado River basin. Many reservoirs in the Colorado River Basin recorded record low inflows during 2002. These included Navajo Reservoir, Blue Mesa Reservoir and Lake Powell. Unregulated[(1)] inflow into Lake Powell during the April through July runoff period in 2002 was only 1.12 maf (1,380 mcm) or 14 percent of the 30 year average[(2)]. Total unregulated inflow into Lake Powell for water year 2002 was only 3.06 maf (3,780 mcm) or 25 percent of average. This was the lowest recorded since the closure of Glen Canyon Dam in 1963. The previous low was observed in 1977 when water year unregulated inflow was 3.66 maf (4,510 mcm) or 30 percent of average.

Not only was water year 2002 a very low year for runoff in the Colorado River basin, but it also marked the third consecutive year with below average inflow into Colorado River reservoirs. Reservoir storage continued to decline for the third straight year. Storage in Lake Powell decreased by 4.67 maf (5,760 mcm) in 2002. Storage in reservoirs upstream of Lake Powell decreased by approximately 1.06 maf (1,300 mcm). In Lower Basin reservoirs, storage decreased by 2.80 maf (3,460 mcm). At the beginning of water year 2002, Colorado River total system storage was 76 percent of capacity. Total Colorado River system storage decreased by approximately 8.52 maf (10,500 mcm) during water year 2002. As of September 30, 2002 total system storage was 64 percent of capacity.

Even though Colorado River reservoir storage has been reduced, during 2002, all deliveries of water to meet valid obligations pursuant to applicable provisions of "The Law of the River" were maintained.

Preliminary Colorado River water delivery accounting data for calendar year (CY) 2002, compiled pursuant to Article V of the Decree, indicated that requests for water deliveries by agricultural users in California during CY 2002 had the potential to exceed the maximum amount of water available under the determinations made in the 2002 AOP approved and transmitted on January 14, 2002. In light of the potential for such overuse within the Lower Basin, and after consultation with members of the CRMWG, a supplement to the 2002 AOP was approved on November 22, 2002. The

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(1) Unregulated inflow adjusts for the effects of operations at upstream reservoirs. It is computed by adding the change in storage, and the evaporation losses from upstream reservoirs to the observed inflow. Unregulated inflow is used because it provides an inflow time series that is not biased by upstream operations, and more closely resembles natural flow conditions.

(2) Inflow statistics throughout this document will be as compared to 30 year averages.

supplement to the 2002 AOP addressed this potential CY 2002 overuse and established appropriate conditions for repayment if Reclamation determines that any overuse occurred in CY 2002 pursuant to final Article V Decree accounting data.

Tables 1(a) and 1(b) list the October 1, 2002, reservoir vacant space, live storage, water elevation, percent of capacity, change in storage, and change in water elevation during water year 2002.

Table 1(a). Reservoir Conditions on October 1, 2002 (English Units)

Reservoir	Vacant Space	Live Storage	Water Elevation	Percent of Capacity	Change in Storage*	Change in Elevation*
	(maf)	(maf)	(feet)	(percent)	(maf)	(feet)
Fontenelle	0.098	0.247	6,492.8	72	0.082	13.2
Flaming Gorge	1.074	2.675	6,011.0	71	-0.279	-8.3
Blue Mesa	0.554	0.275	7,443.1	33	-0.322	-49.0
Navajo	0.823	0.872	6,015.6	51	-0.537	-49.1
Lake Powell	9.854	14.468	3,626.5	59	-4.667	-38.3
Lake Mead	8.784	17.093	1,155.4	66	-2.769	-22.5
Lake Mohave	0.233	1.577	638.5	87	-0.031	-1.2
Lake Havasu	0.054	0.565	447.2	91	-0.001	-0.1
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Totals	21.474	37.772		64	-8.524	

* From October 1, 2001 to September 30, 2002.

Table 1(b). Reservoir Conditions on October 1, 2002 (Metric Units)

Reservoir	Vacant Space	Live Storage	Water Elevation	Percent of Capacity	Change in Storage*	Change in Elevation*
	(mcm)	(mcm)	(meters)	(percent)	(mcm)	(meters)
Fontenelle	120.6	304.7	1,979.0	72	101.1	4.0
Flaming Gorge	1,324.8	3,299.6	1,832.2	71	-344.1	-2.5
Blue Mesa	683.4	339.2	2,268.6	33	-397.2	-14.9
Navajo	1,015.2	1,075.6	1,833.6	51	-662.4	-15.0
Lake Powell	12,154.9	17,846.3	1,105.4	59	-5,756.7	-11.7
Lake Mead	10,835.1	21,084.2	352.2	66	-3,415.6	-6.8
Lake Mohave	287.2	1,945.2	194.6	87	-38.2	-0.4
Lake Havasu	67.1	696.9	136.3	91	-1.2	0.0
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Totals	26,488.2	46,591.8		64	-10,514.3	

* From October 1, 2001 to September 30, 2002.

2003 WATER SUPPLY ASSUMPTIONS

For 2003 operations, three reservoir unregulated inflow scenarios were developed and analyzed and are labeled as probable maximum, most probable, and probable minimum. The attached graphs show these inflow scenarios and associated release patterns and end of month contents for each reservoir.

Although there is considerable uncertainty associated with streamflow forecasts and reservoir operating plans made a year in advance, these projections are valuable in analyzing probable impacts on project uses and purposes. The magnitude of inflows in each of these three inflow scenarios for 2003 are below the historical upper decile, mean, and lower decile (10 percent exceedance, 50 percent exceedance, and 90 percent exceedance, respectively). The volume of inflow is reduced in each of the three scenarios, due to dry antecedent conditions in the Colorado River basin resulting from three consecutive years of below average precipitation. The National Weather Service's Extended Streamflow Prediction (ESP) model was used to develop inflows for the three scenarios for 2003. ESP modeling showed that even with average temperatures and precipitation in 2003, runoff in the Colorado River Basin is likely to remain below average due to dry antecedent conditions. Most probable inflow for Lake Powell for water year 2003 is 10.1 maf (12,500 mcm) or 84 percent of average. The three inflow scenarios for Lake Powell are shown in Tables 2(a) and 2(b).

The volume of inflow resulting from these assumptions was used as input into Reclamation's monthly reservoir simulation model. This model is used to plan reservoir operations for the upcoming 24-month period. Projected water year 2003 inflow and October 1, 2002 reservoir storage conditions were used as input to this model and monthly releases were adjusted until release and storage levels accomplished project purposes.

Table 2(a). Projected Unregulated Inflow
Into Lake Powell for Water Year 2003
(English Units: maf)

Time Period	Probable Maximum	Most Probable	Probable Minimum
10/02 - 12/02	1.00	0.82	0.50
1/03 - 3/03	1.66	1.00	0.43
4/03 - 7/03	13.00	7.23	1.55
8/03 - 9/03	1.68	1.09	0.85
10/03 - 12/03	1.53	1.52	1.53
WY 2003	17.33	10.14	3.33
CY 2003	17.86	10.84	4.35

Table 2(b). Projected Unregulated Inflow
Into Lake Powell for Water Year 2003
(Metric Units: mcm)

Time Period	Probable Maximum	Most Probable	Probable Minimum
10/02 - 12/02	1,230	1,020	610
1/03 - 3/03	2,050	1,230	528
4/03 - 7/03	16,020	8,910	1,910
8/03 - 9/03	2,080	1,340	1,050
10/03 - 12/03	1,880	1,880	1,880
WY 2003	21,380	12,500	4,100
CY 2003	22,030	13,360	5,370

2003 RESERVOIR OPERATIONS

The regulation of the Colorado River has had effects on downstream aquatic and riparian resources. Controlled releases from dams have modified temperature, sediment load, and flow patterns, resulting in increased productivity of some introduced aquatic resources and the development of economically significant sport fisheries. However, these same releases have detrimental effects on endangered and other native species. Operating strategies designed to protect and enhance downstream aquatic and riparian resources have been established at several locations in the Colorado River basin.

Modifications to planned operations may be made based on changes in forecast conditions. However, due to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Upper Colorado Recovery Program), Section 7 consultations, and other downstream concerns, modification to the monthly operation plans may be based on other factors in addition to changes in streamflow forecasts. Decisions on spring peak releases and downstream habitat target flows may be made midway through the runoff season. Reclamation and the Fish and Wildlife Service will initiate meetings with interested parties, including representatives of the Basin States, to facilitate the decisions necessary to finalize site-specific operations plans.

Reclamation completed Section 7 consultation with the Fish and Wildlife Service in April 2002 on current and projected discretionary routine lower Colorado River operations and maintenance activities for a period of up to 3 years. On an annual basis, Reclamation's compliance with environmental commitments related to the April 1997 and 2002 Biological Opinions are reported to the Fish and Wildlife Service. The most recent report documenting Reclamation's compliance with these commitments is dated April 2002. Reclamation's compliance with additional environmental commitments, related to adoption of the Interim Surplus Guidelines, will continue to be addressed in future annual reports, as appropriate. Reclamation and the Fish and Wildlife Service have also formed a partnership with other federal, state, and private agencies to develop the Lower Colorado River Multi-Species Conservation Program. This program permits both nonfederal and federal parties to participate and address Endangered Species Act (ESA) compliance requirements under Sections 7 and 10 of the ESA.

The following paragraphs discuss the operation of each of the reservoirs with respect to compact, decree, and statutory water delivery obligations, and instream flow needs for maintaining or improving aquatic resources, where appropriate.

Fontenelle Reservoir

Precipitation and ensuing runoff in the Upper Green River Basin during water year 2002 were well below normal for the third year in a row. The April through July runoff into Fontenelle during water year 2002 was 0.330 MAF (407 MCM), or 38 percent of normal. Inflow peaked at 4,400 cfs (125 cms) on June 3, 2002. Releases in excess of powerplant capacity were not required from Fontenelle Reservoir in 2002. Maximum releases in 2002 were at powerplant capacity (approximately 1500 cfs (40 cms)) from May 8, 2002 to May 15, 2002. Fontenelle Reservoir reached a peak elevation of

6,496.7 feet (1,980 meters), on August 5, 2002 which was 9.3 feet (2.8 meters) below the crest of the spillway.

Because the most probable inflow of 0.891 maf (1,100 mcm) for water year 2003 far exceeds Fontenelle's storage capacity of 0.345 maf (426 mcm), the most probable and maximum probable inflow scenarios require releases during the spring that exceed the capacity of the power plant. It is unlikely that Fontenelle reservoir will not fill during water year 2003. In order to minimize high spring releases, and to maximize downstream resources and power production, the reservoir will most likely be drawn down to the minimum pool elevation of 6,463 feet above sea level (1,970.0 meters) by early April 2003, which corresponds to a volume of 0.093 maf (115 mcm) of live storage.

Flaming Gorge Reservoir

For the third year in a row, inflows into Flaming Gorge were well below normal during water year 2002. The annual unregulated inflow volume for water year 2002 was 0.529 maf (653 mcm), or 31 percent of normal. The annual unregulated inflow was only 56 percent of normal in water year 2000 and only 43 percent of normal in water year 2001. Flaming Gorge Reservoir did not fill in water year 2002 and inflow was so low that the reservoir continued to decrease in water surface elevation during the spring and early summer. The water surface elevation of Flaming Gorge Reservoir on September 30, 2002 was 6,011.0 feet above sea level (1,832.2 meters), 29.0 feet from full pool.

A spring peak release of 4,000 cfs (113 cms) was made for a period of 1 week between May 21, 2002 and May 27, 2002 as called for in the 1992 Final Biological Opinion on the Operation of Flaming Gorge Dam. These releases were made through the power plant and were successfully timed to meet peak flows on the Yampa River. The Yampa River peaked at approximately 3,700 cfs (105 cms) on May 22, 2002. Flows on the Green River near Jensen, an important segment of the Green River for endangered fish, peaked at about 7,700 cfs (218 cms) on May 23, 2002.

In September 2000, a final report titled "Flow and Temperature Recommendations for Endangered Fishes in the Green River Downstream of Flaming Gorge Dam" (Flaming Gorge Flow Recommendations) was published by the Upper Colorado River Recovery Program. The report compiled and summarized research conducted on endangered fish in the Green River under the Upper Colorado River Recovery Program and presents flow recommendations for three segments of the Green River. Reclamation is currently conducting a National Environmental Policy Act (NEPA) process to determine the best operational alternative for Flaming Gorge Dam to meet these flow recommendations. Reclamation has developed a river simulation model (using the RiverWare modeling system), which simulates the operation of Flaming Gorge Dam under the Flaming Gorge Flow Recommendations, and under the 1992 Biological Opinion on the Operation of Flaming Gorge (BOFG). These modeled alternatives facilitate the quantification of impacts to the resources at Flaming Gorge Dam and to resources in the Green River below the dam associated with the proposed implementation of the Flaming Gorge Flow Recommendations. A draft Environmental Impact Statement (DEIS) will likely be published in late 2002 while completion of the final EIS and Record of Decision (ROD) is scheduled to occur in 2003.

In water year 2003, Flaming Gorge Dam will continue to be operated in accordance with the BOFG. The BOFG calls for high spring releases to occur each year, timed with the peak of the Yampa River, so as to more closely mimic historic Green River flows. Releases from Flaming Gorge Dam, under the most probable scenario, in the winter and early spring months of 2003 will be relatively low (approximately 800 cfs) in order to conserve reservoir storage.

Blue Mesa, Morrow Point, and Crystal Reservoirs (Aspinall Unit)

Severe drought conditions prevailed in the Gunnison River Basin in water year 2002. The April through July unregulated runoff into Blue Mesa Reservoir in 2002 was only 0.157 maf (193 mcm), or 22 percent of average. Water year 2002 unregulated inflow was 0.324 maf (400 mcm), or 32 percent of average. This inflow was the lowest ever recorded since closure of Blue Mesa Dam in 1969. The low inflow caused Blue Mesa Reservoir to decrease in storage in water year 2002 by 0.322 maf (397 mcm). Storage in Blue Mesa Reservoir on September 30, 2002, was 0.275 maf (339 mcm), or 33 percent of capacity. Water year 2002 powerplant bypasses were approximately 0.027 maf (33 mcm) at Crystal, all of which were the result of annual system maintenance.

On August 16, 1995, Memorandum of Agreement (MOA) No. 95-07-40-R1760 was signed by the Bureau of Reclamation, U.S. Fish and Wildlife Service (Service), and Colorado Water Conservation Board. The purpose of the MOA was to provide water to the Redlands Fish Ladder and assure at least 300 cfs (8.5 cms) of flow in the 2-mile reach of the Gunnison River between the Redlands Fish Ladder and the confluence of the Gunnison and Colorado Rivers (2-mile reach). This MOA was extended for an additional five years on June 30, 2000. A key provision of the MOA requires that the parties adopt a plan to share water shortages in dry years, when total storage at Blue Mesa Reservoir is projected to drop below 0.4 maf (493 mcm) by the end of the calendar year. Accordingly, a plan to share or allocate physical water shortages due to the extremely dry hydrological conditions occurring in the Gunnison River Basin was developed for water year 2002 and implemented among the MOA parties, along with the Colorado River Water Conservation District (CRWCD) and Redlands Water and Power Company (Redlands).

Specifically, the shared shortage plan for water year 2002 recognized that Redlands would not likely have water available to satisfy its senior rights and that the Service would have insufficient water available to meet fish passage needs in the 2-mile reach of the Gunnison River downstream of the Redlands Fish Ladder. In normal years, Redlands can place its senior call for 750 cfs (21.2 cms) and the Service relies upon releases from the Aspinall Unit to provide fish passage flows in the 2-mile reach of at least 300 cfs during summer season. For water year 2002, it was agreed that Redlands would voluntarily reduce its senior river call and the Service would reduce the 2-mile reach flow requests for the period June through October. In exchange, Aspinall operations were modified to provide at least 600 cfs (17.0 cms) to Redlands and the 2-mile reach flows were maintained at reduced rates as follows:

June 2002	200 cfs (5.7 cms)
July 2002	250 cfs (7.1 cms)
August 2002	250 cfs (7.1 cms)

September 2002	100 cfs (2.8 cms)
October 2002	0 cfs (0 cms)

Additionally, the CRWCD entered into a contract with Redlands to compensate Redlands for lost hydropower revenues due to the reduced water diversions, and Xcel Energy Company made temporary modifications to Redlands hydropower contract to make the compensation costs reasonable.

In water year 2002, the Aspinall Unit was operated in cooperation with this shared shortage agreement to provide benefits to water users and fish and wildlife, including endangered fish, while minimizing the draw on unit storage to a reasonable extent. As was formally agreed by all parties, pursuant to the aforementioned agreements, water year 2002 operations were undertaken to lessen the impacts of the severe drought conditions to a reasonable extent, and do not establish or set any precedent that such operations will continue or occur again in the future.

In January 2000, a draft report titled, "Flow Recommendations to Benefit Endangered Fishes in the Colorado and Gunnison Rivers" was submitted to the Upper Colorado River Recovery Program - Biology Committee. The report compiles and summarizes the results of research conducted on endangered fish in the Gunnison and Colorado Rivers under the Upper Colorado Recovery Program. This report presents flow recommendations for two different river reaches: one for the lower Gunnison River between Delta and Grand Junction, Colorado, and the other for the Colorado River downstream of the Gunnison River confluence. Based upon comments and objections by numerous parties, these flow recommendations are undergoing additional review. It is anticipated that revisions to the draft report will be completed in late 2002 or early 2003. Following the issuance of final flow recommendations, Reclamation intends to initiate a National Environmental Policy Act compliance process to determine the impacts of the flow recommendations, or a reasonable alternative to them, on Aspinall Unit operations and on other resources associated with the Gunnison River.

On January 17, 2001, the National Park Service, through the Department of Justice, filed an application to quantify the federal reserved water right decreed to the Black Canyon of the Gunnison National Monument. The water right is for flows in the Gunnison River through the Black Canyon of the Gunnison National Park downstream of the Gunnison Tunnel. Reclamation is continuing to work with the National Park Service and Western Area Power Administration, using a daily time step computer model, to evaluate the effects of a reserved water right on Aspinall Unit operations. The model will also be used in conjunction with the State of Colorado's model to analyze the effects of the reserved right and the flow recommendations for endangered fish, once the flow recommendations have been completed.

For water year 2003, the Aspinall Unit will be operated in accordance with the Colorado River Storage Project Act to conserve storage while meeting downstream delivery requirements. Under normal conditions, the minimum release objectives of the Aspinall Unit are to meet the delivery requirements of the Uncompahgre Valley Project, maintain a flow of 300 cfs (8.5 cms) in the Gunnison River through the Black Canyon of the Gunnison National Park, and maintain a minimum flow of 300 cfs (8.5 cms) in the 2-mile reach below the Redlands Diversion Dam during the summer

months. In dry years, the 300 cfs for the 2-mile reach can be reduced as agreed to by the MOA parties. In extremely dry years, the 300 cfs through the Black Canyon can be reduced to as little as 200 cfs, although other downstream requirements such as senior water rights could require more flow. Under the most probable inflow conditions, flows through the Black Canyon of the Gunnison National Park will be above the minimum release objective during the summer months. To protect both the blue ribbon trout fishery in the Black Canyon and recreational interests, releases during 2003 will be planned to minimize large fluctuations in the daily and monthly flows in the Gunnison River below the Gunnison Tunnel diversion.

Under the minimum probable and most probable inflow scenarios, Blue Mesa Reservoir is not expected to fill in the summer of 2003. With the most probable inflow, Blue Mesa Reservoir will fill to within about 12 feet of full pool in July 2003.

Navajo Reservoir

Exceptional drought conditions prevailed in the San Juan River basin in 2002 with extremely low runoff in the basin. The April through July unregulated inflow into Navajo Reservoir in water year 2002 was 0.038 maf (46.9 mcm), or 4 percent of average. Water year 2002 unregulated inflow was 0.116 maf (143 mcm) or 10 percent of average. This inflow was significantly below the previously recorded low, which occurred in 1977. The San Juan River basin is in an extended dry cycle. April through July unregulated inflow to Navajo Reservoir in water years 1999, 2000, and 2001 was 81, 44, and 107 percent of average, respectively. Reservoir storage in Navajo Reservoir has been significantly reduced due to these protracted drought conditions. Reservoir storage on September 30, 2002 was 51 percent of capacity. The water surface elevation at Navajo Reservoir on September 30, 2002 was 6,015.6 feet (1,833.6 meters), 69.4 feet from full.

The final report titled Flow Recommendations for the San Juan River, (Flow Recommendations) which outlines flow recommendations for the San Juan River below Navajo Dam, was completed by the Biology Committee of the San Juan River Basin Recovery Implementation Program (SJRIP) in May 1999. The report synthesizes research conducted on endangered fish in the San Juan River over a 7-year period. The purpose of the report is to provide flow recommendations for the San Juan River that promote the recovery of the endangered Colorado pikeminnow and razorback sucker, maintain important habitat for these two species, as well as the other native species, and provide information for the evaluation of continued water development potential in the basin. It is anticipated that implementation of the Flow Recommendations, or reasonable alternative to it, will allow for a non-jeopardy biological opinion to be issued by the Service for the operations of Navajo Dam.

Due to the severity of the drought and the hydrologic conditions in the San Juan River Basin during the spring runoff period, the Flow Recommendations directed that no spring peak release was necessary from Navajo Reservoir. Although there was no peak release, higher than normal base flows were released from Navajo Reservoir during the spring and summer months during water year 2002. Releases from Navajo Reservoir reached 1,000 cfs (28 cms) during this period. These increases were necessary due to decreasing flows in the San Juan River endangered fish critical

habitat area (Farmington to Lake Powell). The Flow Recommendations call for an average weekly flow of between 500 cfs (14 cms) and 1,000 cfs (28 cms) in this reach of the river.

Reclamation has begun a National Environmental Policy Act (NEPA) process on the implementation of an operation at Navajo Dam that meets these Flow Recommendations or a reasonable alternative to them. A Notice of Intent to prepare an Environmental Impact Statement (EIS) was filed on October 1, 1999, in the Federal Register. A draft EIS was released on September 4, 2002. The completion of the final EIS and Record of Decision is scheduled to occur in 2003.

Under the most probable and maximum probable inflow scenarios during water year 2003, Navajo Reservoir is not expected to fill. Releases from the reservoir will be held near 500 cfs (14 cms) through the fall and winter months and large releases will likely be made in May and June pursuant to the Flow Recommendations to improve the habitat and provide better spawning conditions for endangered fish in the San Juan River.

Lake Powell

Lake Powell began water year 2002 with 20.9 maf (25,800 mcm) of storage (86 percent of capacity). From October 2001 through January 2002, releases from Glen Canyon Dam were scheduled to achieve equalization of storage between Lake Mead and Lake Powell by the end of water year 2002 in accordance with Article II(3) of the Operating Criteria. Inflow projections were reduced in February, 2002 with forecasted April through July unregulated inflow to Lake Powell only 7.7 maf (5,800 mcm) or 59 percent of average. This forecast was sufficiently low that storage equalization no longer became the governing criterion in the 2002 operation. From February, 2002 through the end of the water year, releases were scheduled to maintain the minimum release objective from Lake Powell of 8.23 maf (10,150 mcm) for water year 2002 in accordance with Article II(2) of the Operating Criteria.

April through July unregulated inflow into Lake Powell in water year 2002 was 1.12 maf (1,380 mcm), or 14 percent of average. Water year 2002 unregulated inflow was 3.06 maf (3,770 mcm), or 25 percent of average. Unregulated inflow in 2002 was the lowest recorded since the closure of Glen Canyon Dam. The previous low occurred in 1977.

Lake Powell normally increases in elevation during the April through July runoff period. Inflow was so low in the spring of 2002, however, that reservoir storage in Lake Powell continued to decline throughout the runoff period. The elevation of Lake Powell on September 30, 2002 was 3,626.5 feet (1,105.4 meters) (73.5 feet from full). Lake Powell ended water year 2002 with 14.5 maf (17,800 mcm) of storage (59 percent of capacity).

On April 24, 2002, members of the Glen Canyon Adaptive Management Work Group (AMWG) recommended to the Secretary that a two-year experimental flow test be made from Glen Canyon Dam beginning in water year 2003. The recommendation addressed the decline of two key resources in the Grand Canyon: sediment and population viability of endangered humpback chub.

Reclamation, the National Park Service, and the United States Geological Survey have jointly

prepared an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to document the impacts of these proposed experimental flows. This EA incorporates a Biological Assessment for the Fish and Wildlife Service under the Endangered Species Act (ESA). The proposed experimental flows could be implemented in 2003 depending upon the outcome of the NEPA process, and ESA consultations. The experimental flows would not alter the total volume of water to be released from Lake Powell in water year 2003.

During water year 2003, the minimum release objective of 8.23 maf (10,152 mcm) will be made under the most probable and minimum probable inflow conditions. Above average inflow to Lake Powell in 2003 may require that releases greater then 8.23 maf be made to equalize the storage between Lakes Powell and Mead. Under the probable maximum inflow scenario, approximately 11.0 maf (13,600 mcm) will be released.

Because of less than full storage conditions in Lake Powell, resulting from three consecutive years of below normal runoff, releases for dam safety purposes are highly unlikely in 2003. If implemented, releases greater than powerplant capacity would be made consistent with the 1956 Colorado River Storage Project Act, the 1968 Colorado River Basin Project Act, and the 1992 Grand Canyon Protection Act. Reservoir releases in excess of powerplant capacity required for dam safety purposes during high reservoir conditions may be used to accomplish the objectives of the Beach/Habitat Building Flow according to the terms contained in the Glen Canyon Dam ROD, and as published in the Glen Canyon Dam Operating Criteria (62 Federal Register 9447, Mar. 3, 1997).

Daily and hourly releases in 2003 will be made according to the parameters of the ROD for the Glen Canyon Dam Final Environmental Impact Statement (GCDFEIS) preferred alternative, and the Glen Canyon Dam Operating Criteria, as shown in Table 3. Exceptions to these parameters may be made during power system emergencies, or for purposes of humanitarian search and rescue. Experimental flows, if implemented in 2003, may also require that releases exceed the parameters of the Glen Canyon Dam Operating Criteria during the winter months of 2003.

Releases from Lake Powell in water year 2003 will continue to reflect consideration of the uses and purposes identified in the authorizing legislation for Glen Canyon Dam. Powerplant releases and Beach/Habitat Building Flows will reflect criteria based on the findings, conclusions, and recommendations made in the ROD for the GCDFEIS pursuant to the Grand Canyon Protection Act of 1992, and any additional NEPA documentation regarding the April 24, 2002 AMWG experimental flow proposal.

The Secretary is considering information submitted to the Department of the Interior by the Colorado River Basin States (65 Federal Register 48537, August 8, 2000) whereby 602(a) storage requirements determined in accordance with Article II (1) of the Operating Criteria would utilize a value of not less than 14.85 maf (elevation 3630 feet) for Lake Powell through the year 2016. The Secretary, through Reclamation, may initiate a NEPA process in 2003 to determine the impacts of the Basin States proposed 602(a) storage.

Table 3. Glen Canyon Dam Release Restrictions (Glen Canyon Dam Operating Criteria)

Parameter	(cfs)	(cms)	Conditions
Maximum flow [1]	25,000	708.0	
Minimum flow	5,000	141.6	Nighttime
	8,000	226.6	7:00 am to 7:00 pm
Ramp rates			
Ascending	4,000	113.3	per hour
Descending	1,500	42.5	per hour
Daily fluctuations [2]	5,000 / 8,000	141.6 / 226.6	

Lake Mead

For calendar year 2002, the surplus condition was the criterion governing the operation of Lake Mead in accordance with Article III(3)(b) of the Operating Criteria, Article II(B)(2) of the Decree, and Section 2(B)(2) of the Interim Surplus Guidelines. The estimated amount of additional mainstream water made available in the 2002 AOP was 0.640 maf (789 mcm). A volume of 1.5 maf (1,850 mcm) of water was scheduled for delivery to Mexico in accordance with Article 15 of the 1944 U.S.-Mexico Treaty and Minute No. 242 of the International Boundary and Water Commission.

Lake Mead began water year 2002 at elevation 1,177.96 feet (359.04 meters), with 19.9 maf (24,546 mcm) in storage, 77 percent of the conservation capacity of 25.877 maf (31,919 mcm). During the year, Lake Mead steadily declined and reached its minimum elevation of 1155.42 feet (352 meters) at the end of September 2002, with 17.1 maf (21,093 mcm) in storage, 66 percent of capacity.

The total release from Lake Mead through Hoover Dam during water year 2002 was 10.5 maf (12,951 mcm), with an additional 0.282 maf (348 mcm) being diverted from Lake Mead by the Robert Griffith Water Project.

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[1] May be exceeded during beach/habitat building flows, habitat maintenance flows, or when necessary to manage above average hydrologic conditions.

[2] Daily fluctuations limit is 5,000 cfs (141.6 cms) for months with release volumes less than 0.600 maf (740 mcm); 6,000 cfs (169.9 cms) for monthly release volumes of 0.600 to 0.800 maf (740 to 987 mcm); and 8,000 cfs (226.6 cms) for monthly volumes over 0.800 maf (990 mcm).

Under the most probable inflow conditions during water year 2003, Lake Mead will be at its maximum elevation of 1155.31 feet (352 meters) at the end of February 2003 and will decline during the water year to reach its minimum elevation of 1138.19 feet (347 meters) at the end of September 2003. Releases from Lake Mead for water year 2003 are projected to be 10.0 maf (12,335 mcm). For the purpose of projections, all estimated release amounts for CY 2003 are based on the Full Domestic Surplus condition as the criterion governing the operation of Lake Mead. No flood control releases are required during water year 2003 under any of the three inflow scenarios.

The Interim Surplus Guidelines Record of Decision included ESA conservation measures. One such conservation measure specified in Article X(4)(2) includes provisions for spawning razorback suckers in Lake Mead. Reclamation continues to provide funding and support for the ongoing Lake Mead Razorback Sucker study. The focus of the study has been on locating populations of razorbacks in Lake Mead, documenting use and availability of spawning areas at various water elevations, continuing ageing studies and confirming recruitment events. No changes in operations were made in water year 2002 to provide rising spring water surface elevations for spawning razorback suckers as there were no equalization or BHBF releases during this timeframe. Based on the anticipated operation of Lake Powell for water year 2003, no changes in operations to provide rising elevations are expected in the spring of 2003.

Lakes Mohave and Havasu

At the beginning of water year 2002, Lake Mohave was at an elevation of 639.64 feet (194.96 meters), with an active storage of 1.608 maf (1,983 mcm). The water level of Lake Mohave was regulated as needed between elevation 634 feet (193.24 meters) and 645 feet (196.06 meters) throughout the water year, ending at an elevation of 638.5 feet (194.6 meters) with 1.576 maf (1,944 mcm) in storage. The total release from Lake Mohave through Davis Dam was 10.3 maf (12,705 mcm) for downstream water use requirements.

For water year 2003, Davis Dam is expected to release 9.7 maf (11,965 mcm). For purposes of projections, all estimated release amounts for CY 2003 are based on the Full Domestic Surplus condition as the criterion governing the operation of Lake Mead. The water level in Lake Mohave will be regulated between an elevation of 630 feet (192 meters) and 643 feet (196 meters).

Lake Havasu started water year 2002 at an elevation of 447.33 feet (136.35 meters), with 0.567 maf (699 mcm) in storage. The water level of Lake Havasu was regulated as needed between elevation 445 feet (135.6 meters) and 449 feet (136.9 meters). During the year, 7.3 maf (9,004 mcm) was released from Parker Dam. In addition to the releases from Parker Dam, 1.6 maf (1,973 mcm) was diverted from Lake Havasu for the Central Arizona Project (CAP) and 1.28 maf (1,579 mcm) by the Metropolitan Water District (MWD).

For water year 2003, Parker Dam is expected to release 7.2 maf (8,881 mcm). Diversions from Lake Havasu by MWD and CAP are expected to be 1.19 maf (1,480 mcm) and 1.43 maf (1,764 mcm), respectively.

Mohave and Havasu Reservoirs are scheduled to be drawn down in the late summer and winter months to provide storage space for local storm runoff and will be filled in the spring to meet higher summer water needs. This drawdown will also correspond with maintenance at both Davis and Parker powerplants which is scheduled for September through February. During 2003, Lake Mohave will continue to be operated under the constraints as described in the Biological and Conference Opinion on Lower Colorado River Operations and Maintenance. Reclamation, as provided in the Interim Surplus Guidelines Record of Decision, will continue these existing operations in Lake Mohave that benefit native fish through the effective period of the Interim Surplus Guidelines and will explore additional ways to provide benefits to native fish. The normal filling pattern of these two reservoirs coincides well with the fishery spawning period. Since lake elevations will be typical of previous years, normal conditions are expected for boating and other recreational uses.

Reclamation is the lead agency in the Native Fish Work Group, a multi-agency group of scientists attempting to augment the ageing stock of the endangered razorback sucker in Lake Mohave. Larval suckers are captured by hand in and around spawning areas in late winter and early spring for rearing at Willow Beach Fish Hatchery below Hoover Dam. The following year, one year old suckers are placed into predator-free, lake-side backwaters for rearing through the spring and summer. When the lake is normally drawn down during the fall, these fish are harvested from these rearing areas and then released to the lake. The suckers grow very quickly, usually exceeding ten inches in length by September.

Senator Wash and Laguna Reservoirs

Operations at Senator Wash Reservoir allow regulation of water deliveries to United States and Mexican water users downstream of Imperial Dam. The reservoir is utilized as an off-stream storage facility to meet downstream water demands and to conserve water for future uses in the United States and the scheduled uses of Mexico in accordance with the Treaty obligation. Senator Wash Reservoir is the only major storage facility below Parker Dam. Senator Wash Dam is located approximately 142 river miles downstream of Parker Dam. Operational objectives are to store excess flows from the river which have been caused by water user cutbacks and side wash inflows due to rain. Stored waters are utilized to meet irrigation, recreational, and Treaty demands. Elevation restrictions on Senator Wash Reservoir reduce the flexibility of water storage in the lower reaches of the river. Since August of 1992, a restriction at elevation 240.0 feet, mean sea level, at Senator Wash Reservoir was put in place. This was due to potential piping at West Squaw Lake Dike and Senator Wash Dam. After removing a rock tallus pile and replacing it with a filter blanket at West Squaw Lake dike during the first part of CY 2000, a reservoir fill test was started September 15 and concluded on October 19, 2000. The test had to be stopped due to piping concerns at West Squaw Lake Dike. During most of CY 2000, Senator Wash was not available to regulate river flows and excess flows to Mexico exceeded 300,000 acre-feet for the year. Since the fill test in CY 2000, a new elevation restriction at 235 feet was put in place, and excess flows to Mexico in CY 2001 dropped to about 200,000 acre-feet. In CY 2002 a new filter blanket was placed at West Squaw Lake Dike, additional instrumentation was put in place and another fill test was conducted from April through July 7, 2002. Senator Wash was not available for river regulation essentially from the first of CY 2002 until July 7, 2002. Due to the success of this fill test the elevation restriction was raised back to elevation 240 feet on July 8, 2002 with some operational restrictions and monitoring

requirements. It is likely that Reclamation will allow Senator Wash operations to range between elevations 242 to 245 feet. However, a review of the CY 2002 test fill data will be required before operations will be allowed to exceed elevation 240 feet. Through August 2002, approximately 105,460 acre-feet had been over delivered to Mexico in CY 2002.

Laguna Reservoir is a regulating storage facility located approximately 7 river miles downstream of Senator Wash. Operational objectives are similar to those for Senator Wash Reservoir. The storage capability of Laguna Reservoir has diminished from about 1,500 acre-feet to about 600 acre-feet due to sediment accumulation and vegetation growth. Sediment accumulation in the reservoir has occurred primarily due to flood releases that occurred in 1983 and 1984, and flood control or space building releases that occurred between 1985 and 1988 and from 1997 through 1999. Dredging of the Laguna Reservoir to increase its storage capability to contain sluicing operations at Imperial Dam is scheduled to begin in CY 2004.

Imperial Dam

Imperial Dam is the last diversion dam on the Colorado River for United States water users. From the head works at Imperial Dam the diversions of flows for American water users and Mexico occur into the All American Canal on the California side, and into the Gila Gravity Main Canal on the Arizona side of the dam. These diversions supply all the irrigation districts in the Yuma area, in Wellton-Mohawk, in the Imperial and Coachella Valleys, and through Pilot Knob to NIB to the Mexicali Valley in Mexico. The diversions also supply much of the domestic and industrial water needs in the Yuma area.

Yuma Desalting Plant

The Yuma Desalting Plant (YDP) was not operated in CY 2002 and is in a ready reserve status. In calendar year 2001 the amount of water discharged through the Main Outlet Drain was 107,910 acre-feet. The U.S. recognizes that it has an obligation to replace, as appropriate, the bypass flows. Reclamation is preparing a report for Congress that explores options for replacement of the bypass flows from Wellton-Mohawk, including options that would not require operation of the Yuma Desalting Plant. Operation of the YDP would affect the Cienega de Santa Clara, a marsh of approximately 10,000 acres that is a protected environmental area in Mexico.

The Main Outlet Drain and Main Outlet Drain Extension (MODE) requires minor repair work each year, and a short section of the MODE near the confluence with the Gila River that was damaged during the 1993 Gila River flood still needs to be repaired. However, seepage from the drain is less than one percent of the ground water flow in the area and is not significantly affecting the quality of the ground water or the Colorado River water. Minor repair work accomplished each year consists of replacing isolated broken concrete panels and cleaning debris from the drainage system. In March 2002, some drainage water was spilled from the MODE to the Colorado River to accommodate panel replacement along much of the MODE. All Wellton-Mohawk Irrigation & Drainage District drainage flows are expected to be contained in the MODE for the rest of CY 2002 to prevent increasing the salinity of the Colorado River arriving at the Northerly International Boundary (NIB) with Mexico.

Measures that are being taken to ensure that the salinity differential requirements at NIB will be met include reducing drainage pumping in the South Gila Valley in areas with more than adequate depths to groundwater, returning some drainage flows from the Yuma Mesa Conduit to the Yuma Valley Drainage System and thence to the boundary pumping plant at the Southerly International Boundary with Mexico, and ensuring that no additional drainage water from the MODE will be spilled to the Colorado River this calendar year. This action is required as several Yuma Valley Drainage wells that used to discharge to the SIB have been connected to the Yuma Mesa Conduit, causing salinity levels at the NIB to increase as the quantity of drainage inflow to the Colorado River above NIB increases. At the same time, better quality water has been arriving at Imperial Dam since CY 2000. These two issues combined together are currently resulting in a forecast salinity differential near the maximum allowed under Minute 242.

Located at the Yuma Desalting Plant is a research facility known as the Water Quality Improvement Center (WQIC). The primary role of the WQIC is to find ways to reduce operating costs of the YDP. To do this, Reclamation personnel who work in the WQIC investigate new technologies and processes, and explore improvements in operational and maintenance efficiencies. The WQIC also serves as a key component in Reclamation's Technology Transfer program – hosting third party research to enhance the spread of publicly-developed water treatment technology into private industry. This program serves Reclamation in two ways: it reduces the overall cost of YDP cost-reduction research by attracting outside parties pursuing similar interests; and it helps guarantee additional water supplies by supporting the proliferation of water-stretching treatment technology throughout the U.S. In addition, the WQIC serves as the primary water provider to the Yuma Area Office. The facility purifies about one million gallons per day of either drainage water delivered either from the MODE, groundwater pumped from an on-site well, or Colorado River water. The WQIC will continue to operate during calendar year 2003.

Colorado River Channel Aggradation Below Gila River Confluence

The 1993 Gila River flood deposited approximately 10 million cubic yards of sediment in the Colorado River between its confluence with the Gila and Morelos Dam. An additional unspecified volume of sediment was deposited in the river channel below Morelos Dam. The aggradation of the channel has substantially reduced the river's capability to carry flood flows, to act as a drain for groundwater, and has occasionally caused operational problems with the delivery of Treaty water to Mexico at Morelos Dam.

The Yuma Area Office developed a project proposal to address the aggradation problems in cooperation with local irrigation districts, the IBWC, Native American Tribes, local environmental organizations, local governments, and other state and federal agencies.

The overall project has been developed in phases. Phase 1 of the project was completed in late 1997 so the channel below Morelos Dam could accommodate flood control releases from Hoover Dam during the winters of 1997 and 1998. Phase 1 consisted of limited clearing of a flow path in the channel below Morelos Dam, and realignment of the channel upstream of Yuma at River Mile 31, where the levee was in danger of being breached during high flows.

Phase 2 of the project began in September 1999. Phase 2 consisted of dredging a sediment basin in the river channel immediately upstream of Morelos Dam to a location about one mile above the NIB. The sediment basin should alleviate most of the operational problems due to sediment laden waters being delivered to Mexico at Morelos Dam. Phase 2 was completed in April of 2001.

The need for completing Phases 3 and 4 of the project is currently being reviewed and studied. The space building and flood control releases experienced during the winters of 1997, 1998, and 1999, as well as the natural dynamic nature of the river system, make this review prudent.

Limitrophe Division Below Morelos Dam

The IBWC has initiated the development of an Environmental Impact Statement (EIS) to address the work necessary to develop and undertake a boundary preservation project within the Limitrophe section of the Colorado River. The flood events of 1983 and 1993 have changed the course of the river and deposited approximately 10 million cubic yards of material within the first 5.5 miles of the river below Morelos Dam, affecting the carrying capacity of the river and contributing to higher groundwater levels in the Yuma Valley. The EIS will identify the best U.S./Mexico alternative to be undertaken for the proposed project.

The following schedule is proposed for the IBWC EIS.

Feb 3, 1999	Meeting with cooperators and resource agencies
May 21, 1999	Notice of Intent
Jun 9, 1999	Public scoping meeting
Aug 15, 2000	Development of maps for boundary alignments and significant habitat
Dec 7, 2001	Bi-national meeting on proposed alignments and land use and environmental data from Mexico
Jan 18, 2002	Presentation to all Resource agencies on preliminary alignment alternatives/plan
Dec 10, 2002	Notice of availability of draft EIS in Federal Register
Jan 31, 2003	Public meeting on draft EIS
May 13, 2003	File final EIS
Aug 20, 2003	Record of Decision

2003 DETERMINATIONS

The AOP provides guidance regarding reservoir storage and release conditions during the upcoming year, based upon congressionally mandated and authorized storage, release, and delivery criteria and determinations. After meeting these requirements, specific reservoir releases may be modified within these requirements as forecast inflows change in response to climatic variability and to provide additional benefits coincident to the projects' multiple purposes.

Upper Basin Reservoirs

The Operating Criteria provide that the annual plan of operation shall include a determination of the quantity of water considered necessary to be in Upper Basin storage at the end of the water year. Taking into consideration all relevant factors required by the Operating Criteria, and further considering information submitted to Reclamation by the Colorado River Basin States (65 Federal Register 48537, August 8, 2000) which would utilize a value not less than 14.85 million acre-feet (elevation 3,630 feet) for Lake Powell, it is determined that the active storage in Upper Basin reservoirs forecast for September 30, 2003, exceeds the storage required under Section 602(a) of the *Colorado River Basin Project Act* under any reasonable range of assumptions which might be applied. Therefore, "602(a) Storage" is not the criterion controlling the release of water from Glen Canyon Dam during water year 2003.

Section 602(a)(3) of the *Colorado River Basin Project Act* provides for the storage of Colorado River water in Upper Basin reservoirs that the Secretary finds necessary to assure deliveries to comply with Articles III(c) and III(d) of the 1922 *Colorado River Compact*, without impairment to the annual consumptive use in the Upper Basin. Pursuant to Section 602(b), as amended, the Secretary is required to make this determination after consultation with the Upper Colorado River Commission and representatives from the three Lower Division States, and after taking into consideration all relevant factors including historic stream flows, the most critical period of record, the probabilities of water supply, and estimated future depletions. Water not required to be so stored will be released from Lake Powell:

- to the extent it can be reasonably applied in the States of the Lower Division to the uses specified in Article III(e) of the 1922 *Colorado River Compact*, but these releases will not be made when the active storage in Lake Powell is less than the active storage in Lake Mead,

- to maintain, as nearly as practicable, active storage in Lake Mead equal to the active storage in Lake Powell, and

- to avoid anticipated spills from Lake Powell.

The minimum objective release criterion will control the annual release from Glen Canyon Dam during water year 2003 in accordance with Article II(2) of the Operating Criteria unless spill avoidance and/or the storage equalization criteria in Article II(3) is controlling. Under the most probable inflow scenario, Glen Canyon Dam will release 8.23 maf (10,150 mcm).

Lower Basin Reservoirs

Pursuant to the Operating Criteria and consistent with the Decree, water shall be released or pumped from Lake Mead to meet the following requirements:

(a) 1944 U.S.-Mexico Water Treaty obligations;
(b) Reasonable beneficial consumptive use requirements of mainstream users in the Lower Division States;
(c) Net river losses;
(d) Net reservoir losses;
(e) Regulatory wastes; and
(f) Flood control.

The Operating Criteria provide that after the commencement of delivery of mainstream water by means of the CAP, the Secretary will determine the extent to which the reasonable beneficial consumptive use requirements of mainstream users are met in the Lower Division States. The reasonable beneficial consumptive use requirements are met depending on whether a normal, surplus, or shortage condition has been determined. The normal condition is defined as annual pumping and release from Lake Mead sufficient to satisfy 7.500 maf (9,251 mcm) of consumptive use in accordance with Article III(3)(a) of the Operating Criteria and Article II(B)(1) of the Decree. The surplus condition is defined as annual pumping and release from Lake Mead sufficient to satisfy in excess of 7.500 maf (9,251 mcm) consumptive use in accordance with Article III(3)(b) of the Operating Criteria and Article II(B)(2) of the Decree.

The Interim Surplus Guidelines, which became effective February 26, 2001 and were first utilized in CY 2002, serve to implement the narrative provisions of Article III(3)(b) of the Operating Criteria and Article II(B)(2) of the Decree for the period through 2016. These specific interim surplus guidelines will be used annually by the Secretary to determine the quantity of water available for use within the Lower Division States.

Article II(B)(6) of the Decree allows the Secretary to allocate water that is apportioned to one Lower Division State, but is for any reason unused in that State, to another Lower Division State. This determination is made for one year only and no rights to recurrent use of the water accrue to the state that receives the allocated water. As provided in the Interim Surplus Guidelines, Section 1(B), before making a determination of a surplus condition under these Guidelines, the Secretary will determine the quantity of apportioned but unused water from the basic apportionments, based on the best available information at the time. Reclamation does not anticipate any available unused apportionment for calendar year 2003 at this time. However, if any unused apportionment is available the Secretary shall allocate any available unused apportionment for calendar year 2003 in accordance with Article II(B)(6) of the Decree and Section 1(B) of the Interim Surplus Guidelines.

Consistent with Section 7 of the Interim Surplus Guidelines, the August 24-Month Study was used to project the January 1, 2003, Lake Mead reservoir water surface elevation. Based on this projection, the Full Domestic Surplus will govern releases for use in the States of Arizona, Nevada and California during calendar year 2003, as defined in Section 2 of the Interim Surplus Guidelines.

The amount of this surplus shall equal:

1. For Direct Delivery Domestic Use by MWD, 1.250 maf reduced by the amount of basic apportionment available to MWD.
2. For use by SNWA, the Direct Delivery Domestic Use within the SNWA service area in excess of the State of Nevada's basic apportionment.
3. For use in Arizona, the Direct Delivery Domestic Use in excess of Arizona's basic apportionment.

For informational and planning purposes, Reclamation has estimated that the amount of surplus water expected to be pumped or released from Lake Mead during calendar year 2003 under the Full Domestic Surplus is not expected to exceed 0.660 maf (814 mcm). The actual amount of surplus could be less than this amount (in the unlikely event of the availability of any unused apportionment) and could also, based on actual Direct Delivery Domestic use, exceed this projected amount.

Consistent with Section 5(B) of the Interim Surplus Guidelines, if the California contractors have not executed the Quantification Settlement Agreement by December 31, 2002, the interim surplus determinations under Section 2(B)(1) Full Domestic Surplus and Section 2(B)(2) Partial Domestic Surplus are suspended and will instead be based on the 70R Strategy. Consistent with Section 7 of the Interim Surplus Guidelines, the August 24-Month Study was used to project the January 1, 2003, system storage and projected uses. Based on this projection and the definition of the 70R Strategy, the Normal determination will then govern releases for use in the States of Arizona, Nevada and California during calendar year 2003 in accordance with Article II(B)(1) of the Decree.

The suspension of surplus determinations under Section 2(B)(1) and 2(B)(2) of the Interim Surplus Guidelines will remain in effect until such time as California completes all required actions and complies with reductions in water use reflected in Section 5(C) of the Interim Surplus Guidelines. In the event that the California contractors and the Secretary execute said agreements during calendar year 2003, consistent with Section 5(B) of the Interim Surplus Guidelines, the interim surplus determinations under Sections 2(B)(1) and 2(B)(2) will be reinstated, following appropriate consultations. The Full Domestic Surplus will then govern the releases for use in the States of Arizona, Nevada and California for the remainder of calendar year 2003.

Under a Normal determination, it is anticipated that use of mainstream Colorado River water in the Lower Basin will be reduced from approximately 8.5 maf in calendar year 2002 to 7.5 maf in calendar year 2003. This reduction for calendar year 2003 may require reductions in use by users in Nevada (approximately 37,000 acre-feet less than 2003 projected use) and California (approximately 620,000 acre-feet less than 2003 projected use). Given these reductions in available supply, and the extraordinarily low inflow amounts within the Colorado River basin during 2002, the Secretary, through Reclamation, will be reviewing Lower Basin operations to assure that all deliveries and diversions of mainstream water are in strict accordance with the Decree, applicable statutes, contracts, rules, and agreements.

The Secretary anticipates addressing the potential for overuse in the Lower Basin through the adoption of an inadvertent overrun and payback policy in 2002. Absent adoption of an inadvertent overrun and payback policy, and specifically in light of the potential CY 2002 overuse, the Secretary will undertake enforcement actions consistent with the Decree to ensure that no Colorado River water user(s) exceeds its lawful use in CY 2003.

For informational purposes, the natural inflow required to reach a Quantified Surplus (70R value strategy) on January 1, 2003, is 34.9 maf (43,049 mcm), which has been exceeded in the historical record less than 1 percent of the time. As provided in Article IV(1) of the Interim Surplus Guidelines, the 70R strategy involves assuming a 70-percentile inflow into Lake Powell, subtracting out the consumptive uses and system losses and checking the results to see if all of the water could be stored or if flood control releases from Lake Mead would be required. If flood control releases from Lake Mead would be required, additional water is made available to the Lower Division states beyond a full domestic surplus. The notation 70R refers to the natural inflow into Lake Powell that has been exceeded 30 percent of the time (17.4 maf).

On June 19, 2002, Reclamation published a Federal Register notice (67 FR 41733) stating the Secretary would be accepting input on the following:

(1) The ability of lower basin entities outside of California to affect compliance with section 5(B) requirements,
(2) the need of other lower basin entities outside of California, to utilize surplus quantities in 2003 (and the relative amounts of such surplus quantities),
(3) impacts on storage of water in the Colorado River reservoirs, and the impact on future deliveries to users of the waters of the Colorado River under applicable provisions of federal law and international treaty, and
(4) impacts on California's ability to meet applicable conditions for reinstatement of the determinations under sections 2(B)(1) and 2(B)(2).

In response to this Federal Register Notice, Reclamation has received comments and is continuing to review the issues identified in the notice.

As provided in Section 3 of the Interim Surplus Guidelines, the Secretary shall undertake a "mid-year review" pursuant to Article I(2) of the Operating Criteria, allowing for the revision of the current AOP, as appropriate, based on actual runoff conditions which are greater than projected, or demands which are lower than projected. The Secretary shall revise the determination for the current year only to allow for additional deliveries. Any revision in the AOP may occur only after a reinitiation of the AOP consultation process as required by law.

1944 U.S.-Mexico Water Treaty

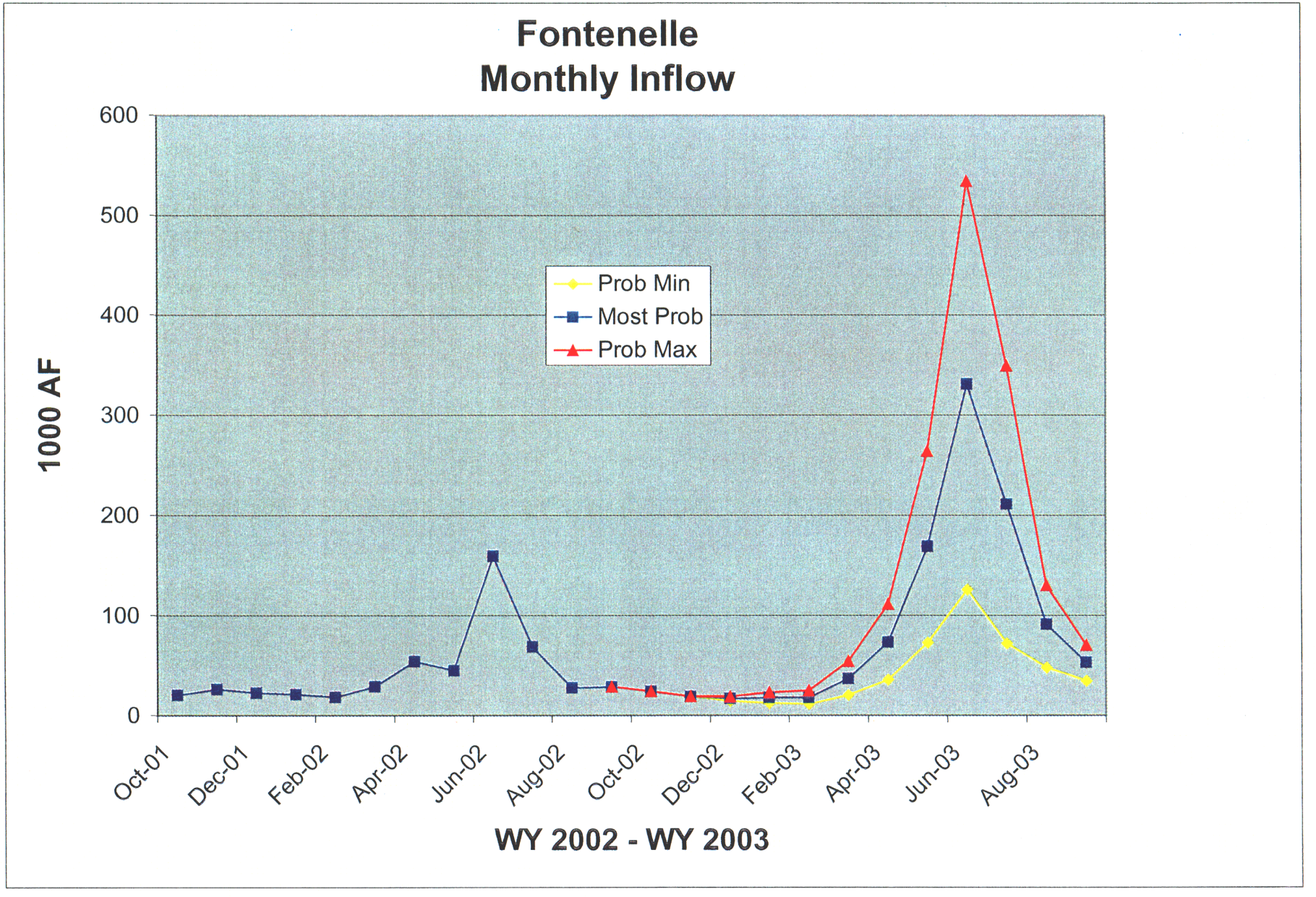
Under most probable inflow conditions, water in excess of that required to supply uses in the United States will not be available, therefore there will be no Colorado River surplus, as defined by the 1944 U.S.-Mexico Water Treaty, for delivery to Mexico. Vacant storage space in mainstem reservoirs is substantially greater than that required by flood control regulations. Therefore, a volume of 1.5 maf

(1,850 mcm) of water will be available to be scheduled for delivery to Mexico during calendar year 2003 in accordance with Article 15 of the 1944 U.S.-Mexico Water Treaty and Minute No. 242 of the International Boundary and Water Commission. Calendar year schedules of the monthly deliveries of Colorado River water are formulated by the Mexican Section of the IBWC and presented to the United States Section before the beginning of each calendar year.

DISCLAIMER

Nothing in this Annual Operating Plan is intended to interpret the provisions of *The Colorado River Compact* (45 Stat. 1057), *The Upper Colorado River Basin Compact* (63 Stat. 31), *The Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Treaty Between the United States of America and Mexico* (Treaty Series 994, 59 Stat. 1219), the United States/Mexico agreement in Minute No. 242 of August 30, 1973, (Treaty Series 7708; 24 UST 1968), the Decree entered by the Supreme Court of the United States in *Arizona v. California* et al. (376 U.S. 340), as amended and supplemented, *The Boulder Canyon Project Act* (45 Stat. 1057), *The Boulder Canyon Project Adjustment Act* (54 Stat. 774; 43 U.S.C. 618a), *The Colorado River Storage Project Act* (70 Stat. 105; 43 U.S.C. 620), *The Colorado River Basin Project Act* (82 Stat. 885; 43 U.S.C. 1501), *The Colorado River Basin Salinity Control Act* (88 Stat. 266; 43 U.S.C. 1951), *The Hoover Power Plant Act of 1984* (98 Stat. 1333), *The Colorado River Floodway Protection Act* (100 Stat. 1129; 43 U.S.C. 1600), or *The Grand Canyon Protection Act of 1992* (Title XVIII of Public Law 102-575, 106 Stat. 4669).

Attachment. Monthly inflow, monthly release, and end of month contents for Colorado River reservoirs (October 2001 through September 2003) under the probable maximum, most probable, and the probable minimum inflow scenarios, and historic end of month contents.


Fontenelle
Monthly Inflow
1000 AF
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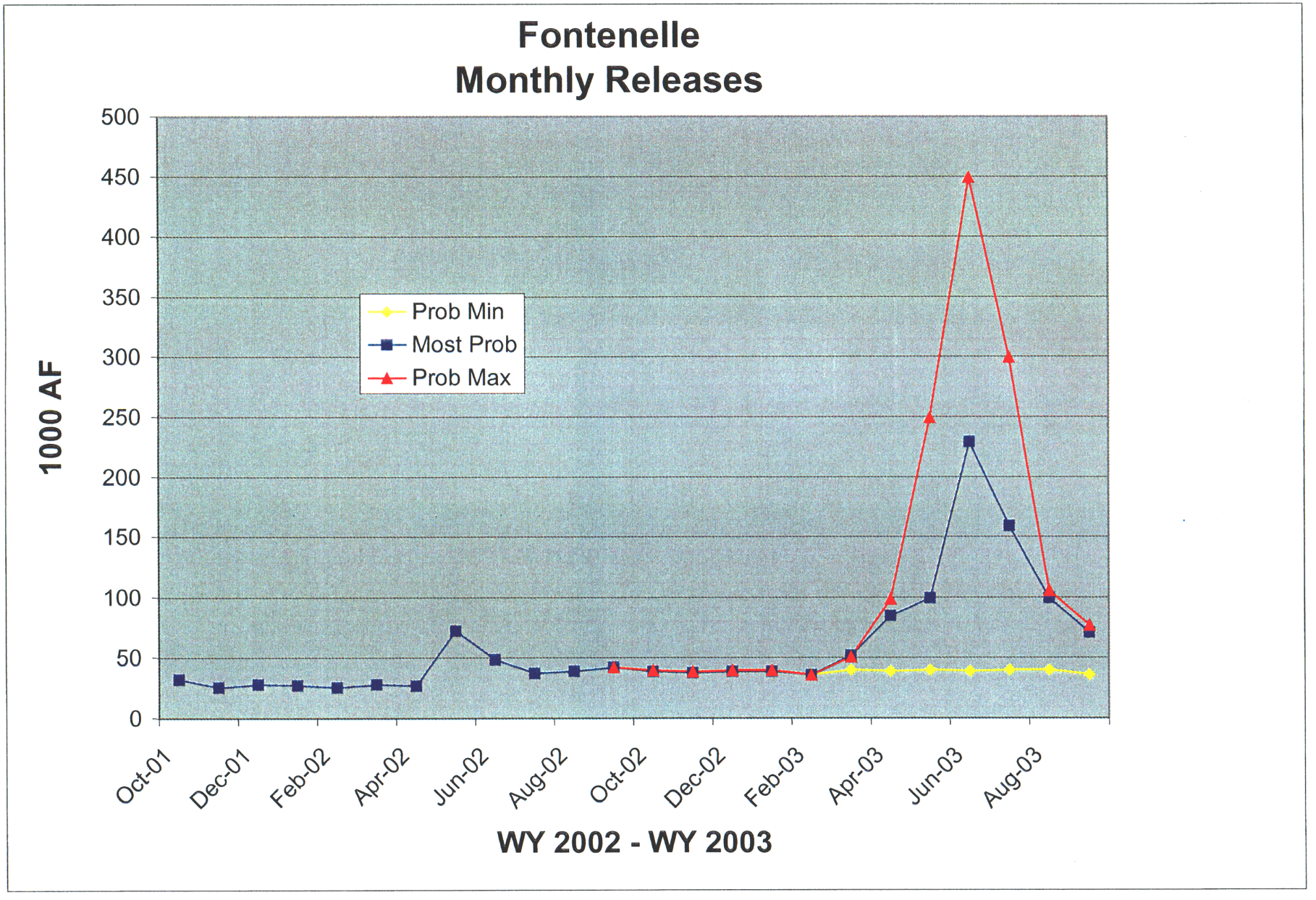
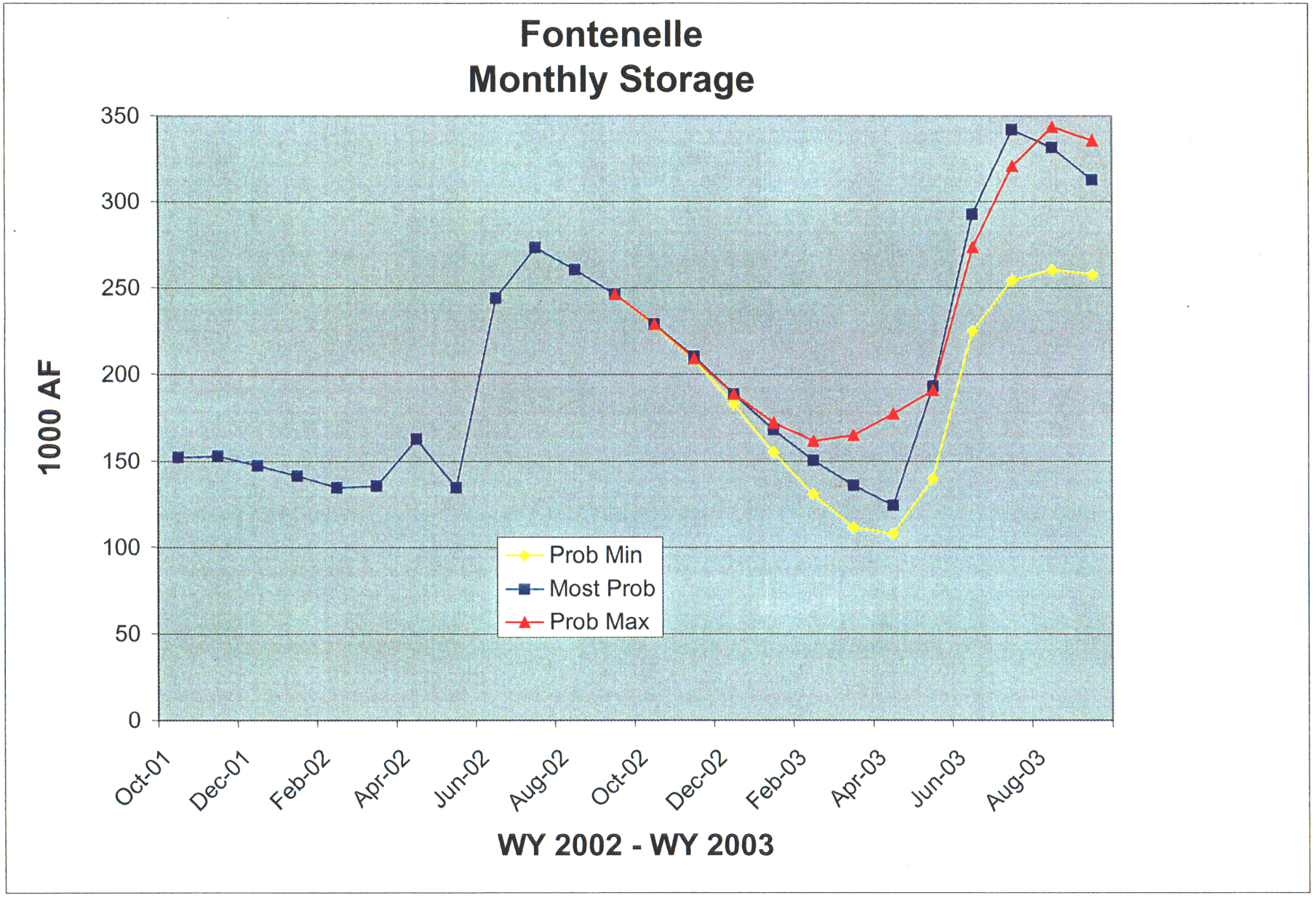
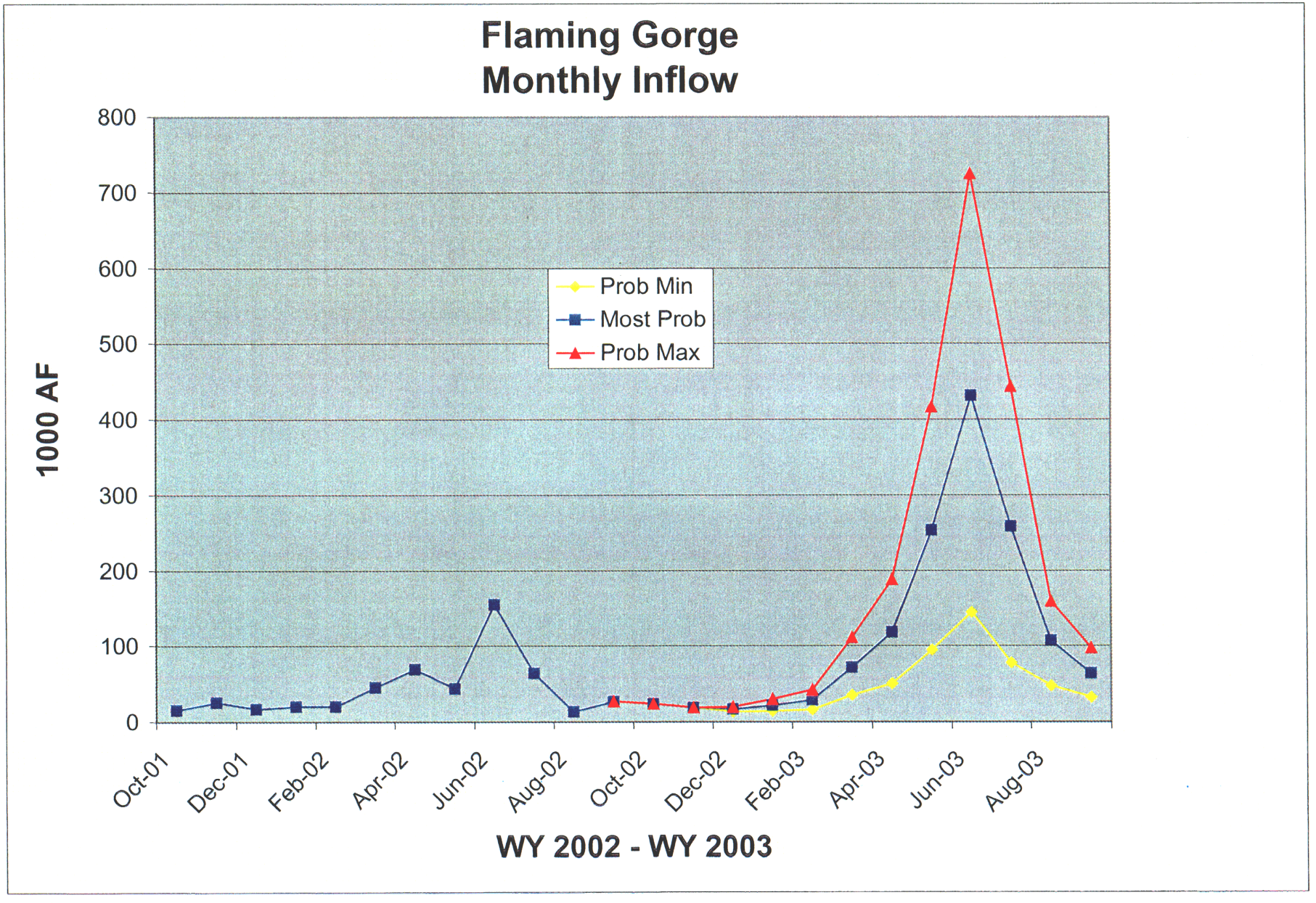
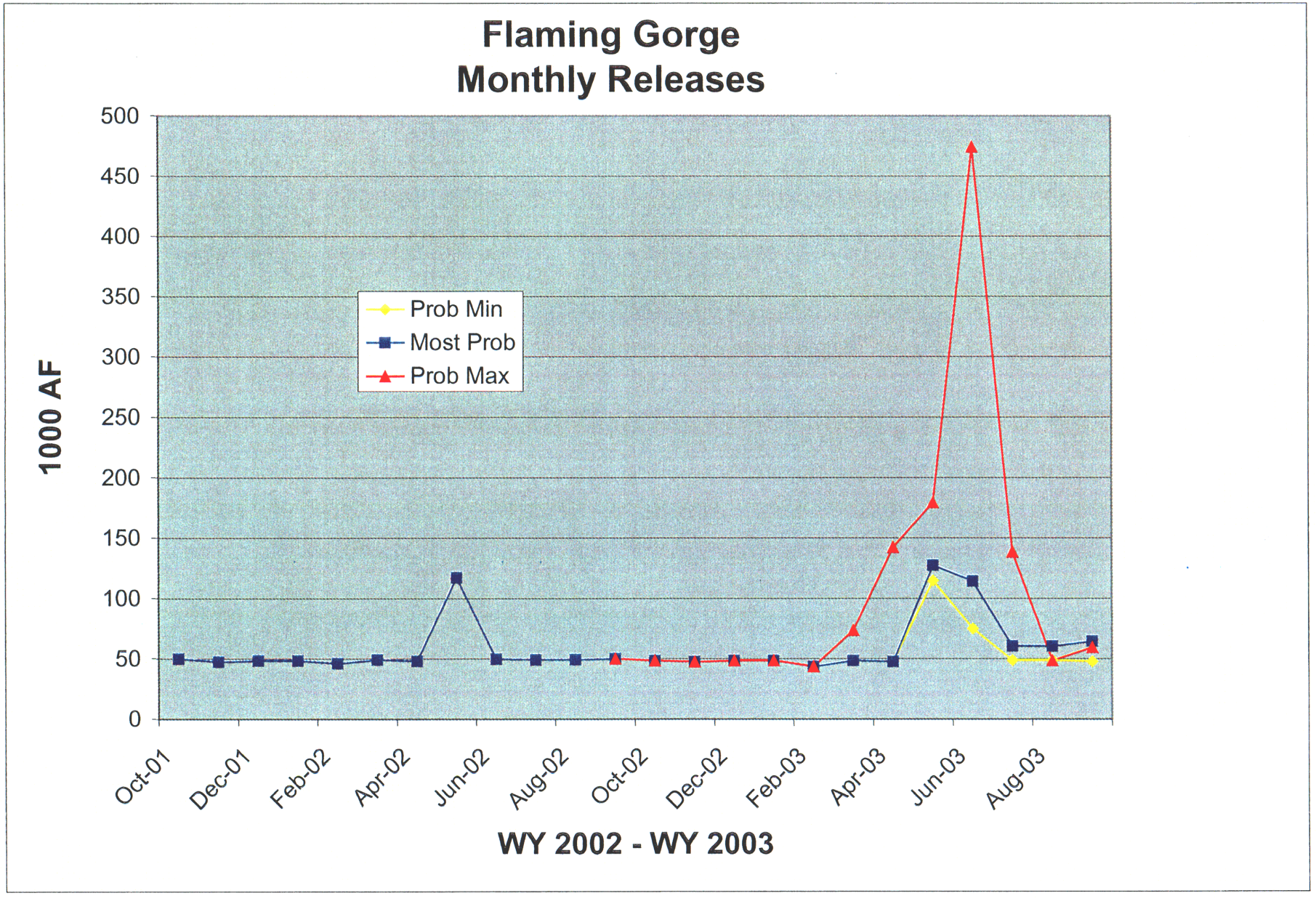
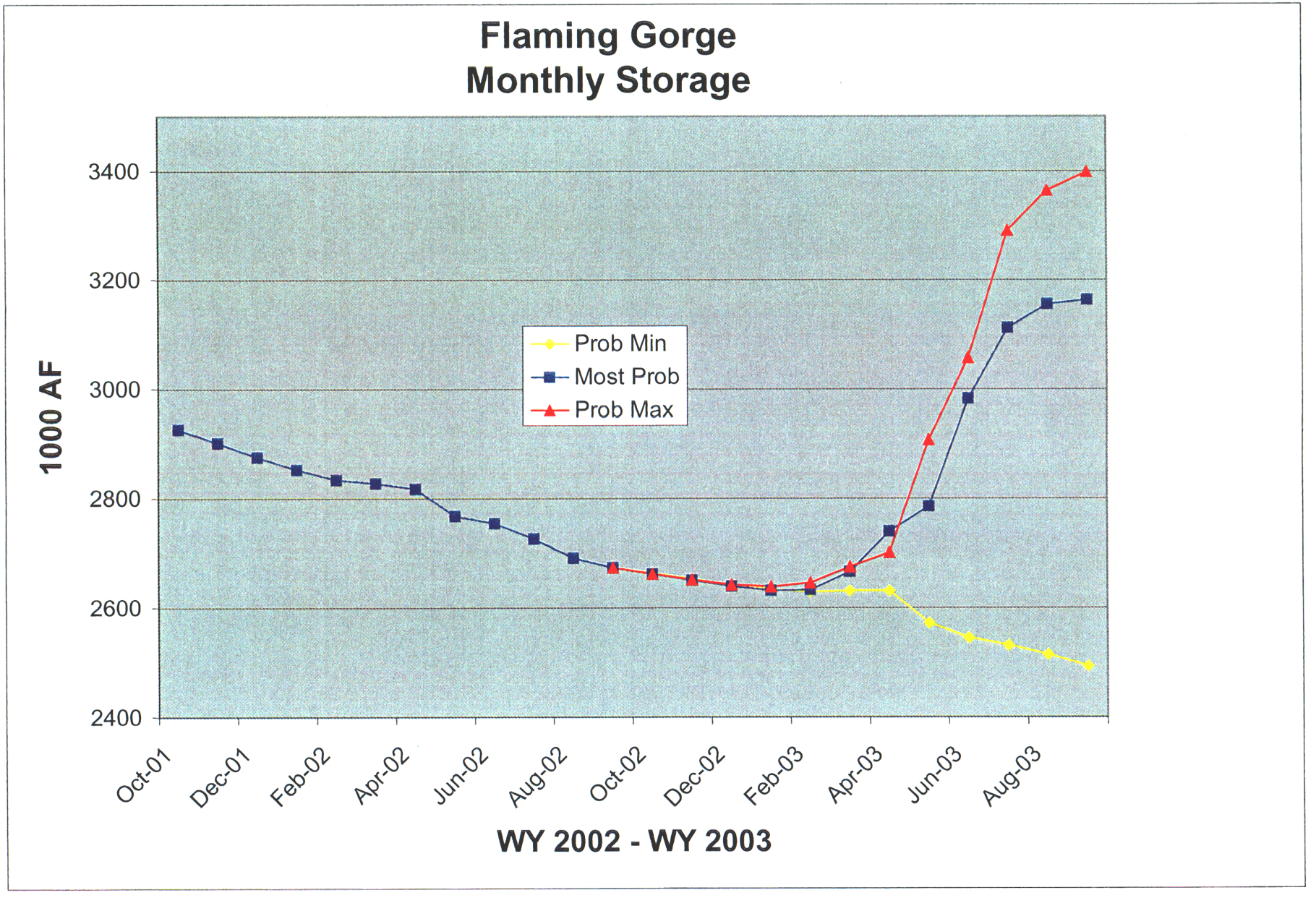
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

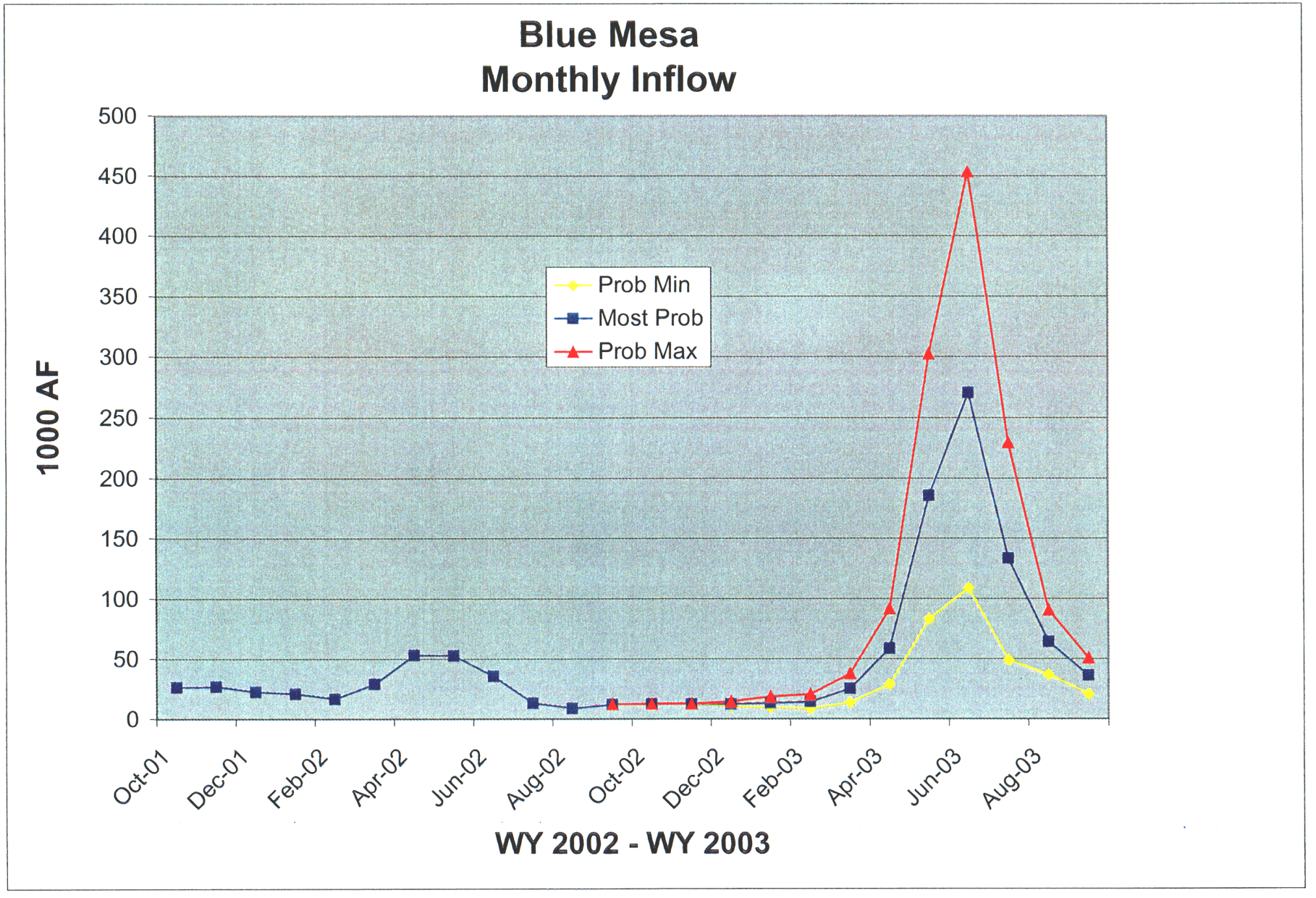

Fontenelle
Monthly Releases
1000 AF
500
450
400
350
300
250
200
150
100
50
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

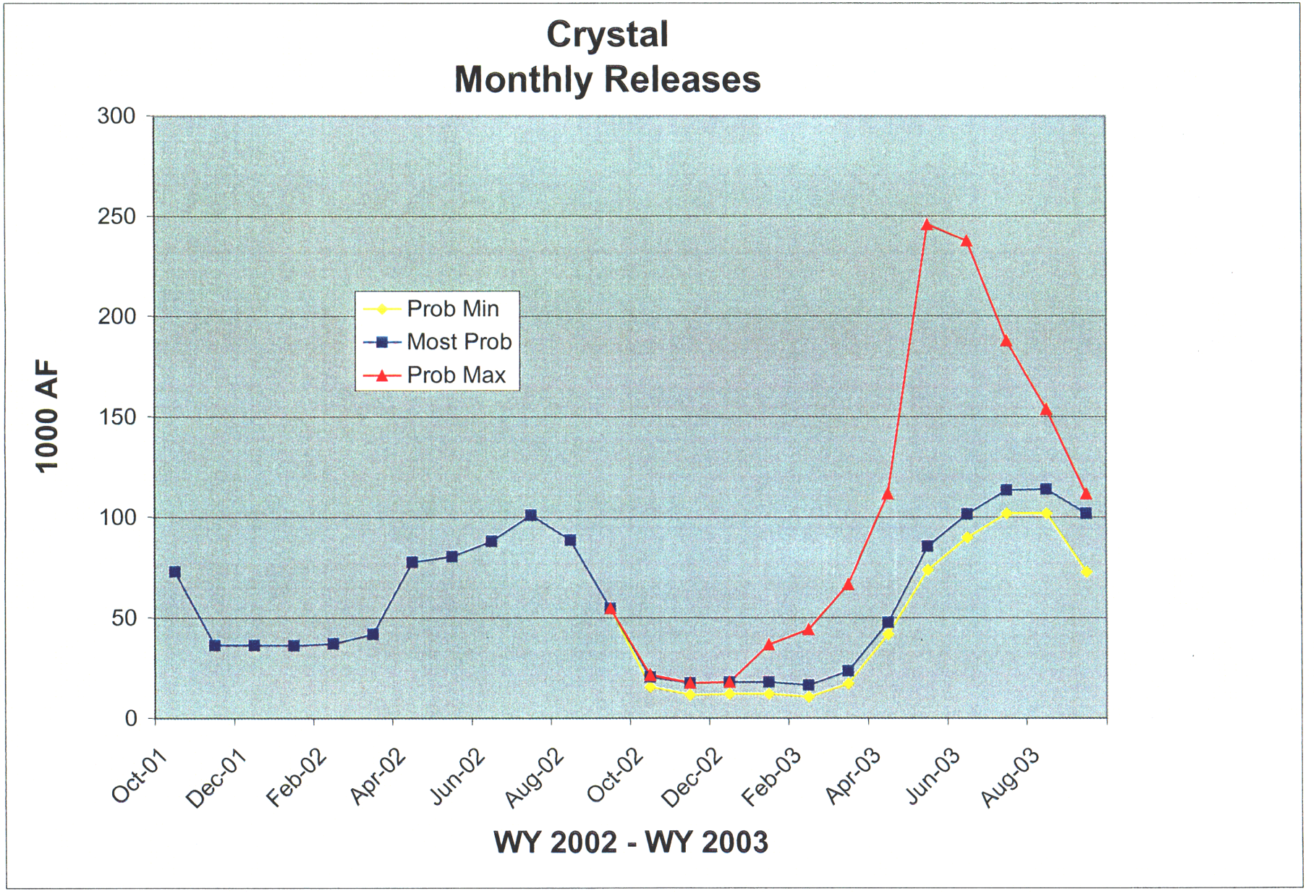

Fontenelle
Monthly Storage
1000 AF
350
300
250
200
150
100
50
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

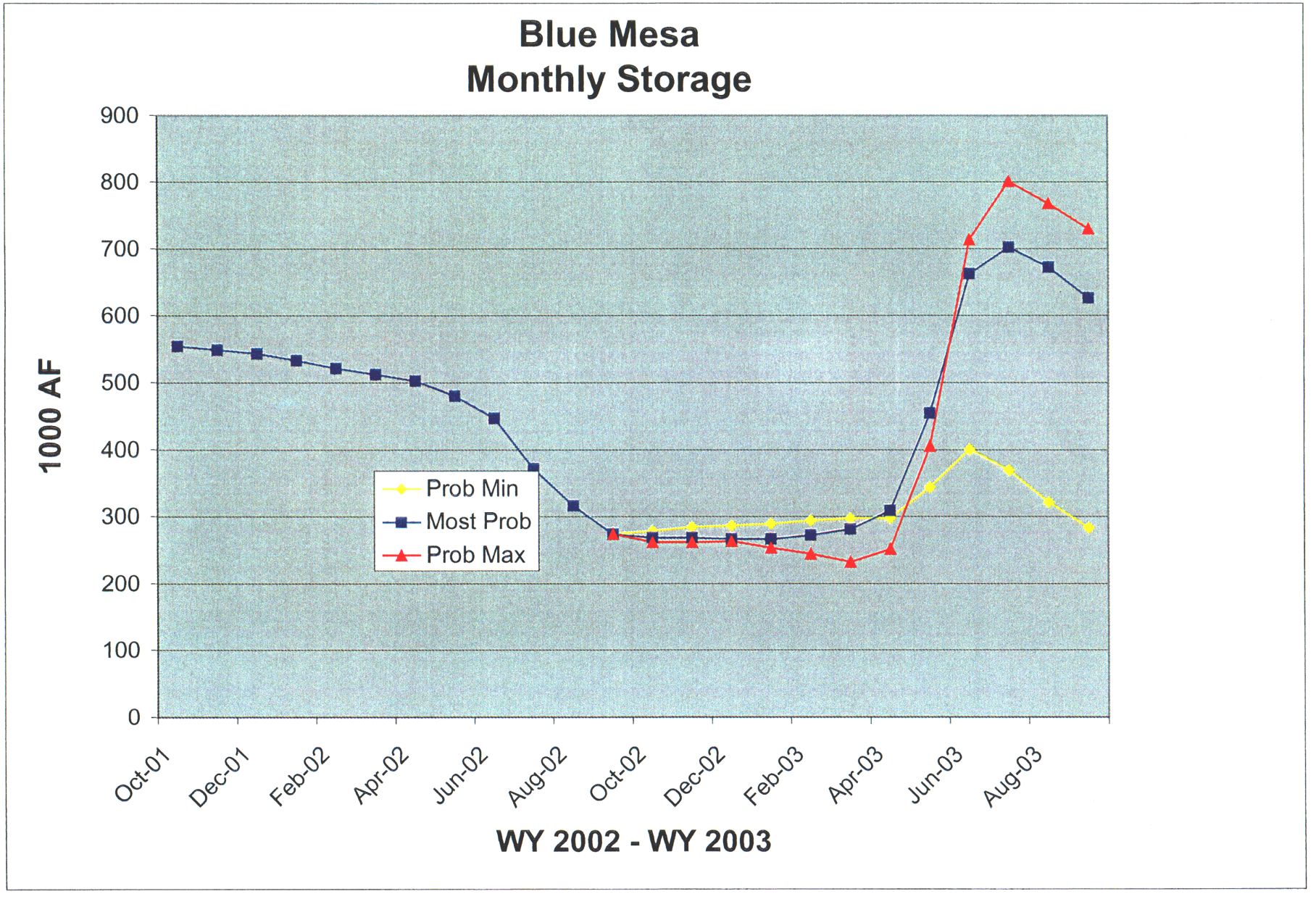

Flaming Gorge
Monthly Inflow
1000 AF
800
700
600
500
400
300
200
100
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

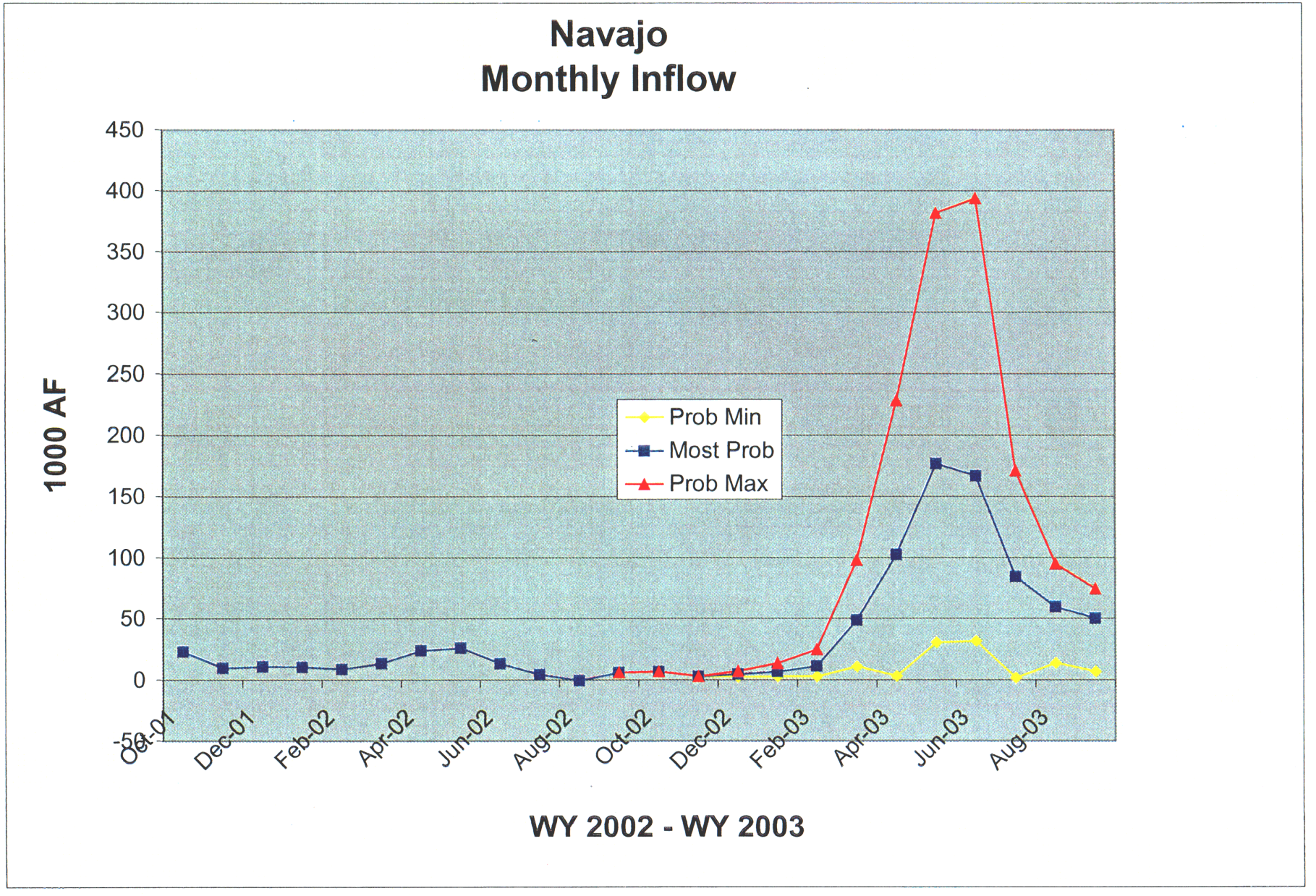

Flaming Gorge
Monthly Releases
1000 AF
500
450
400
350
300
250
200
150
100
50
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

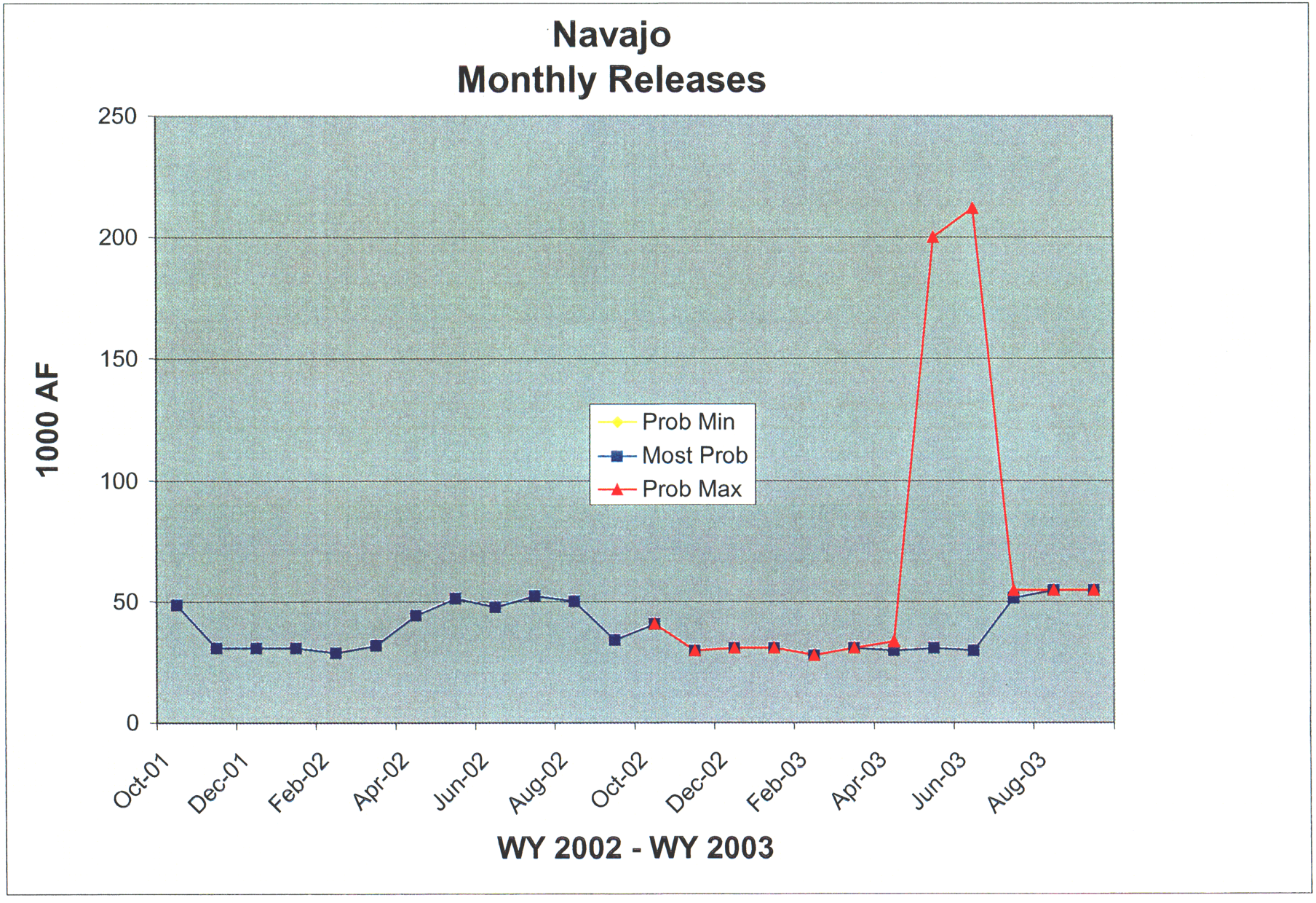

Flaming Gorge
Monthly Storage
1000 AF
3400
3200
3000
2800
2600
2400
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

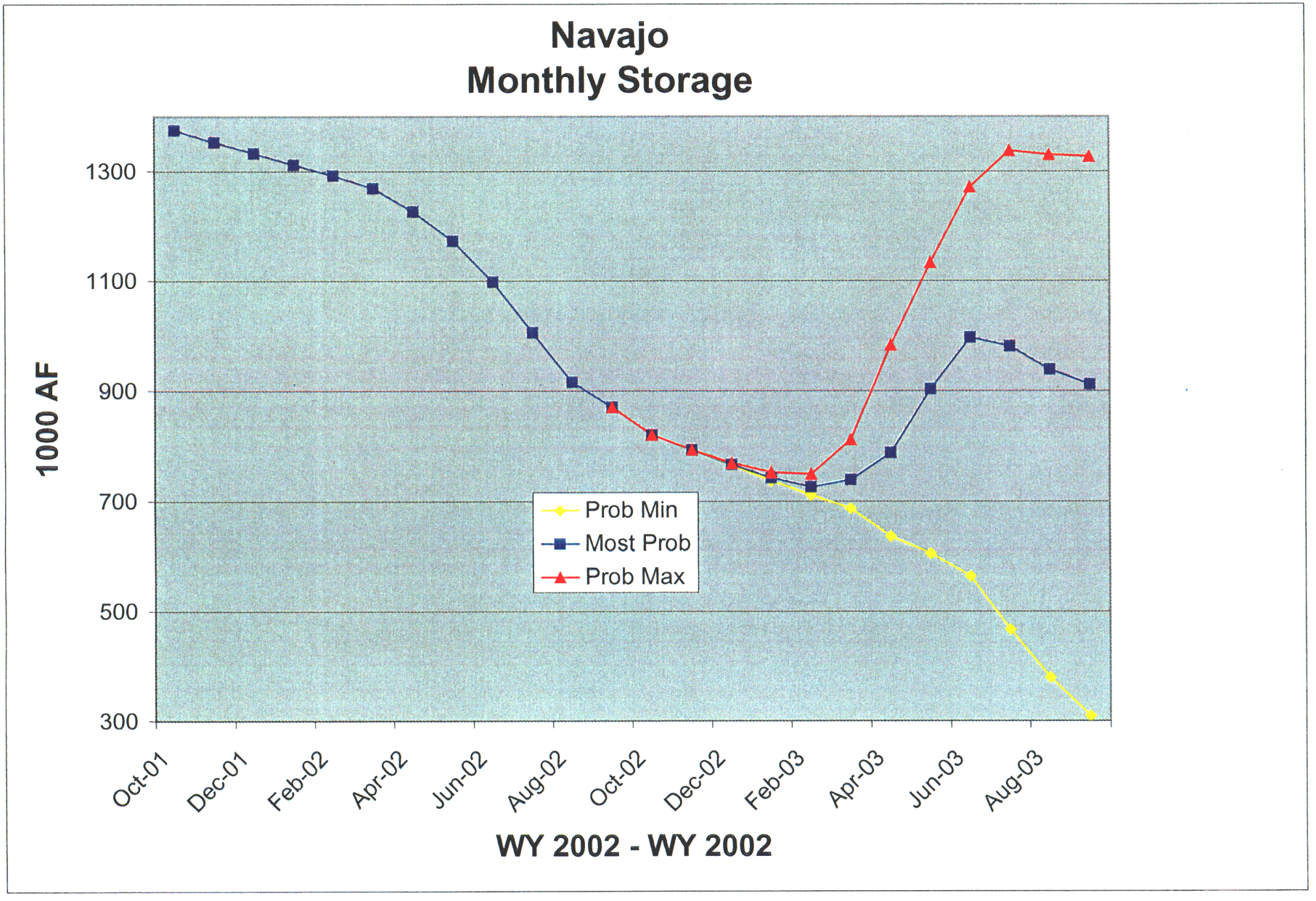

Blue Mesa
Monthly Inflow
1000 AF
500
450
400
350
300
250
200
150
100
50
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

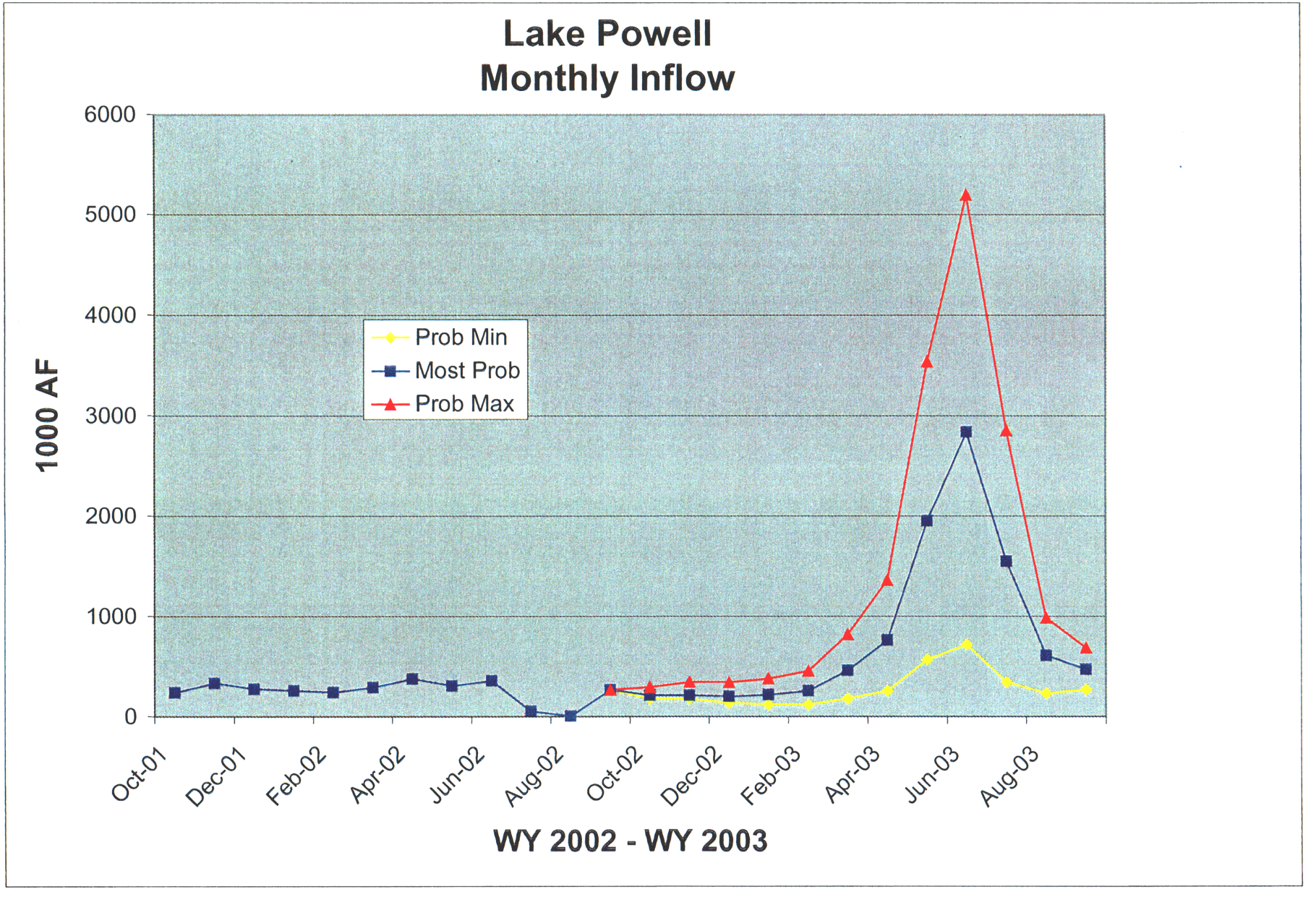

Crystal
Monthly Releases
1000 AF
300
250
200
150
100
50
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

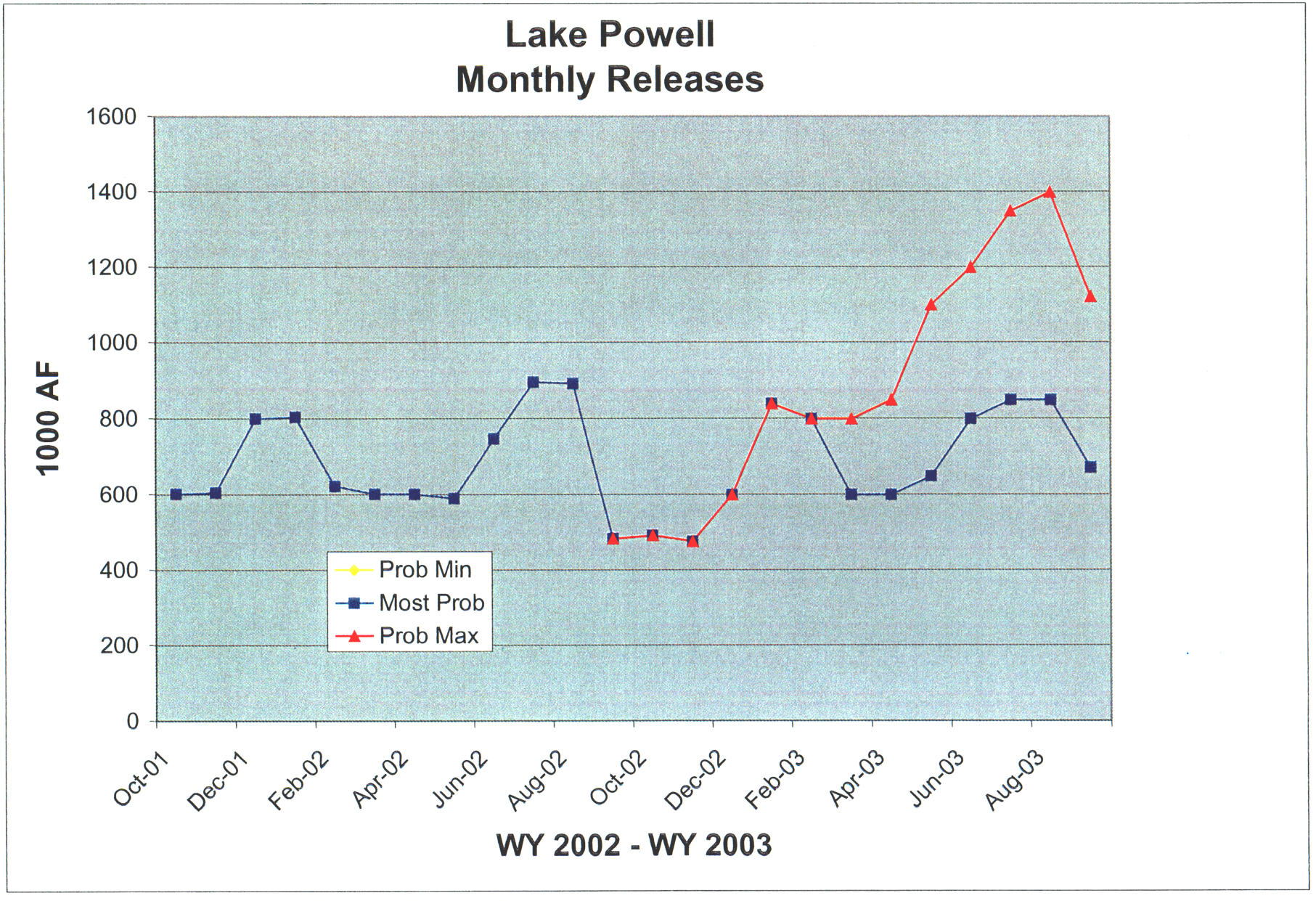

Blue Mesa
Monthly Storage
1000 AF
900
800
700
600
500
400
300
200
100
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

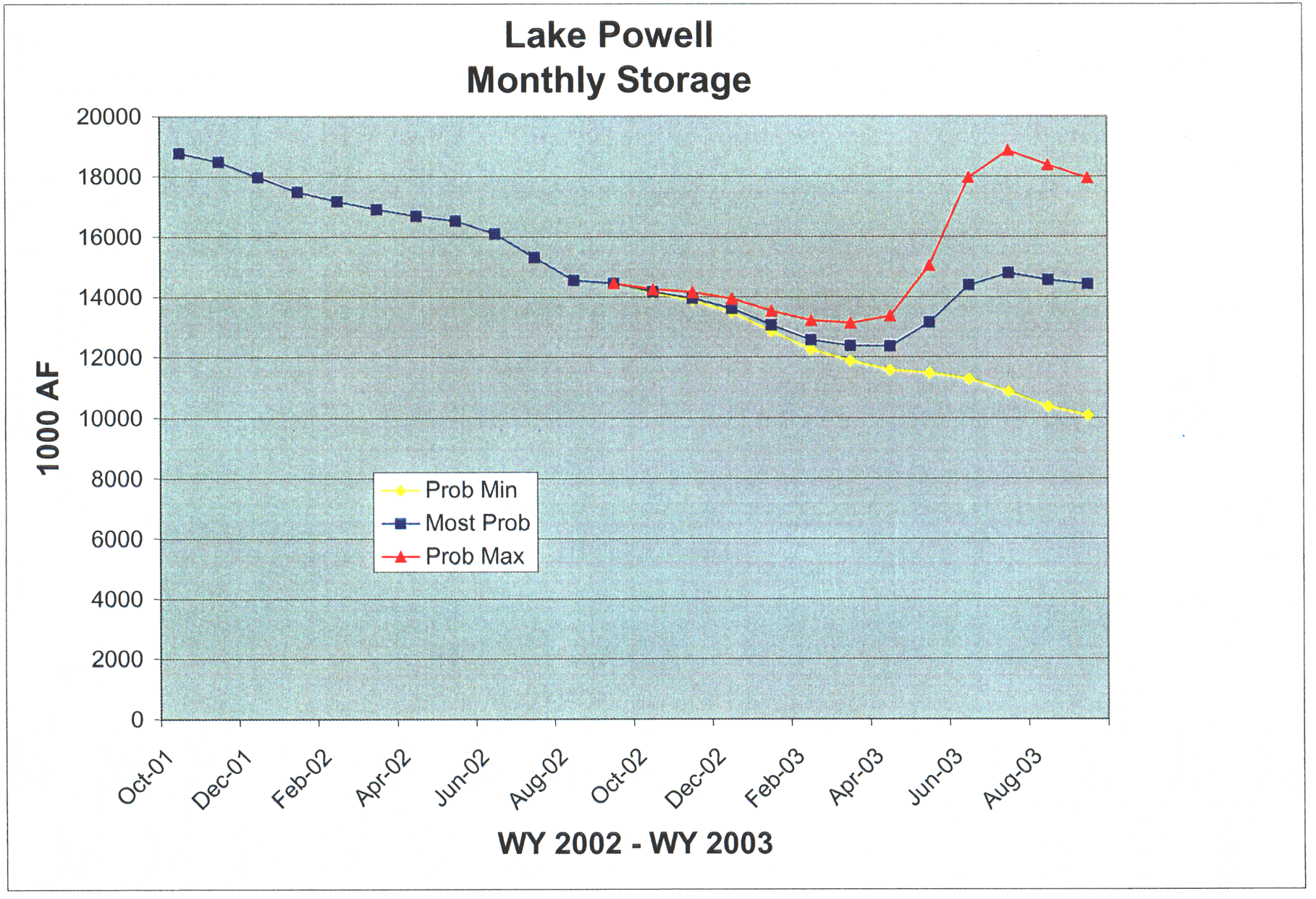

Navajo
Monthly Inflow
1000 AF
450
400
350
300
250
200
150
100
50
0
-50
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
Prob Min
Most Prob
Prob Max
WY 2002 - WY 2003

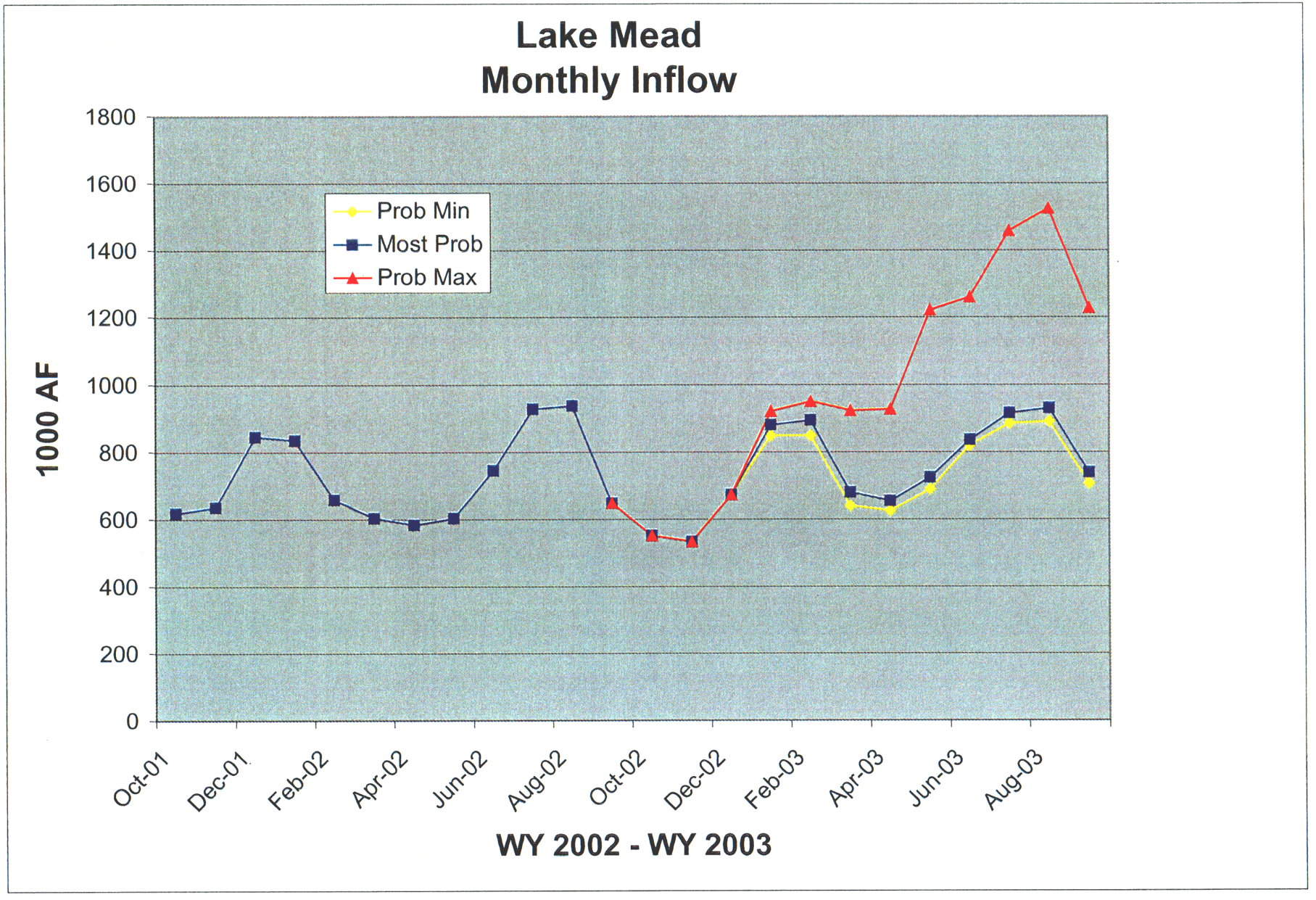

Navajo
Monthly Releases
1000 AF
250
200
150
100
50
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

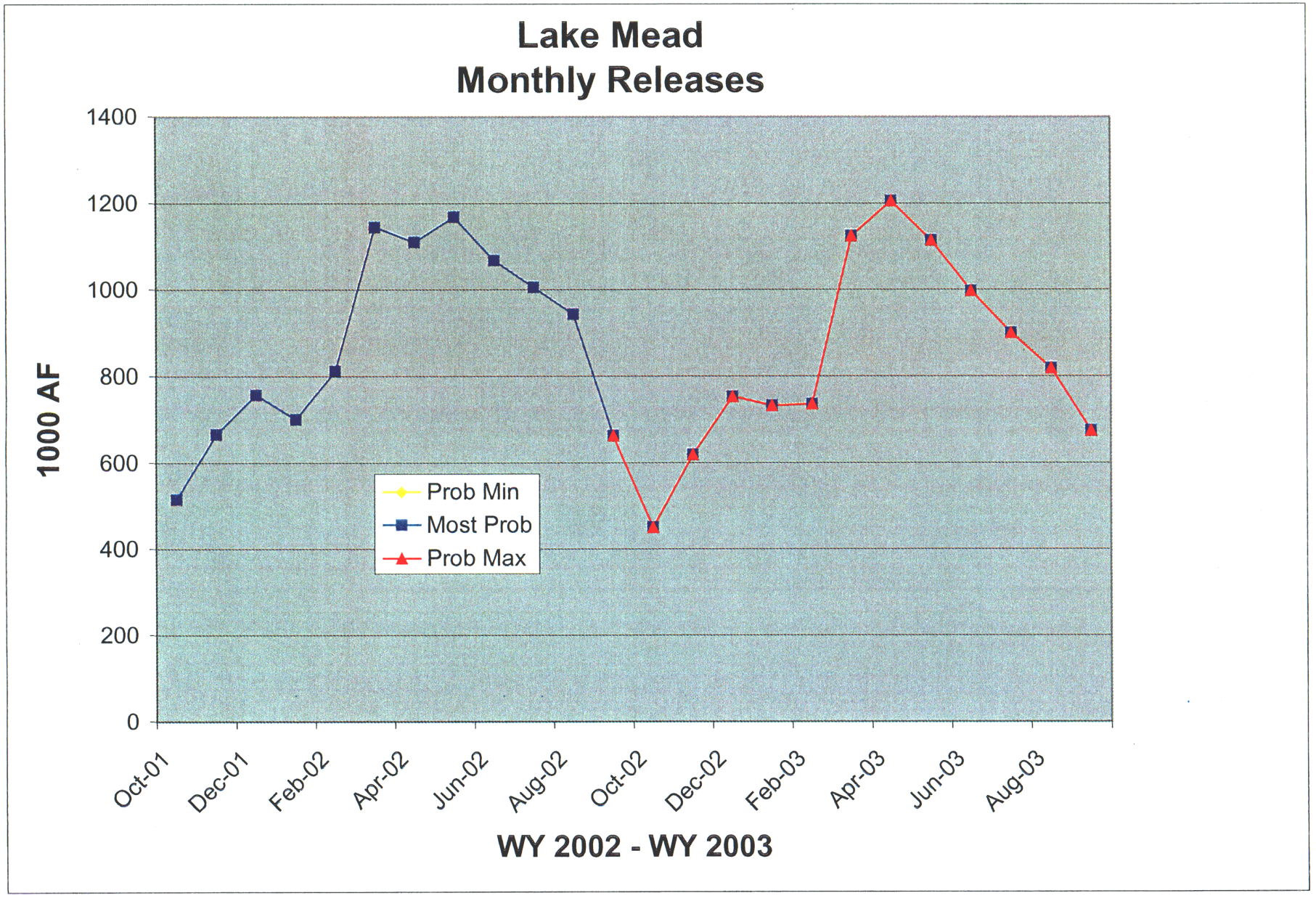

Navajo
Monthly Storage
1000 AF
1300
1100
900
700
500
300
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
Prob Min
Most Prob
Prob Max
WY 2002 - WY 2002


Lake Powell
Monthly Inflow
1000 AF
6000
5000
4000
3000
2000
1000
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003


Lake Powell
Monthly Releases
1000 AF
1600
1400
1200
1000
800
600
400
200
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003


Lake Powell
Monthly Storage
1000 AF
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003


Lake Mead
Monthly Inflow
1000 AF
1800
1600
1400
1200
1000
800
600
400
200
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003


Lake Mead
Monthly Releases
1000 AF
1400
1200
1000
800
600
400
200
0
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
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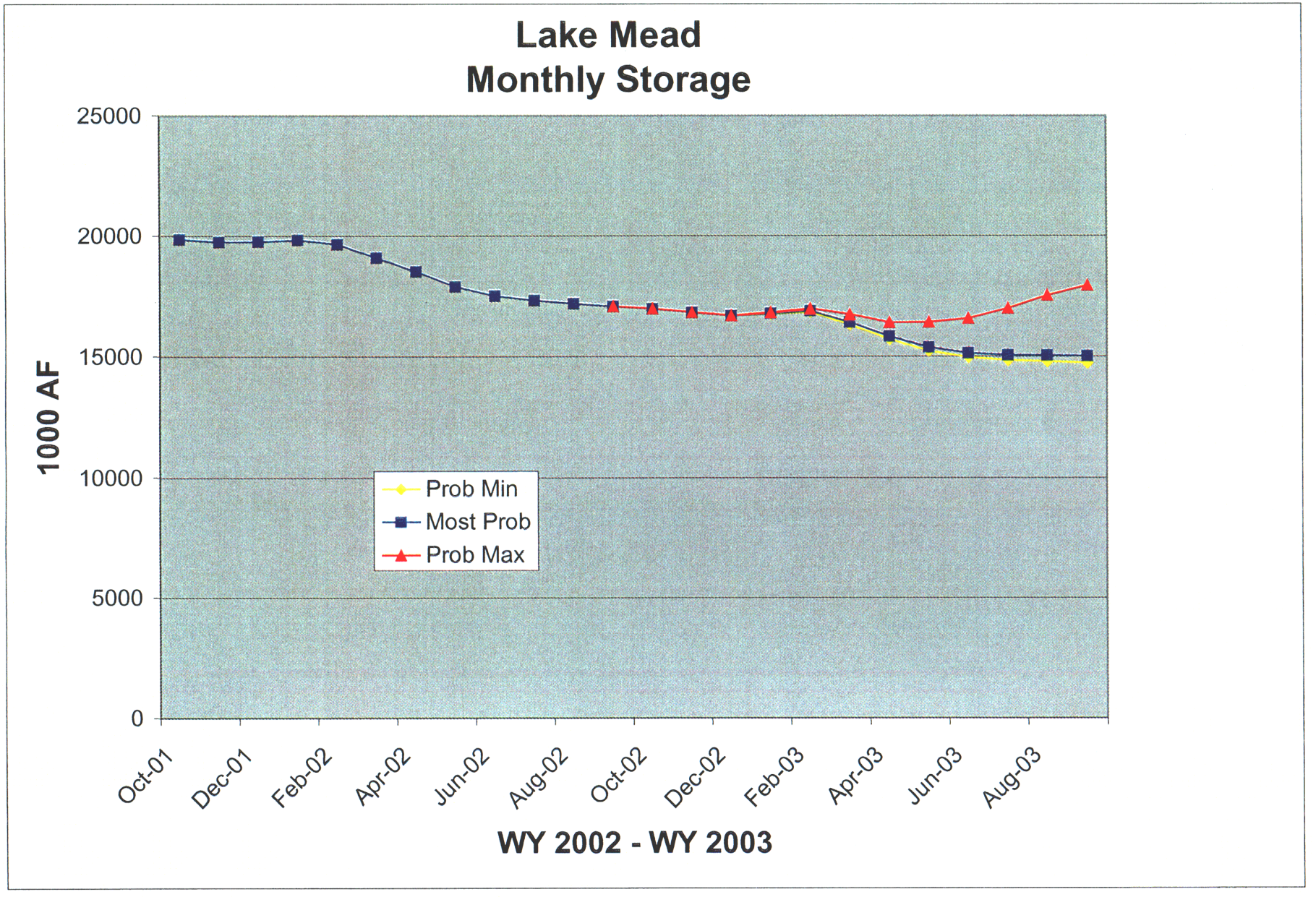
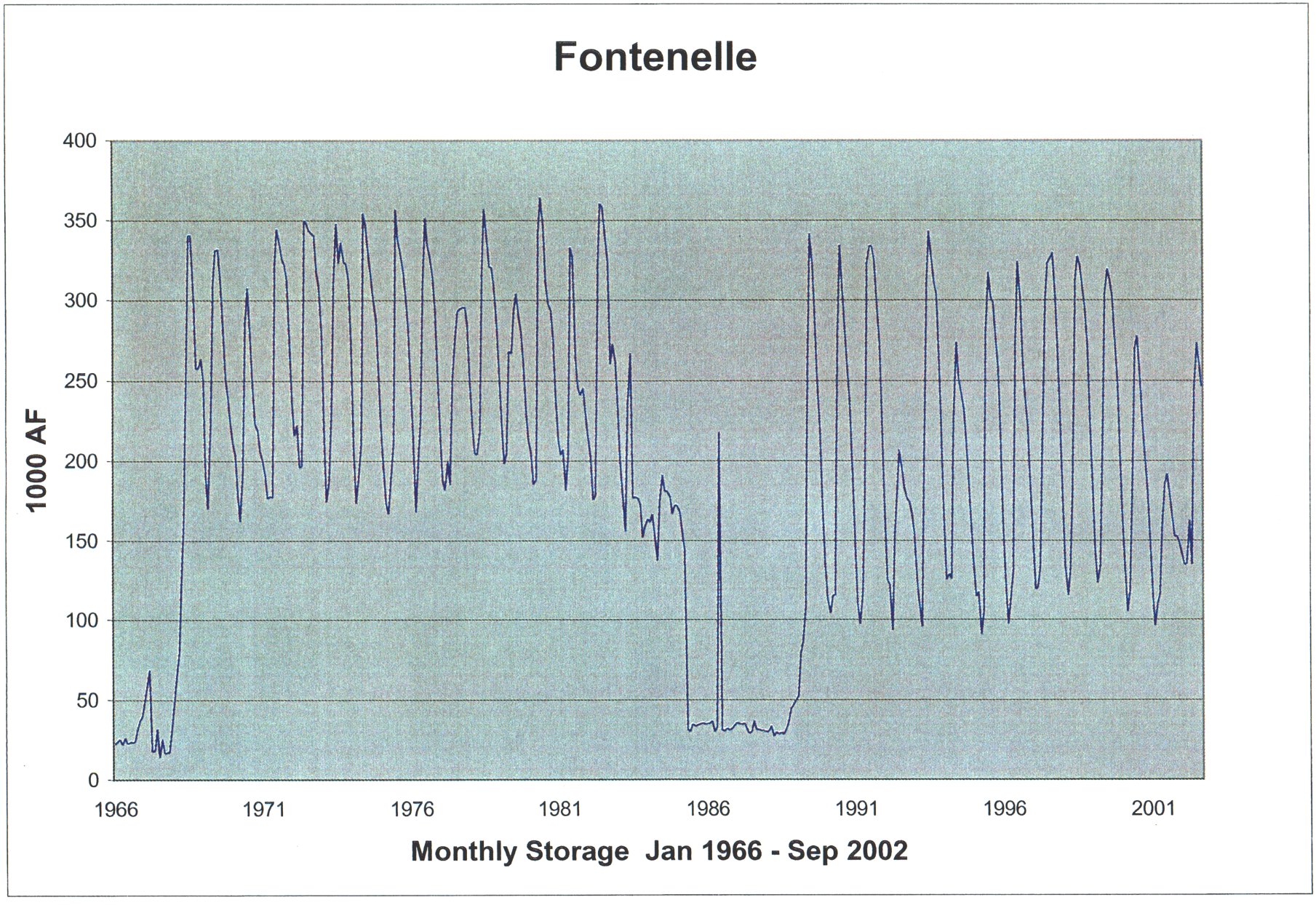
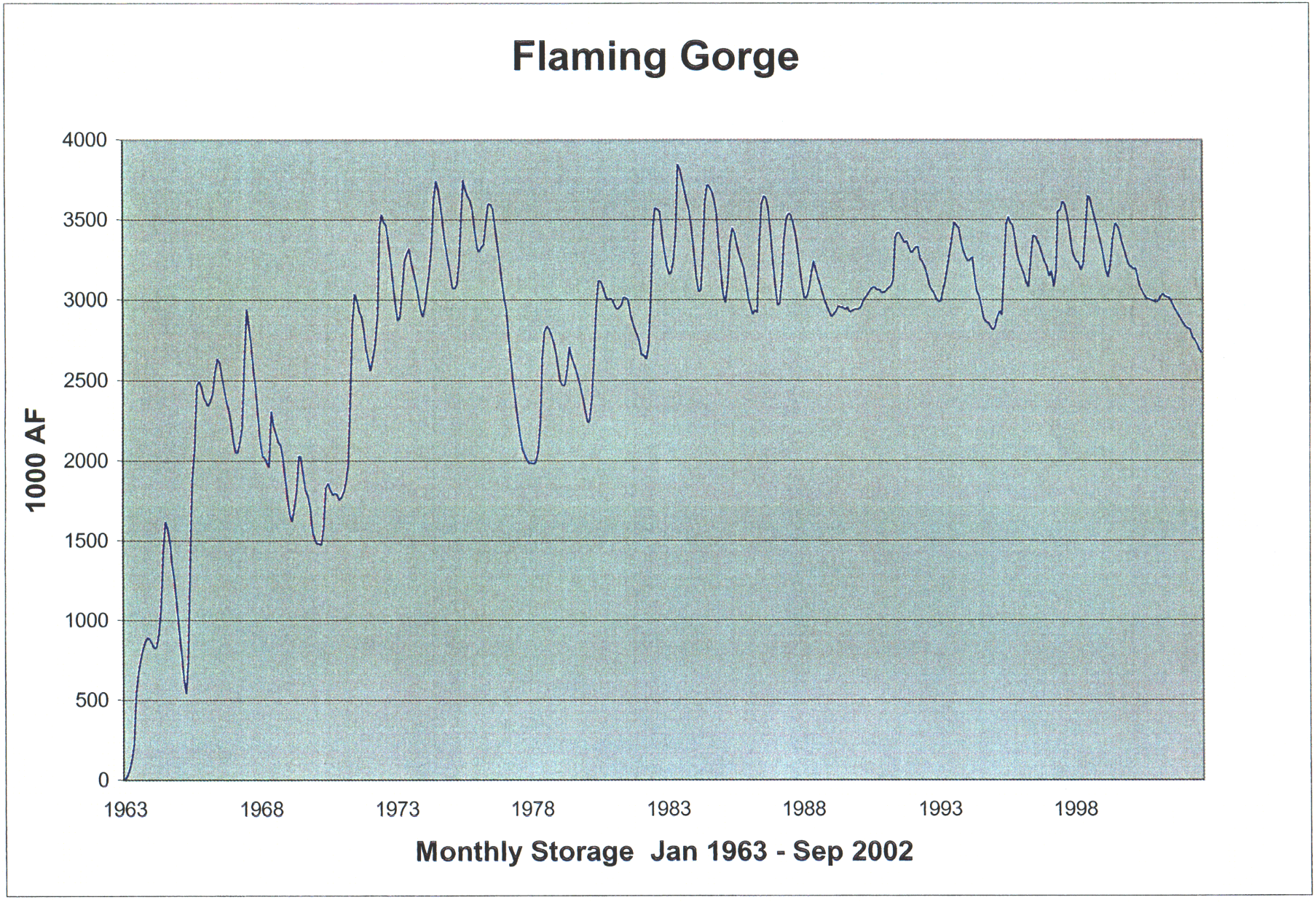
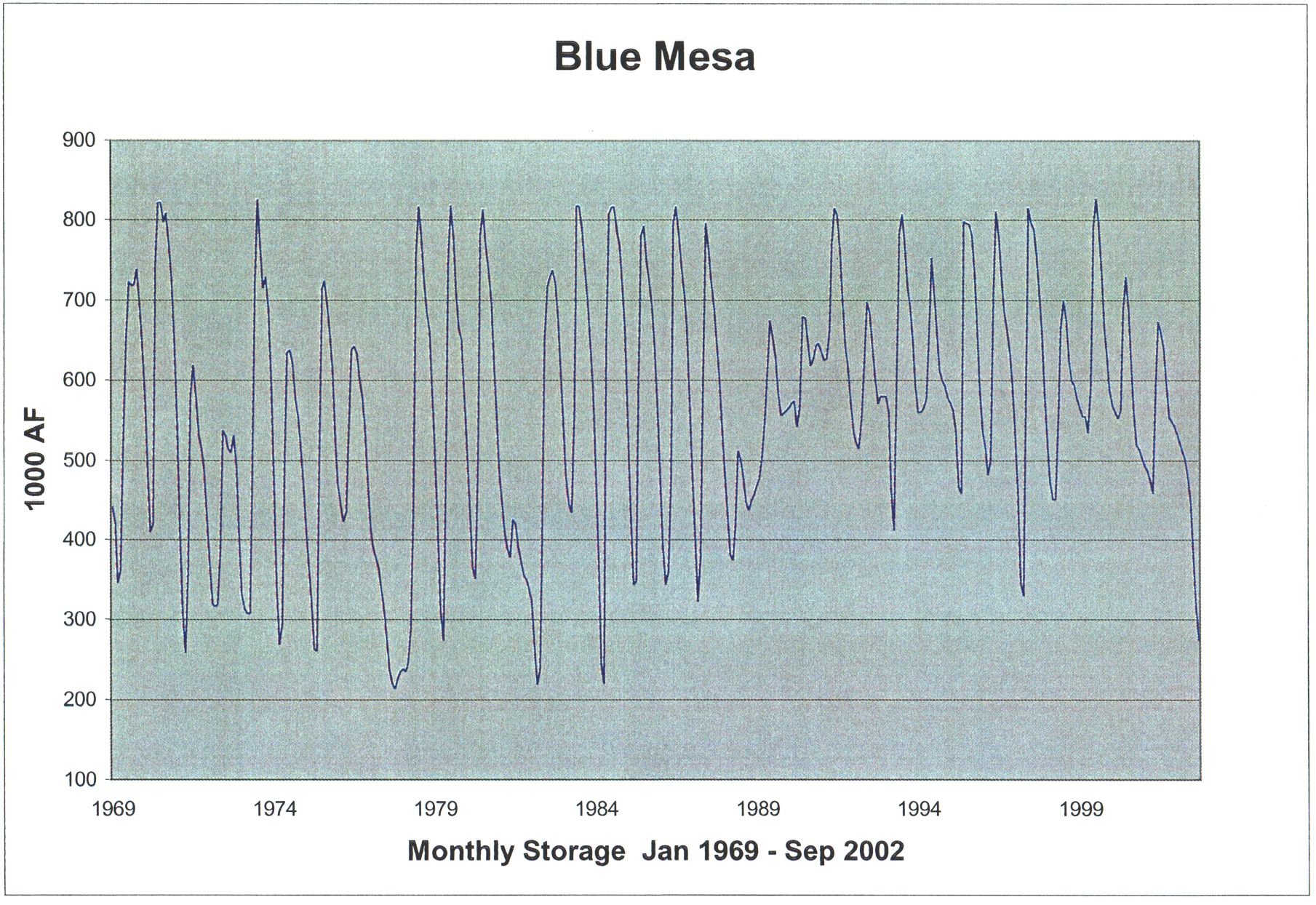
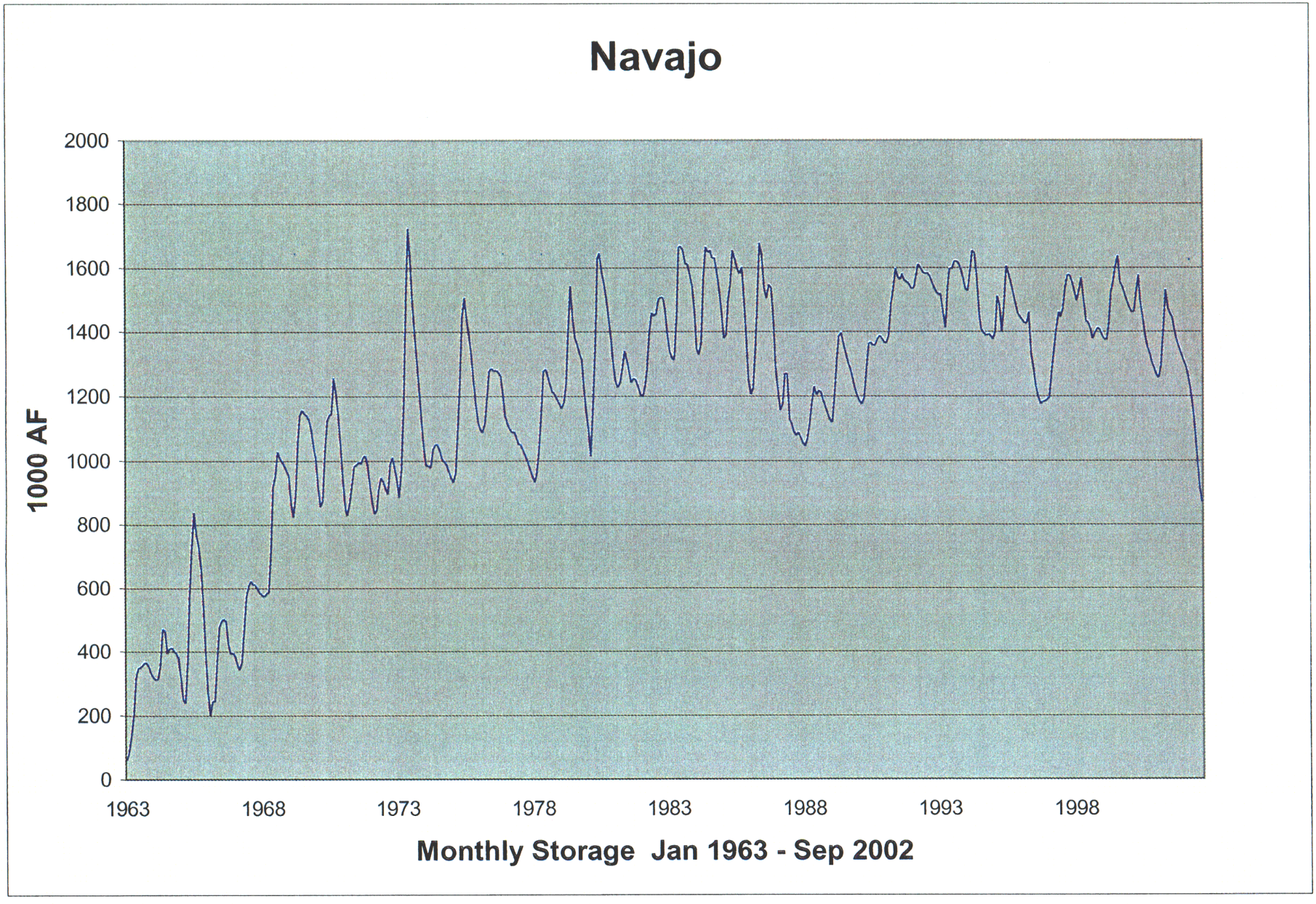
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

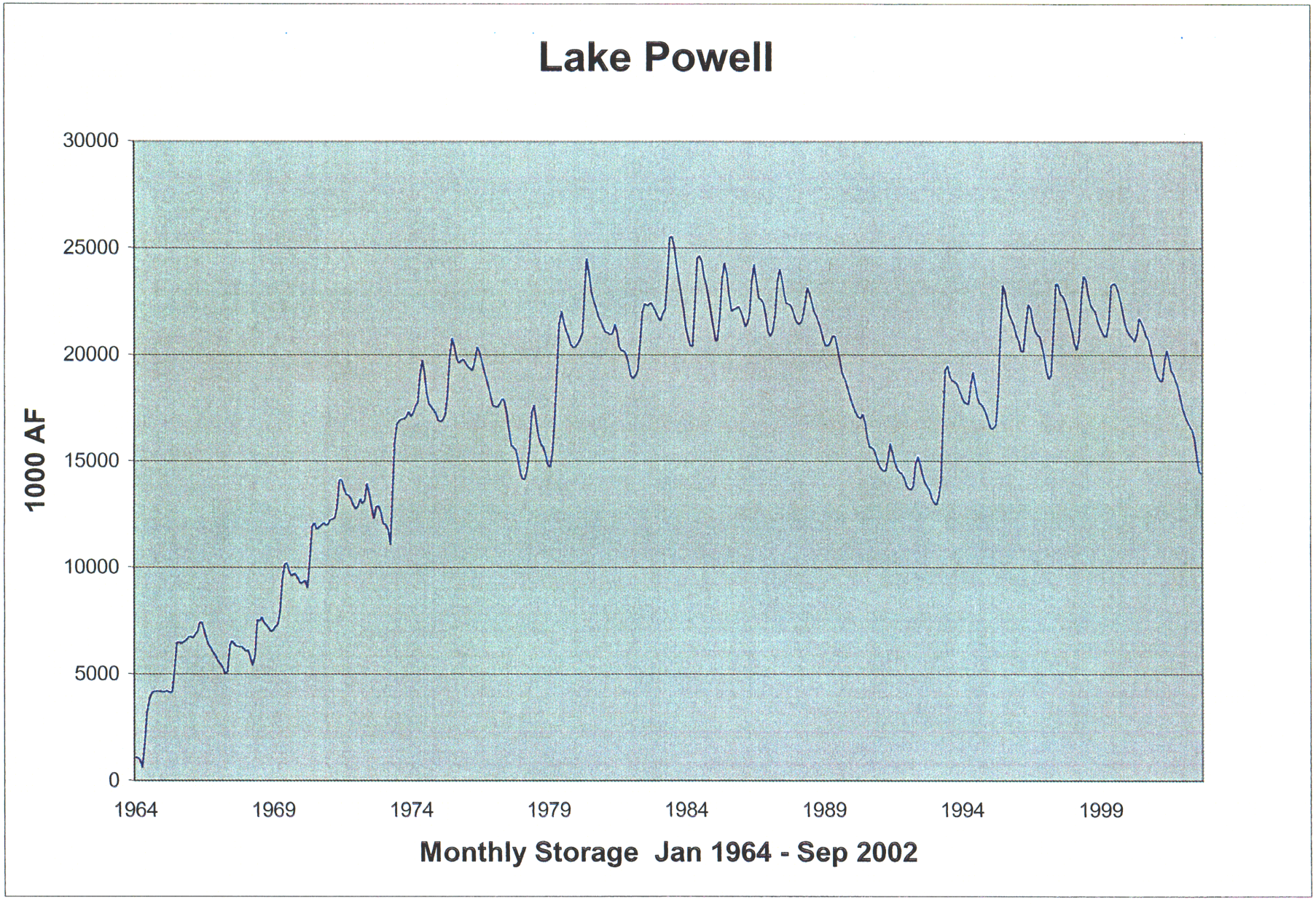

Lake Mead
Monthly Storage
25000
20000
15000
10000
5000
0
1000 AF
Prob Min
Most Prob
Prob Max
Oct-01
Dec-01
Feb-02
Apr-02
Jun-02
Aug-02
Oct-02
Dec-02
Feb-03
Apr-03
Jun-03
Aug-03
WY 2002 - WY 2003

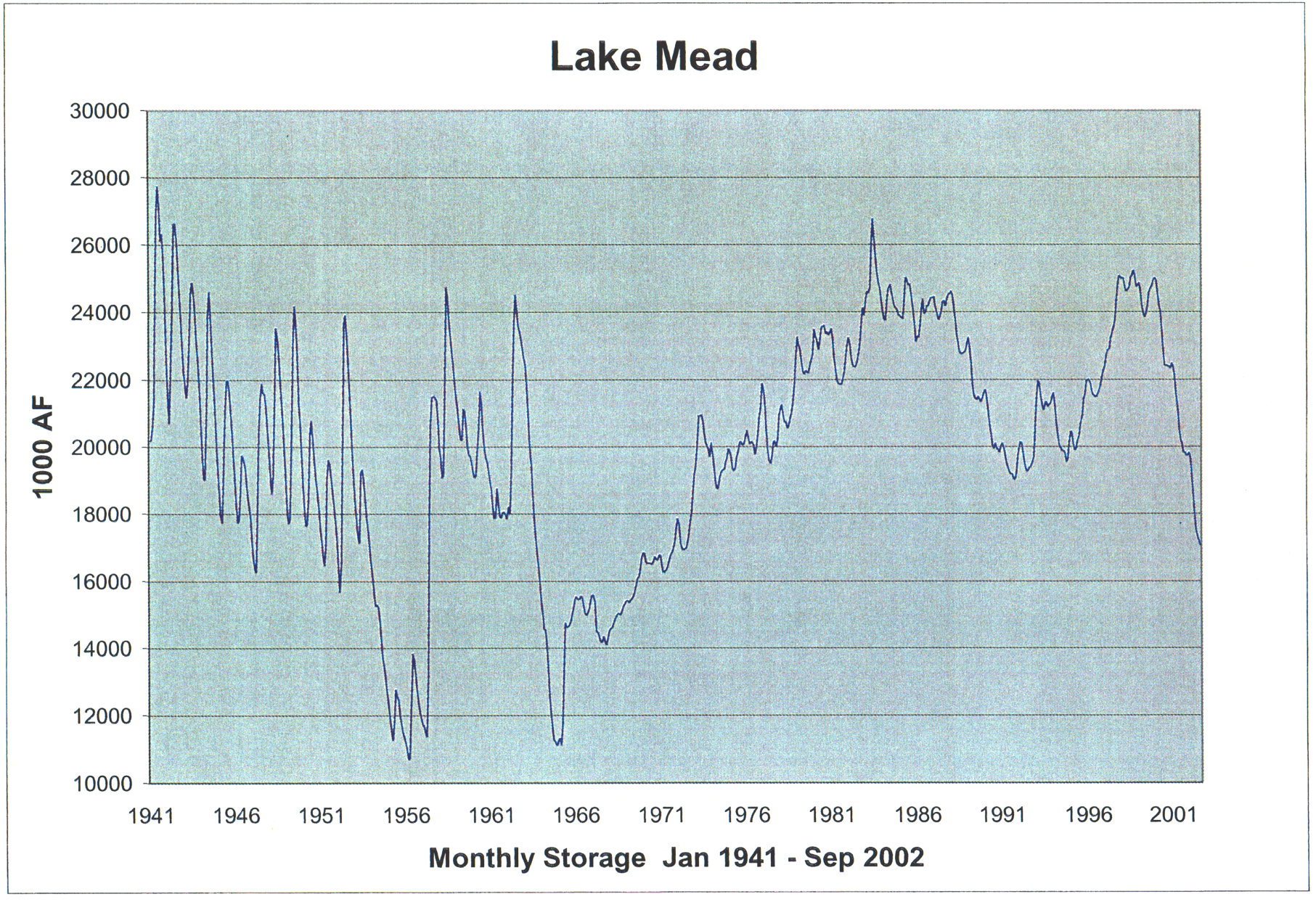

Fontenelle
400
350
300
250
200
150
100
50
0
1000 AF
1966
1971
1976
1981
1986
1991
1996
2001
Monthly Storage Jan 1966 - Sep 2002


Flaming Gorge
4000
3500
3000
2500
2000
1500
1000
500
0
1000 AF
1963
1968
1973
1978
1983
1988
1993
1998
Monthly Storage Jan 1963 - Sep 2002


Blue Mesa
900
800
700
600
500
400
300
200
100
1000 AF
1969
1974
1979
1984
1989
1994
1999
Monthly Storage Jan 1969 - Sep 2002


Navajo
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1000 AF
1963
1968
1973
1978
1983
1988
1993
1998
Monthly Storage Jan 1963 - Sep 2002


Lake Powell
30000
25000
20000
15000
10000
5000
0
1000 AF
1964
1969
1974
1979
1984
1989
1994
1999
Monthly Storage Jan 1964 - Sep 2002


Lake Mead
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10000
1000 AF
1941
1946
1951
1956
1961
1966
1971
1976
1981
1986
1991
1996
2001
Monthly Storage Jan 1941 - Sep 2002