



THE SECRETARY OF THE INTERIOR  
WASHINGTON

FEB 24 1997

MEMORANDUM

To: Interested Parties

From: Secretary *[Signature]*

Subject: Operating Criteria and 1997 Annual Plan of Operations for Glen Canyon Dam, Colorado River Storage Project

The Bureau of Reclamation has established Operating Criteria and the 1997 Annual Plan of Operations (APO) for Glen Canyon Dam as required by the Grand Canyon Protection Act. Copies of these documents are enclosed. This action was taken after distributing draft copies of the proposed Operating Criteria and the proposed 1997 Plan of Operations to representatives of the Governors of the Colorado River Basin States, the Upper Colorado River Commission, appropriate Federal agencies, tribal, academic, scientific and recreation representatives, and others interested in Colorado River operations, and after holding a consultation meeting on November 21, 1996, with these same entities. The Operating Criteria and APO reflect the implementation of the Record of Decision (ROD) for the Glen Canyon Dam Environmental Impact Statement and meet the requirements of the 1992 Grand Canyon Protection Act.

The Operating Criteria specify the requirements for an annual report of operations under the Grand Canyon Protection Act, a periodic review of the Operating Criteria, and details regarding operational constraints. These constraints include maximum, minimum, and daily fluctuation flow rates, maximum ramp rates, emergency exception criteria, flood frequency reduction measures, habitat maintenance flows, and beach/habitat building flows.

The recommended 1997 Plan of Operations reflects the operation of Glen Canyon Dam consistent with the Operating Criteria. Monthly releases are expected to vary between 600,000 acre-feet and 1,500,000 acre-feet with daily flow fluctuations likely between 6,000 cfs/day and 8,000 cfs/day depending on monthly release volumes. The maximum daily flow rate of 25,000 cfs and the maximum upramp rate of 4,000 cfs/hr during fluctuating flow conditions, as described in the Final Environmental Impact Statement and ROD, will be placed into effect.

During the preparation of the 1996 Annual Operating Plan prepared under the 1968 Colorado River Basin Project Act, operating guidelines were agreed to which attempts to accomplish the intent of the Beach/Habitat Building Flow of the Glen Canyon Dam Environmental Impact Statement was developed in cooperation with the Basin States. With this commitment from all parties, a test of this "spike flow" was conducted in March/April 1996. It is my intention that Glen Canyon Dam will continue to be operated in conformance with the agreement in the 1996 Annual Operating Plan regarding Beach/Habitat Building Flows.

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Every measure will be taken to prevent a powerplant bypass during 1997 in order to preserve the environmental enhancement accomplished by the 1996 beach/habitat building flow. Should releases in excess of powerplant capacity occur, they will be managed consistent with all of the Secretary's authorities to benefit to the greatest degree possible, the downstream environment of the Grand Canyon. On January 1, 1997, Lake Powell contents exceeded 19 million acre-feet; therefore, a habitat maintenance flow will not be scheduled this year.

**Operating Criteria for Glen Canyon Dam  
In accordance with the  
Grand Canyon Protection Act of 1992**

These Operating Criteria are promulgated in compliance with section 1804 of Public Law 102-575, the Grand Canyon Protection Act of 1992. They are to control the operation of Glen Canyon Dam, constructed under the authority of the Colorado River Storage Project Act. These Operating Criteria are separate and apart from the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs prepared in compliance with the Colorado River Basin Project Act of 1968.

**1. Annual Report**

As required in the Grand Canyon Protection Act, a report shall be prepared and submitted to Congress annually that describes the operation of Glen Canyon Dam for the preceding water year and the expected operation for the upcoming water year. The annual plan of operations shall include such detailed rules and quantities as are required by the Operating Criteria contained herein. It shall provide a detailed explanation of the expected hydrologic conditions for the Colorado River immediately below Glen Canyon Dam.

**2. Review of Criteria**

The Secretary of the Interior shall review these Operating Criteria as the result of actual operating experiences to determine if the Operating Criteria should be modified to better accomplish the purposes of the Grand Canyon Protection Act. Such a review shall be made at least every 5 years in consultation with the appropriate Federal agencies, Governors of the Colorado River Basin States, Indian Tribes, representatives of academic and scientific communities, environmental organizations, the recreation industry, and contractors for the purchase of Federal power produced at Glen Canyon Dam.

**3. Specific Operational Constraints**

The plan of operations will follow the description of the preferred alternative (Modified Low Fluctuating Flow) in the Operation of Glen Canyon Dam Final Environmental Impact Statement and its Record of Decision. The specific criteria are as follows:

**Minimum Releases**-- 8,000 cfs between 7 a.m. and 7 p.m. 5,000 cfs at night

**Maximum Releases**-- 25,000 cfs. Several circumstances warrant exception to this restriction. These are the Beach/Habitat Building Flows and the Habitat Maintenance Flows (both described below) and the release of large volumes of water to avoid spills or floodflow releases from Glen Canyon Dam. These latter releases would most likely result from high snowmelt runoff into Lake Powell; if such high releases above 25,000 cfs are required, they shall be made at constant daily flow rates.

**Allowable Daily Flow Fluctuations**-- 5,000 cfs/24 hours for monthly release volumes less than 600,000 acre feet; 6,000 cfs/24 hours for monthly release volumes of 600,000 to 800,000 acre feet; and 8,000 cfs/24 hours for monthly release volumes over 800,000 acre feet.

**Maximum Ramp Rates**-- 4,000 cfs/hour when increasing, and 1,500 cfs/hour when decreasing.

**Emergency Exception Criteria**--Normal powerplant operations will be altered temporarily to respond to emergencies. These changes in operations typically would be of short duration (usually less than 4 hours) and would be the result of emergencies at the dam or within the interconnected electrical system. Examples of system emergencies include:

- Insufficient generating capacity
- Transmission system: overload, voltage control, and frequency
- System restoration
- Humanitarian situations (search and rescue)

**Flood Frequency Reduction Measures**-- The frequency of unanticipated flood flows in excess of 45,000 cfs will be reduced to no more than 1 year in 100 years as a long-term average. This will be accomplished initially through the Annual Operating Plan process and eventually by raising the height of the spillway gates at Glen Canyon Dam 4.5 feet.

**Habitat Maintenance Flows**-- Habitat maintenance flows are high, steady releases within powerplant capacity (33,200 cfs) not to exceed 14 days in March, although other months will be considered under the Adaptive Management Program. Actual powerplant release capacity may be less 33,200 cfs under low reservoir conditions. These flows will not be scheduled when projected storage in Lake Powell on January 1 is greater than 19,000,000 acre feet, and typically would occur when annual releases are at or near the minimum objective release of 8,230,000 acre-feet. Habitat maintenance flows differ from beach/habitat-building flows because they will be within powerplant capacity, and will occur nearly every year when the reservoir is low.

**Beach/Habitat-Building Flows**-- These controlled floods will occur as described in the EIS (steady flow not to exceed 45,000 cfs, duration not to exceed 14 days, up-ramp rates not to exceed 4,000 cfs/hour, and down-ramp rates not to exceed 1,500 cfs/hour) except instead of conducting them in years in which Lake Powell storage is low on January 1, they will be accomplished by utilizing reservoir releases in excess of powerplant capacity required for dam safety purposes. Such releases are consistent with the 1956 Colorado River Storage Project Act, the 1968 Colorado River Basin Project Act, and the 1992 Grand Canyon Protection Act.



Secretary of the Interior

FEB 24 1997

Date

**Glen Canyon Dam 1997 Annual Plan of Operations  
prepared in accordance with the Operating Criteria  
developed for the Grand Canyon Protection Act (GCPA)**

Under the most probable inflow conditions in water year 1997, Glen Canyon Dam is expected to release about 14.1 million acre-feet through the Grand Canyon to Lake Mead. This is about 5.9 million acre-feet greater than the minimum objective release and is the result of high snowpack conditions throughout the Colorado River basin. Lake Powell is expected to fill in July.

Monthly release volumes from Glen Canyon Dam during 1997 are expected to range from 600,000 acre-feet to 1,500,000 acre-feet. Projected daily allowable fluctuations therefore will be 6,000 cfs or 8,000 cfs (see criteria). With the projected monthly release volumes, it is likely that peak daily releases will exceed 20,000 cfs during the months of February through July, when monthly release volumes are at their highest for the year. Minimum releases of 5,000 cfs at night and 8,000 cfs during the day and ramping rates of 4,000 cfs/hr increasing and 1,500 cfs/hr decreasing will be followed. All of the above is outlined in the Record of Decision implementing the preferred alternative of the Glen Canyon Dam Environmental Impact Statement.

With current projected monthly release volumes, daily releases will exceed 20,000 cfs during the months of February through July, when monthly release volumes are at their highest for the year. Releases above 25,000 cfs will be made as steady flows. Since there are concerns for possible modifications of the environmental restoration in the Grand Canyon accomplished last year with the beach/habitat building flow, monitoring of the impacts of this spring's releases will be an important objective of the Grand Canyon Monitoring and Research Center and may result in fluctuating flows to aid in this effort.

Every measure will be taken to prevent a powerplant bypass this spring in order to preserve the environmental enhancement accomplished by the beach/habitat building flow test in April 1996. Water year 1997 had a January 1, 1997, Lake Powell storage content greater than 19 million acre-feet; therefore a beach/habitat maintenance flow of powerplant capacity is not planned.

This plan is prepared in conformance with Section 1804(c)(1)(A) of the GCPA. Any changes to the plan would require reconsultation in accordance with this Act.



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