BOD Meeting--May 7-8, 1983--Additional Item

Southwest Resource Council
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The Outing Committee proposes the following resolution.

I. PROPOSED RESOLUTION:

Opposition to Peaking Power Management at Glen Canyon Dam Powerplant:

The Sierra Club opposes Peaking Power Management at Glen Canyon Dam Power Plant and calls on all appropriate Sierra Club entities to expend all reasonable efforts in pursuit of the following actions:

1) A full Environmental Impact Study should be undertaken by the BOR, encompassing all impacts of peaking-power generation on the downstream environment to Lake Mead, and exhaustively detailing alternatives to peaking-power "demand" at Glen Canyon Dam.

2) A return to a pre-1979 management policy at the dam while the EIS (or interagency study) is being conducted, thereby halting further damage to the Canyon until such impacts can be assessed and mitigated.

3) Oversight hearing be requested of the House Subcommittee on Public Lands and National Parks in order to determine the present extent and necessity of such an extreme management policy at the dam. Chairman John Seiberling must be made aware that the EA released by the Bureau is short-sighted, incomplete and narrow in scope, and must be subjected to the scrutiny of the subcommittee.

II. BACKGROUND:

For at least the last four years, the management of the Glen Canyon Dam has been moving away from a baseload mode of power generation to one of peaking power. Peak power generation (which can be sold for up to four times the rate of base power production) requires dramatic fluctuations in daily and seasonal water releases from the dam. Peak power generation, which responds to hourly demands for electricity, requires daily fluctuations in river flow from 3,000 cubic feet per second (cfs) to 30,000 cfs - often coming within one hour's time. In addition, peak power generation requires generally low summer releases - except during hours of peak power generation - and large winter releases ("dumping") in order to meet mandated release commitments to

to downstream water users. Such dramatic extremes in water releases cause downstream river fluctuations in excess of twelve vertical feet, and a consequent "scouring out" or "flushing out" of the river's riparian zone.

Our concerns are great for the river in question is the Colorado River, and the stretch of river impacted is the Grand Canyon!

Three years ago, in an effort to expand peaking-power capacity at Glen Canyon Dam, the Bureau of Reclamation (BOR) began rewinding the eight turbines in the dam in order to maintain and upgrade their power-generating efficiency. Such uprating, done without study of downstream impacts, will allow peak power releases to grow almost twenty percent, thus greatly magnifying the already serious ecological impacts in the Canyon downstream. The rewinding is expected to be completed this year. The move into a peaking-power mode of operation, with its consequent dangerous and ecologically disastrous "tidal" fluctuation in water volume and velocity, has been growing more extreme each year, and will become more extreme - by plan - throughout the remainder of the decade. Several commercial river-runners in the Grand Canyon predict that such recreational uses of the Canyon will not be possible beyond the year 1990, due to hazardous water conditions and ecological destruction.

Fully one-third of all outings conducted by the River Trips Subcommittee of the Outing Committee are run on the Colorado River through the Grand Canyon. Trip leaders have noted the rapid erosion of beaches, the destruction of native fisheries, the disruption of riparian vegetation and habitat, and the increased danger of many rapids brought on by sudden and unpredictable changes in water volume. As early as August, 1981, the National Park Service released a study (albeit incomplete and inconclusive) documenting the historic and expected impacts on the Grand Canyon of the BOR's peaking-power policy at Glen Canyon Dam (see attached), supporting the personal observations of our trip leaders. In the interim, the problem has only grown worse.

Recently, the BOR released its final "Environmental Assessment for Glen Canyon Powerplant Upratings." The environmental assessment (EA) reports a "finding of no significant impact" in the river corridor of the Grand Canyon for the proposed (i.e., increased) changes in water release patterns in pursuit of expanded peak power generation at the dam. The report goes on to say that, in spite of this finding, there will be "no changes" in current operations at the dam pending a joint agency study (with the National Park Service) to "determine the environmental effects of the present and historical operations of Glen Canyon Dam on the resources of the Grand Canyon."

The EA is grossly inadequate, for several reasons: First, the study fails to include impacts on the river downstream; it simply leaves out the Grand Canyon from serious consideration. Second, it fails to incorporate - or, indeed, mitigate - the seven negative findings established by the Recreation Technical Team, assembled in 1979 by the BOR and included in its report entitled "Recreational Effects and Environmental Impacts for the Proposed Peaking Power Project at Glen Canyon Dam." Third, it fails to acknowledge the overwhelming negative comment received after the draft EA was released in 1981 (much of the comment was scientific in nature).

With the release of the Environmental Assessment, the Bureau has revealed its intention to continue - indeed increase - its peaking-power management policy to the detriment of Grand Canyon National Park, and in the face of substantial study and comment to the contrary. Such a tragically short-sighted policy cannot be allowed to continue.

GLEN CANYON DAM: PEAKING POWER ISSUE
NATIONAL PARK SERVICE
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BACKGROUND

The Bureau of Reclamation (BuRec) began studies on the feasibility of pumped-storage hydroelectric projects for the Upper Colorado River Basin in 1964. These studies were in response to anticipated population growth and increasing electrical use in the region. For example, electrical use in Arizona, Nevada, New Mexico, Utah, Colorado and Wyoming is increasing at a rate of 3 to 5 percent annually. BuRec also recognized that water flow through turbines housed in dams can be more readily adjusted to meet rising and changing hourly demands for electricity than can less responsive coal- or oil-fired power plant boilers.

Since those 1964 efforts, approximately 150 localities in the Upper Colorado River Basin have been identified as potential peaking power sites. After further site assessments followed by public comment in 1978, this list of peaking power sites was narrowed to six facilities, one of which was Glen Canyon Dam.

Today BuRec is uprating its eight turbines by rewinding coils and replacing worn components, making them more efficient. Although the dam is presently acknowledged as a peaking power facility, one that can vary its production according to changing hourly demand, uprating will increase its peaking power generating capacity from 1,150 megawatts (MW) to approximately 1, 336 MW. It would also allow Glen Canyon Dam turbines to operate at maximum water release rates of 33,000 cubic feet per second (cfs), about 10 percent above today's average release rates.

As a result of turbine uprating underway, daily water releases will not exceed 33,000 cfs. In addition, the National Park Service hopes BuRec will maintain minimum Colorado River flows of 5,000 cfs during the April to September boating season and 3,000 cfs October through March; and also develop release schedules that will permit gradual fluctuations between those extremes. Under this scenario, goals to increase energy production and to preserve resources on National Park Service lands for the enjoyment of future generations can be achieved.

PEAKING POWER PROPOSAL

According to BuRec the aforementioned increase in generating capacity may not be sufficient to satisfy future demand: the need for peaking power in the six-state region service by Glen Canyon Dam and other Federal dams upstream on the Colorado River and its tributaries is projected to be 8,100 MW by the year 2,000, about three times what is now produced. As an additional step in meeting this project demand, in 1979 the BuRec began studying whether to increase the generating capacity at Glen Canyon Dam by an additional 250 MW, to the 1,586 MW level (It should be noted that an alternative to increase the capacity by 125 MW was recently dropped as being uneconomical!).

The 250 MW increase in peaking power generating capacity would involve installation of two additional turbines in large bypass tubes already existing with the dam. With the addition of these turbines, at its most extreme, the flow of the Colorado River would fluctuate from 1,000 cfs during "off-hours" production periods to 40,000 cfs during peak production periods. Due to Colorado River Compact requirements, low flows can be expected to increase in duration to make up for the shorter periods of higher flows. For comparison, typical summer flows today may drop as low as 5,000 cfs during the night but during most of the day remain between 15,000 to 25,000 cfs.

The BuRec proposed time table for completing their peaking power feasibility study and environmental statement is:

Fall 1981	-Informal public meetings on capacity selection
Winter 1981 to Winter 1982	-Feasibility report preparation
Fall 1982	-Initiate work on draft environmental statement
Early 1983	-Draft Feasibility report preparation
Fall 1983	-Final Feasibility report preparation
Fall 1984	-Final Environmental statement preparation and final decision

RESEARCH AND IMPACTS

In 1979, when this tentative increase was first being considered, the BuRec began evaluating impacts of proposed water releases from Glen Canyon Dam on river flows, boating, sport fishing, vegetation, beaches, and fish and wildlife. To assist with that task they established four technical teams to help determine biological, recreational, sociological, and power research needs and to help predict impacts. National Park Service (NPS) personnel served on the Biological and Recreational teams. In addition, in March and October 1980 the NPS assisted BuRec investigators in surveying stream profiles, in gathering information on inundation effects within Grand Canyon National Park, and in gathering instream flow model input data. When results of BuRec studies become available, we anticipate access to them. They will be invaluable for development of mitigation actions, identification of additional research requirements, and assessment of impacts to Grand Canyon National Park, Glen Canyon National Recreation Area and other NPS units upstream, downstream or on tributaries that may be affected by this or future proposals.

Considerable research has been completed on the Colorado River environment potentially affected by the BuRec proposal to increase peaking power capacity by another 250 MW. Studies have been performed by independent investigators as well as by NPS and other Federal and State agency scientists. In "Biology and Ecology of the Grand Canyon from the Bibliography of the Grand Canyon and the Lower Colorado River 1540-1980. (Spanner, et al. 1981) there are listed at least 60 citations on literature directly related to the inner canyon riparian and Colorado River environments.

Although not directly related to peaking power proposals, the results and conclusions of much of this past research infer what some of the effects would be, most notably:

1. Significant disruption to riparian vegetation, wildlife and soil communities that have adjusted to conditions created by construction of Glen Canyon Dam in 1964 (Carothers and Aitchison 1976; Johnson and Carothers 1980; and Dolan 1981).

2. Accelerated erosion and loss of beaches used for camping along the Colorado River, which will affect river carrying capacity (Borden, 1976; Howard and Dolan 1976; Shelby and Nielsen 1976; Borden, Turner and Strauss 1977; Valentine and Dolan 1979; and Dolan 1981).

3. Significant effects to habitat and perhaps to propagation of fishes native to the Colorado River (Minckley and Blinn 1976; Suttkus, et al. 1976; Miller 1977; and USFWA 1980 and 1981).

A BuRec commissioned report written by the Recreation Technical Team assembled in 1979 and entitled "Recreational Effects and Environmental Impacts from the Proposed Peaking Power Project at Glen Canyon Dam" concluded that expansion of the dam's generating capacity would have these effects.

1. Daily flows in the Colorado River may vary from 1,000 to 40,000 cfs, creating significant alterations in the riparian environment.

2. With the extreme daily fluctuations, water saturated beaches may slump or collapse into the river.

3. At 40,000 cfs an estimated 43 percent of beaches studied (38) would be flooded.

4. Some 31 percent of all existing primary habitat-trees and plants - would be washed out.

5. With sudden and unpredictable high releases it is possible that boats may become tangled in the trees lining the river banks.

6. River banks would be lined with dead and dying vegetation, eliminating habitats of birds, beavers and other mammals and reptiles frequenting the riparian environment.

7. Users will have to camp on beaches that are partially flooded. Several nights of crowded conditions do little to represent the solitude of a wilderness experience expected on the Colorado River.

Investigator and NPS observations in June 1980 when Lake Powell spilled over the dam for the first time were also revealing. During the spill, flows reaced a maximum of 43,000 to 45,000 cfs, a volume approximating what would happen daily during peaking power generation. Dr. R. Dolan of the University of Virginia notes in his 1981 reports, "Analysis of Erosion Trends of the Sedimentary Deposits in the Grand Canyon" and "Analysis of Potential Recreational impacts due to High Water Releases from Glen Canyon Dam on the Colorado River in the Grand Canyon" that:

1. At 40,000 cfs 32 percent of the sampled campsite beaches (38) in Grand Canyon were flooded over 50 percent of their area and 22 percent showed signs of serious erosion, including changes of several feet in their surveyed profiles.

2. At 40,000 cfs there will be one-third fewer campsites available along the river, and of the remaining two-thirds caution will be the rule if they are to be safely used. Since the "tidal zone" of the beaches will expand dramatically, guides will be required to plan carefully in mooring boats and selecting sleeping areas. On many beaches, higher terrace levels will be the only safe sites for camping. These will be hotter in summer and probably less desirable. Loading and unloading boats will also become a more difficult task.

3. The hydrology of the river near the campsites will change more frequently. Reverse eddies will be washed out at high water levels making approaches and moorings more difficult if not impossible. Many rapids will be washed out at high water and be very difficult to navigate at low water.

NPS observations of the effects of the June 1980 high-water release from places including Phantom Ranch, River mile 120 and Diamond Creek, although unquantified and in need of verification through research, infer that at 40,000 cfs there will be significant impact including:

1. Cumulative and irreversible loss of soil substrate and nutrients, and cumulative and irreversible loss of as much as one-third the riparian acreage along the Colorado River.

2. Elimination of large numbers of native as well as nonnative plants in the tamarisk - willow portion of the riparian vegetation association.

3. Possible setbacks in succession and reductions in species diversity and numbers (the riparian zone supports approximately 89 of the 283 species of birds, 36 of the 93 species of mammals, and 19 of the 55 species of reptiles and amphibians found in the park).

4. Decrease in the amount and composition of contributed detritus, insect and other organic material important to Grand Canyon and perhaps even Lake Mead aquatic ecosystem productivity.

5. Change in the cross-section of river banks from sharp protective banks and overhangs to rounded, bare exposed banks, thereby changing habitat for native fish species.

6. Because of the loss of camping beaches, displacement of associated activities into undisturbed areas and/or increased congestion and crowding at remaining beaches.

7. Longer periods of low flows, making rapids such as Horn Creek extremely hazardous or impassible, and possibly: (a) preempting or limiting continued use of large motorized rubber rafts and wooden dories; (b) causing trip

delays, "stacking up" and congestion at difficult rapids and principal campsites; (c) causing increased landscape scarring and disturbance to vegetation and wildlife in areas of congestion; (d) causing changes in itineraries that could affect duration of trips or the passing up of significant attractions; (e) causing more accidents that may result in injury or loss of life and damage to or destruction of property and equipment; and (f) causing economic loss to companies unable or unwilling to adapt their operations to new flow conditions.

8. Potential hazard to recreation boaters and fishermen, especially above Lees Ferry, resulting from rapidly fluctuating water levels and swift, cold currents. Lees Ferry is a nationally recognized fishing area noted for its trophy-sized trout.

9. Above Lees Ferry, potential degradation of habitat in an area acknowledged for its excellent trout fishing.

CONCLUSION

The National Park Service recognizes our nation's need for additional energy if we are to accommodate anticipated population and industrial growth and maintain our high standard of living. Should it become necessary to accomplish this goal by increasing the peaking power generating capacity at Glen Canyon Dam, we hope it can be achieved with no or minimum adverse effect to the unique natural, scientific, recreational and scenic values of Grand Canyon National Park and other units this agency is chartered to protect. To accomplish that end, we offer the services of National Park Service scientists and planners to assist the Bureau of Reclamation with the conduct of research and with preparation of the feasibility study and environmental statement.