BEYOND CONJECTURE: LEARNING ABOUT ECOSYSTEM MANAGEMENT FROM THE GLEN CANYON DAM EXPERIMENT

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INTRODUCTION

> We have an unknown distance yet to run, an unknown river to explore. What falls there are, we know not; what rocks beset the channel, we know not; what walls rise over the river, we know not. Ah, well! we may conjecture many things.
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> The wonders of the Grand Canyon cannot be adequately represented in symbols of speech, nor by speech itself. The resources of the graphic art are taxed beyond their powers in attempting to portray its features. Language and illustration combined must fail. The elements that unite to make the Grand Canyon the most sublime spectacle in nature are multifarious and exceedingly diverse.[1]

Since at least when John Wesley Powell first led his famous expedition exploring its canyons in 1869, the Colorado River has been a substantial source of uncertainty, holding many mysteries in its vastness for the many humans and other species that have increasingly come to rely on it. Though the scientific uncertainties with the Colorado may no longer be of the navigational variety that Powell endured, they are no less significant. For just as long a time, this uncertainty has been paired with a universal recognition that the Colorado River is of indescribable value, serving as a vital natural resource for transportation, recreation, sustenance, energy, and other diverse uses. Increasingly, these uncertainties and competing resource demands have taken their toll throughout this vital ecosystem.

In response to these uncertainties and escalating resource demands, the U.S. Congress and delegated administrative agencies have set up a variety of regulatory institutions, indeed to "conjecture many things." In particular for the segment of the Colorado River downstream from the Glen Canyon Dam, a decade ago the U.S. Department of the Interior established the Glen Canyon

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[1] JOHN WESLEY POWELL, CANYONS OF THE COLORADO 247, 394 (1895), *available at* http://www.gutenberg.org/etext/8082.

processes have considerable promise as regulatory tools for addressing the increasing number of natural resource disputes in the U.S.

Unfortunately, the Glen Canyon Dam AMP exemplifies how existing regulatory programs that have promised a more collaborative and adaptive approach to decision-making have been adopted and implemented in a manner that provides little chance for addressing and resolving complex natural resource problems. This brief Article modestly attempts to reflect on what the Glen Canyon Dam AMP and the circumstances surrounding its creation and implementation can teach us about the challenges of creating successful multilateral and adaptive management protocols in natural resource management. Born in the shadow of the law and improvised with too little thought as to its structure, the Glen Canyon Dam AMP serves as a lesson on the limitations of existing regulatory approaches in integrating meaningful participation and a systematic process for adapting regulation.

I. OPACITY AND COLLABORATIVE ECOSYSTEM MANAGEMENT

A notable lesson provided by the Glen Canyon Dam AMP experiment comes from the opacity and improvised nature of its creation, and in particular the formation of the Glen Canyon Dam Adaptive Management Working Group ("AMWG"). The roles of the Glen Canyon Dam AMP and AMWG in reconciling the various conflicting resource uses for the ecosystems of Glen Canyon are at best murky, perhaps revealing an abdication of responsibility by the ultimate authority on this important resource question—the U.S. Congress. This opacity and the extemporized creation of the Glen Canyon Dam AMP have served to cripple severely the AMP's efficacy at achieving any comprehensive and systematic resolution of the complex and contentious disputes surrounding Glen Canyon Dam.

A. Resource Competition and Regulatory Evasion in Glen Canyon

A number of increasingly competing legal mandates continue to govern the existing resource uses of the Grand Canyon and Glen Canyon ecosystems. The Colorado River Compact in 1922 allocated Colorado River water between the four states of the upper Colorado River Basin and the three states of the lower Colorado River Basin.[6] The 1922 Colorado River Compact and subsequent amendments[7] (collectively commonly referred to as the "Law of the

[6] Colorado River Compact of 1922, art. III(d), 70 CONG. REC. 324 (1928) ("The States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years . . . .").

[7] The Law of the River incorporates a variety of compacts, federal laws, court decisions, and decrees, contracts, and regulatory guidelines. These most notably include the Colorado River Storage Project Act of 1956, 43 U.S.C. §§ 620-620(o) (2000); the Colorado River Basin Project Act of 1968, 43 U.S.C. §§ 1501-1556; the Upper Colorado River Basin Compact of 1948, ch. 48, 63 Stat. 31 (1949); the Treaty on the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, U.S.-Mex., Feb. 3 1944, 59 Stat. 1219; and the decree of the Supreme Court in *Arizona v. California*, 547 U.S. 150 (2006) (incorporating decree in *Arizona v. California*, 376 U.S. 340 (1964), and subsequent amendments). For a more complete list and collection of the sources of the "Law of the River," see Bureau

more-uniform water temperature affects humpback chub reproduction and development.[15]

Several federal resource laws have been developed to manage precisely these types of impacts on biological resources. The impacts on native species and habitat occurring along the Colorado River arose at the same time as a growing awareness of environmental degradation throughout the United States, prompting the U.S. Congress to enact the National Environmental Policy Act ("NEPA")[16] and the Endangered Species Act ("ESA").[17] NEPA is a procedural statute that requires the preparation and disclosure of a detailed environmental impact statement ("EIS") for major federal actions (including permit approval) significantly affecting the quality of the environment.[18] The more substantive ESA expressly forbids harmful actions against species listed as threatened or endangered.[19] In addition to prohibiting the "take" of any endangered species by any person,[20] the ESA prohibits any federal action[21] that would "jeopardize the continued existence"[22] of any listed species or result in the modification of its "critical habitat."[23] Any federal agency planning an action that *might* jeopardize a listed species or modify its critical habitat must obtain a "Biological Opinion" from the Fish and Wildlife Service ("FWS") or National Marine Fisheries Service ("NMFS")[24] that evaluates the action's impacts on the species. If the action would jeopardize a listed species or mod-

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[15] *See* U.S. GEOLOGICAL SURVEY, GRAND CANYON HUMPBACK CHUB POPULATION STABILIZING (2006), *available at* http://www.gcmrc.gov/files/pdf/fs_2006_3109.pdf; Glen Canyon Dam Adaptive Management Program, *supra* note 14.

[16] 42 U.S.C. §§ 4321-4375 (2000).

[17] 16 U.S.C. §§ 1531-1544 (2000 & Supp. IV 2004).

[18] *See* 42 U.S.C. § 4332(2)(C). The EIS must include a detailed evaluation of impacts and alternatives and provide public opportunities to comment through early open "scoping" meetings, a public comment period on the impacts of and alternatives to the proposed action, and agency responses to comments made on the proposed agency action.

[19] *See* 16 U.S.C. § 1533(b) (2000 & Supp. III 2003); 16 U.S.C. § 1538(a) (2000).

[20] 16 U.S.C. § 1538(a)(1). The statute broadly defines "take" to include to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Id.* § 1532(19). Subsequent judicial opinions have upheld expansive regulatory interpretations of this language to include substantial modification of habitat. *See* Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or., 515 U.S. 687 (1995) (determining Service interpretation of statutory definition of "harm" to include "significant habitat modification or degradation" that significantly impairs breeding, feeding, or sheltering patterns was reasonable); Palila v. Haw. Dep't of Land & Natural Res., 639 F.2d 495, 497 (9th Cir. 1981).

[21] Action includes any activity "authorized, funded, or carried out, in whole or in part, by Federal agencies." 50 C.F.R. § 402.02 (2007).

[22] 16 U.S.C. § 1536(a)(2) (2000 & Supp. III 2003); *see also* Tenn. Valley Auth. v. Hill, 437 U.S. 153 (1978) (finding jeopardy determination must be made strictly without regard to costs and benefits of the proposed agency action).

[23] 16 U.S.C. § 1533(b)(2). If a species is listed, the Services must designate critical habitat in areas where the species is found or which might provide additional habitat for the species' recovery. *See id.* However, FWS has only designated critical habitat for thirty-six percent of listed domestic species as of June 2006. *See* EUGENE H. BUCK ET AL., THE ENDANGERED SPECIES ACT (ESA) IN THE 109TH CONGRESS: CONFLICTING VALUES AND DIFFICULT CHOICES 3 (2006), *available at* http://www.ncseonline.org/NLE/CRSreports/06Nov/RL33468.pdf.

[24] The FWS must be consulted for actions affecting terrestrial or freshwater species, while the NMFS must be consulted for those affecting marine species.

protection earlier). Finally, it also avoids any attempt at reconciling the conflict between the water uses protected by the Law of the River and the biological resources protected by federal environmental regulation by carving out federal environmental laws from its purview. In short, the GCPA's circular language demonstrates Congress' at best careless abdication of its responsibility to provide any guidance over how to resolve the competing uses of the Glen and Grand Canyons.

Instead, Congress tendered the management and resolution of this intractable conflict to the Secretary of the Interior, who then established the Glen Canyon Dam AMP as an ongoing, collaborative regulatory salve. The GCPA obliges the Secretary to manage the dam's operation and develop an EIS on the impacts of such operations.[33] Because of the existence of substantial scientific uncertainty regarding the effect of dam operations and other resource use activities on the downstream ecosystem, it also directs the Secretary to establish "long-term monitoring programs and activities" "in consultation with" the governing federal agencies, the Secretary of Energy, the basin states, American Indian tribes, academics, environmental organizations, the recreation industry, and power users.[34] In compliance with this brief instruction,[35] in 1995 the Secretary adopted an EIS for turbine upgrades to Glen Canyon Dam that proposed an "adaptive management" process whereby the effects of dam operations on downstream resources would be monitored and assessed.[36] In 1996, the Secretary created the Glen Canyon Dam AMP, including (1) the AMWG, a twenty-five member federal advisory committee;[37] (2) the Grand Canyon Monitoring and Research Center ("GCMRC"), a U.S. Geological Survey scientific research program;[38] (3) a Technical Work Group ("TWG"), filled by representatives from the same groups as the AMWG and purportedly tasked with liaising between the AMWG and GCMRC;[39] and (4) an independent science advisory

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[33] *Id.* §§ 1803-1804.

[34] *Id.* §§ 1803(b), 1804(c)(3), 1805(a), (c).

[35] The Bureau of Reclamation was already preparing an EIS prior to the passage of the GCPA, but the GCPA established a deadline and other procedural requirements for the Secretary of the Interior and Bureau to follow. *See* ROBERT W. ADLER, RESTORING COLORADO RIVER ECOSYSTEMS: A TROUBLED SENSE OF IMMENSITY 144-46 (2007).

[36] *See* U.S. DEPARTMENT OF THE INTERIOR, RECORD OF DECISION, OPERATION OF GLEN CANYON DAM, FINAL ENVIRONMENTAL IMPACT STATEMENT (1996), *available at* http://www.usbr.gov/uc/rm/amp/pdfs/sp_appndxG_rod.pdf [hereinafter ROD]. The full text of the Final Environmental Impact Statement can be found at the U.S. Bureau of Reclamation's website. Operation of Glen Canyon Dam: Final Environmental Statement, http://www.usbr.gov/uc/library/envdocs/eis/gc/gcdOpsFEIS.html (last visited May 18, 2008).

[37] Members of AMWG are listed at Glen Canyon Dam Adaptive Management Program – AMWG Members, http://www.usbr.gov/uc/rm/amp/amwg/amwg_members.html (last visited May 18, 2008).

[38] Information about the GCMRC can be found at Grand Canyon Monitoring and Research Center, http://www.gcmrc.gov/ (last visited May. 18, 2008).

[39] Members of the Technical Work Group are listed at Glen Canyon Dam Adaptive Management Program – TWG Members, http://www.usbr.gov/uc/rm/amp/twg/twg_members.html (last visited May 18, 2008).

despite little technical expertise to do so.[46] Surely the Glen Canyon Dam AMP collaborative experiment is destined to failure if its apex deliberative body concentrates its limited deliberations and expends most of its social capital on the details and technical questions of the AMP. Yet, given the extensive regulatory ambiguity and finite deliberation opportunities, such a circumstance is perhaps to be expected from any effort by the AMWG at collaboration.

Even supporters of the AMWG process concede that there has been and still is substantial uncertainty regarding what the function of the AMWG should be in addressing this regulatory dispute.[47] Though belated, an ad hoc committee of the AMWG recently concluded that "collaboration among the AMP participants and the overall effectiveness of the AMP would be improved if [the AMWG were to] [e]stablish and agree to a common mission/goal for the AMP."[48] The committee also concedes that "[t]o clarify progress in meeting its responsibilities, the AMP should define measures of success."[49] Though occurring a full eight years after the AMWG was created, at least the AMWG is now seeking to clarify what Congress and the Secretary should have in 1997 when the AMWG was created.[50]

More alarmingly, this substantive opacity is exacerbated by the limited procedural guidance provided by Congress to guide the AMWG's exercise of its authority. In fact, many of the participants in the Glen Canyon Dam AMP have identified the confusion regarding the roles, responsibilities, and functions of the various program components as "the most urgent issue" facing the AMP.[51] Without any clearly defined procedural decision-making framework, the GCPA invites a procedural opacity that encourages powerful interests to dominate the collaborative process while allowing the Secretary to evade accountability for the ultimate decision.

To begin with, neither the GCPA nor the AMP's operative documents provide any clear information as to how to harmonize the AMWG process efficiently with the ESA's Biological Opinion process or the procedures of other environmental laws. As a result, there has been considerable uncertainty as to the relationship of AMWG decisions with those provided in the FWS's Biological Opinion for the humpback chub under the ESA.[52] At a minimum then, this inattention to the AMWG's regulatory design has made for a less efficient regulatory process from the outset.

More fundamentally, the Glen Canyon Dam AMP's regulatory design that obscures the relationship of the AMWG with the Secretary has limited the effi-

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[46] Telephone Interview with Andrea Alpine, *supra* note 43.

[47] Telephone Interview with Mary Orton, *supra* note 45.

[48] *See* AMWG ROLES AD HOC GROUP REPORT, *supra* note 42, at 4.

[49] *Id.* at 7.

[50] Unfortunately, to date the thorough and constructive recommendations of the AMWG Roles Ad Hoc Group have not been formally adopted by the Glen Canyon Dam AMP and the Department of the Interior. Telephone Interview with Andrea Alpine, *supra* note 43.

[51] *See* AMWG ROLES AD HOC GROUP REPORT, *supra* note 42, at 2; *see also id.* at 8 ("Some AMWG members do not seem to have a clear understanding of their role, in particular pertaining to giving advice and making recommendations to the Secretary of the Interior.").

[52] The lack of clarity is exacerbated by subsequent regulatory decisions. For example, the U.S. Fish and Wildlife Service's 1994 Biological Opinion was vague as to the extent that adaptive management is to be incorporated into the Reasonable and Prudent Alternative.

the AMP is obtaining participation that actually leads to better (or even better informed) decisions or obtaining such participation in an efficient or fair way. Even some of the AMWG members have asserted that there is a "lack of clear communication and understanding of how recommendations are relayed to the Secretary's office and how the Department of the Interior (DOI) responds to these recommendations."[58] To its credit, in response to these concerns the Secretary's Designee has responded in writing to AMWG recommendations for the past year.[59] Nonetheless, as the Secretary can deviate from recommendations without explanation, stakeholders still have a substantial incentive to circumvent the AMWG process to alter the final decision. Indeed, in numerous instances, stakeholders have lobbied the Secretary seeking a rejection of the AMWG's recommendations after extensive deliberation by the AMWG.[60] Much human capital thus is expected to go into an advisory body for which we are unclear about its mandate and how it even influences the ultimate decision.

Furthermore, the murky relationship between the AMWG's recommendations and the Secretary's decisions (or indecision) allows both the AMWG and Secretary to evade responsibility for reconciling the competing use priorities of the Colorado River or other difficult decisions regarding management of the dam. AMWG representatives can always absolve themselves of responsibility by saying it is the Secretary's ultimate decision, and the Secretary can use the AMWG or its muddled procedural process to deflect criticism or even delay resolution of substantial issues. In short, the decision-making process continues to rely on the same hierarchical, ultimately unilateralist New Deal and Interest Representation models of regulatory decision-making[61]—and thus is subject to the familiar critiques of conventional command-and-control regulation as ineffective, inefficient, and undemocratic,[62] and arguably is subject to less accountability than provided by even traditional regulatory processes.

Though insufficient attention was given to the AMWG when it was established, like many other early collaborative regulatory processes, it has still ended up serving as a de facto surrogate for more traditional regulatory decision-making. Though unfortunately neither the AMP nor any other public or private entity has performed a systematic study evaluating the AMWG's decisions, anecdotally the Secretary normally adopts the recommendations of the

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[58] AMWG ROLES AD HOC GROUP REPORT, *supra* note 42, at 11. In response to these concerns, an ad hoc committee of the AMWG recently recommended: "The Secretary's Designee . . . convey the outcome of these discussions and the final DOI decision in writing to the AMWG within 45 days of the AMWG meeting. A written status report will be provided if a final DOI decision is not reached within the 45 day process." *Id.*

[59] *See* Correspondence with Mary Orton, The Mary Orton Co., LLC, Facilitator, Glen Canyon Dam Adaptive Mgmt. Work Group (Jan. 15, 2008) (on file with author).

[60] Telephone Interview with Mary Orton, *supra* note 45. As one might expect, this has been particularly the case in circumstances in which the recommendation is not a unanimous recommendation but rather one based on super-majority vote. *See id.*

[61] *See* Richard B. Stewart, *The Reformation of American Administrative Law*, 88 HARV. L. REV. 1667, 1711-90 (1975); Richard B. Stewart, *Administrative Law in the Twenty-First Century*, 78 N.Y.U. L. REV. 437, 440-43 (2003).

[62] Administrative regulation is regularly characterized as inefficient, ineffective, and undemocratic. *See* Freeman, *supra* note 4, at 3, 35; Philip J. Harter, *Negotiating Regulations: A Cure for Malaise*, 71 GEO. L.J. 1, 6-7 (1982).

ure of regulatory institutions to engage in systematic monitoring and assessment of regulatory programs, is all too often overlooked or neglected by both governmental regulators and scholars of administrative regulation.

The AMP was and is a regulatory experiment, proposed as a novel way to attend to a variety of competing and conflicting use demands on a network of vital natural resources.[68] This experiment included both collaborative and adaptive regulatory features. The first *collaborative* characteristic, embodied by the AMWG, proposes providing a range of interested and affected stakeholders meaningful involvement in regulatory decision-making.[69] Presumably, this feature was adopted in the belief that doing so is more likely to lead to better regulatory decisions than traditional regulation that relies almost exclusively on agency resources and presumed expertise.[70] The second *adaptive management* element, most directly embodied by the GCMRC, emphasizes a reliance on long-term monitoring and research protocols that seek repeated monitoring and, if necessary, adjustment of regulatory restrictions to account for new information or changed circumstances that arise during implementation.[71] This adaptive element, envisioned as providing more cost-effective and effective regulation, is particularly important in circumstances like those surrounding the Glen Canyon Dam EIS, in which information is uncertain and regulatory conclusions are necessarily tentative.[72]

Though it is certainly possible (and to some even probable) that integrating collaborative and adaptive management features into a regulatory process could make the regulatory process and resultant outcomes "better," whether including such features in the AMP program will actually do so is undeniably unproven. Through passage of the GCPA and the Secretary's creation of the AMP, Congress and the Secretary evidently decided to engage in a regulatory experiment. Yet in their haste to carry out this trial program, neither Congress nor the Secretary has bothered to structure the AMP program to function adequately as a systematic experiment on regulatory decision-making.

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[68] *See* Glen Canyon Dam Adaptive Management Program Home Page, http://www.gcdamp.gov (last visited May 18, 2008).

[69] Grand Canyon Protection Act of 1992, Pub. L. No. 102-575, §§ 1803(b), 1804(c)(3), 1805(c), 106 Stat. 4600, 4670-72.

[70] *Cf.* Camacho, *Can Regulation Evolve?*, *supra* note 5, at 304-05 ("[S]ome practitioners involved in species-conservation disputes saw the HCP program as a necessary alternative to the ESA's conventional but inflexible, expensive, and ultimately ineffective approach to resolving resource conflicts . . . . The HCP process was thus seen as fostering better agency decisions by incorporating participation, rigorous and comprehensive data gathering and analysis, and subsequent monitoring and adaptation into the regulatory process.").

[71] *See* Grand Canyon Protection Act § 1805(a).

[72] *See* GLEN CANYON DAM ADAPTIVE MGMT. PROGRAM, *supra* note 53, at 1-2 ("Due to the significant levels of uncertainty surrounding the resources of the Colorado River ecosystem and the effects of dam operations on those resources, the Glen Canyon Dam Environmental Impact Statement stipulated an adaptive management approach. This approach allows for scientific experimentation that adds to the knowledge base of effects of the operation of Glen Canyon Dam, primarily on downstream resources, and results in the development of recommendations to the Secretary of the Interior regarding additional operational changes."); *cf.* Menkel-Meadow, *supra* note 67, at 850 ("[T]here is growing recognition that many governance decisions . . . might need to be transitional, contingent, and flexible, with ongoing processes and opportunities for reconsideration and reopening and renegotiation as conditions change and political systems mature.").

tions based on a consensus? On a super-majority vote? How often are AMWG recommendations adopted by the Secretary? This and more information would undoubtedly be useful in assessing the effectiveness of the AMP's regulatory framework in achieving meaningful participation and resource management, and even perhaps reinforcing the accountability of the regulatory actors to Congress and the public.

Similarly, in assessing the value of adaptive management in the regulatory process, key questions are not methodically and publicly assessed, such as: What management experiments have been adopted by the AMWG for implementation by the Center? Have such experiments utilized active[78] or passive[79] adaptive management? How costly are they? How often do they lead to changes in permanent management decisions? Unsurprisingly, then, more complex questions that go to the root of the AMP's process for facilitating effective participation, gathering information, and making management decisions are ignored. These include: (1) Is the composition of the AMWG representative of the parties potentially affected by dam operations? (2) How much non-stakeholder public involvement is there in AMWG deliberations? (3) Does the Secretary engage parties ex parte outside of the AMWG process in his or her deliberations? (4) How effective is the TWG as a liaison between the AMWG and GCMRC? (5) How if at all do the TWG and Independent Review Boards improve the scientific information and/or conclusions provided by the GCMRC? These questions are rarely evaluated, and the AMP has never been adjusted to respond to their answers.

A concrete example of the AMP's wasted opportunity is the much-admired series of Glen Canyon Dam experimental floods. The Secretary's 1995 EIS and associated 1996 Record of Decision for turbine upgrades to Glen Canyon Dam provided the opportunity for a series of experimental flood releases from the dam as part of the AMP's efforts to learn more about the downstream ecosystem and ostensibly guide future dam operations.[80] After much study and deliberation, over the decade since its creation, the AMP has engaged in two high flow experiments and another two significant test flows.[81] These experiments have been praised by many as successful examples of exactly the kind of adaptive implementation that is needed in natural resource management.[82]

Certainly, these experiments have revealed important information, particularly regarding the sediment and nutrient dynamics of the ecosystem down-

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[78] *See* Availability of a Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, 65 Fed. Reg. 35,252 (June 1, 2000) ("Active adaptation is developing and testing a range of alternative strategies.").

[79] *See id.* ("Passive adaptation is where information obtained is used to determine a single best course of action.").

[80] *See* FEIS, *supra* note 57; ROD, *supra* note 36.

[81] Adler, *supra* note 9, at 100-01.

[82] *See, e.g.*, Holly Doremus, *Adaptive Management, the Endangered Species Act, and the Institutional Challenges of "New Age" Environmental Protection*, 41 WASHBURN L.J. 50, 78-79 (2001); Vicky J. Meretsky et al., *Balancing Endangered Species and Ecosystems: A Case Study of Adaptive Management in Grand Canyon*, 25 ENVTL. MGMT. 579 (2000); Bernice Wuethrich, *Deliberate Flood Renews Habitat*, 272 SCI. 344, 344-45 (1995).

approaches to addressing natural resource conflicts: The procedural structure of the multilateral working group plays a considerable role in its effectiveness at even addressing, let alone reconciling, public disputes. In particular, the Glen Canyon Dam AMP shows that the composition of the stakeholder group, the decision rule adopted for group votes, and the role of the convenor are each crucial and require more reflection than the Secretary provided for the Glen Canyon Dam AMP.

The AMP's key stakeholder group, the Adaptive Management Work Group, includes twenty-five members that represent a relatively broad range of interests. These include the convenor (the Secretary's Designee-representative), various federal agencies,[87] states,[88] recreational interests,[89] hydropower interests,[90] Native American tribes,[91] and two local environmental groups.[92] Though the group is reasonably diverse, there is still a question regarding whether the group is sufficiently representative. This is in large part because of the operative rule chosen for voting on AMWG decisions. The AMWG's operating procedures dictate that "[t]he group should attempt to seek consensus but, in the event that consensus is not possible, a vote should be taken. . . . Approval of a motion requires a two-thirds majority of members present and voting."[93] The exact point in time when consensus may be established to be impossible—thus paving the way for a super-majority vote—is never delineated in the AMWG's operating procedures. The Secretary's Designee, not the mediator-facilitator, decides on his or her own option when to switch to a two-thirds vote.[94]

The Glen Canyon Dam AMWG demonstrates that decisions as to the structure of the regulatory program—stakeholder group composition, the adopted decision rule, the convenor's role in decision-making—can function to allow a stakeholder group to suppress meaningful participation and collaboration rather than cultivate it. The exact group composition perhaps plays a smaller role in a consensus-based process; as long as the stakeholder group is broad and diverse, decisions made by the group can reasonably be considered

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[87] Federal agencies include the Bureau of Indian Affairs, Bureau of Reclamation, National Park Service, U.S. Fish and Wildlife Service, and the Department of Energy-Western Area Power Administration. Glen Canyon Dam Adaptive Management Program – AMWG Members, *supra* note 37.

[88] The Arizona Department of Water Resources, Colorado River Board of California, Colorado River Commission of Nevada, Colorado Water Conservation Board, New Mexico State Engineer's Office, Utah Division of Water Resources, and the Wyoming State Engineer's Office represent the seven Colorado River Basin States. In addition, the Arizona Game and Fish Department is a party. *Id.*

[89] These include the Federation of Fly Fishers and the Grand Canyon River Guides. *Id.*

[90] Two federal power purchase contractors are members: the Colorado River Energy Distributors Association and the Utah Associated Municipal Power Systems. *Id.*

[91] The Hualapai Tribe, the Hopi Tribe, the Navajo Nation, the Southern Paiute Consortium, and the Pueblo of Zuni are all active AMWG members. In addition, the San Juan Southern Paiute Tribe is an in active member. *Id.*

[92] The Grand Canyon Trust and the Grand Canyon Wildlands Council are the two environmental members of the AMWG. *Id.*

[93] Operating Procedures of the Glen Canyon Dam Adaptive Management Work Group, Jan. 17, 2002, *available at* http://www.usbr.gov/uc/rm/amp/amwg/pdfs/OP_02apr24.pdf.

[94] Telephone Interview with Mary Orton, *supra* note 45.

holders consistently in the minority are increasingly seeing little incentive to expend their limited resources in a process that consistently ignores them, turning instead to costly litigation to address issues the AMWG has not confronted.[100] Ultimately, such public law litigation may indeed serve a destabilization function suggested by some scholars[101] and encourage the reengagement of a collaborative approach to addressing the resource conflict at Glen Canyon Dam. Yet, the fact that key stakeholders have returned to the adversarial model with all its shortcomings—not to review the AMWG's activities, but to address issues that the AMWG has failed to address—provides evidence of the deficiency of the existing AMWG as a forum for even tackling, let alone resolving, the Glen Canyon Dam's natural resource challenges.[102]

Because neither Congress nor the Secretary nor the AMP has publicly and rigorously considered these structural questions, or monitored them for their effectiveness at attaining their intended results, the AMWG's recommendations become considerably less probative. Recommendations based on a supermajority vote certainly do not indicate a consensus of opinion; they instead reflect a particular voting block's preferences that the Secretary very well might have surmised without such a time- and resource-consuming forum. Furthermore, such AMWG recommendations may not reflect the opinion of those most knowledgeable about a particular issue, but merely a strong interest group. Though such a circumstance would certainly not be unique to a collaborative multilateral process, it does serve as yet another lesson of the need to attend to the design of decision-making institutions more scrupulously than has been done in the past generally and the Glen Canyon Dam AMP in particular. It also reinforces the need to monitor and evaluate such institutions closely to determine whether they are achieving the goals they were set out to address.

By pointing out the structural inattentiveness in the formation of the AMWG, I do not mean to suggest that consensus is always the superior decision rule for multilateral stakeholder decision-making processes like the AMWG.[103] There is certainly value to a consensus decision rule—some schol-

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[100] *See* Complaint For Declaratory and Injunctive Relief, Grand Canyon Trust v. U.S. Bureau of Reclamation, No. 3:07-cv-08164-DGC (D. Ariz. Dec. 7, 2007) (lawsuit by environmental group participant of the Glen Canyon AMWG against Bureau of Reclamation for violating the Endangered Species Act and National Environmental Policy Act).

[101] *See* Bradley C. Karkkainen, *Getting to "Let's Talk": Legal and Natural Destabilizations and the Future of Regional Collaboration*, 8 NEV. L.J. 811 (2008); Charles F. Sabel & William H. Simon, *Destabilization Rights: How Public Law Litigation Succeeds*, 117 HARV. L. REV. 1015 (2004).

[102] Indeed, the Secretary's Designee recently took the unprecedented step of deciding to move forward with preparation for another experimental test at Glen Canyon Dam without asking the AMWG for its recommendation. *See* Notice of Public Meeting, 73 Fed. Reg. 500 (Jan. 3, 2008); Shaun McKinnon, *Flood May Help Revive a River: River's 3rd Planned Flood May Aid Fish, Environment*, ARIZ. REPUBLIC, Feb. 28, 2008, http://www.azcentral.com/arizonarepublic/news/articles/0225coloriver-fish0225.html; Memorandum from Brenda W. Burman, Deputy Assistant Sec'y – Water & Science, Sec'y's Designee for the Glen Canyon Dam AMWG, to the Glen Canyon Dam AMWG (Dec. 20, 2007), *available at* http://www.gcmrc.gov/research/high_flow/2008/files/2008_potential_hft.pdf.

[103] Similarly, there certainly is merit to providing the convenor discretion in carrying out his or her duties, and it is conceivable that the current composition of the AMWG is the optimal arrangement.

Finally, this critique of the Glen Canyon Dam AMWG does not suggest that a multilateral stakeholder approach to resolving natural resource disputes is inferior to the more traditional, notice-and-comment mode to administrative decision-making. The traditional regulatory approach fragments the information-gathering and decision-making authority and responsibility regarding these important natural resource disputes to a range of different administrative agencies. One need only consider the various state, tribal, and federal agencies participating in the AMWG to see that without the AMWG, there would be at least as much uncertainty regarding the appropriate accommodation of the many competing authorities governing the Glen Canyon Dam. Furthermore, traditional notice-and-comment regulatory decision-making too regularly treats public participation as a procedural burden,[111] rather than as a crucial way to obtain valuable information and to improve accountability.[112]

The point is that there is little evidence that Congress, the Secretary, or the AMWG considered these structural issues in any careful and public way. Furthermore, neither Congress nor the Secretary nor the Glen Canyon Dam AMP has ever systematically monitored or reviewed the structural characteristics of the AMWG's adopted decision-making process—including the convenor's role and the decision rule—to assess how effective they were in achieving progress toward the program's goals. As a result, whether the AMWG's considerable outlay of public and private financial and human resources has been worth it is at best of unknown value—which alone should be considered a disappointment.

CONCLUSION

The Glen Canyon Dam AMP serves as a valuable illustration of the flaws of existing regulatory processes purporting to incorporate collaboration and regulatory adaptation into the decision-making process. In doing so, it provides considerable information on ways that future collaborative experiments might be modified to enhance their prospects at success. In fact, any regulatory program, experimental or otherwise, could benefit from a careful consideration of the lessons of the Glen Canyon Dam AMP.

In its own haphazard way, the Glen Canyon Dam AMP encouragingly provides an opportunity for regulatory learning that the Department of the Inte-

55, at 27, 36 (summarizing studies reporting that participants found environmental mediation processes more satisfying); Mette Brogden, *The Assessment of Environmental Outcomes*, *in* THE PROMISE AND PERFORMANCE OF ENVIRONMENTAL CONFLICT RESOLUTION, *supra* note 55, at 277, 287 ("Multistakeholder processes increase both scientific and individually held knowledge about the natural environment."); Camacho, *Mustering Part 2*, *supra* note 5, at 311, 313; Laura I. Langbein & Cornelius M. Kerwin, *Regulatory Negotiation Versus Conventional Rulemaking: Claims, Counterclaims, and Empirical Evidence*, 10 J. PUB. ADMIN. RES. & THEORY 599, 625-26 (2000) (concluding that negotiated regulations typically result in significantly higher participant satisfaction with both final rules and the overall process).

[111] *See, e.g.*, Camacho, *Can Regulation Evolve?*, *supra* note 5, at 317; *cf.* Camacho, *Mustering Part 1*, *supra* note 5, at 35-42.

[112] *Cf.* Camacho, *Mustering Part 2*, *supra* note 5, at 279, 301 (arguing that participation can thwart corruption, provide important information about the interests and preferences of affected parties, and enhance governmental accountability).