

# Cultural And Recreational Monitoring Program

TWG Meeting, Phoenix AZ  
September 27, 2004



# Sociocultural Program

- Heritage Resources

  - Archaeological sites

  - Traditional cultural properties

  - Other resources of traditional concern

- Recreation

  - Visitor Experience

  - Visitor Safety

  - Campsites

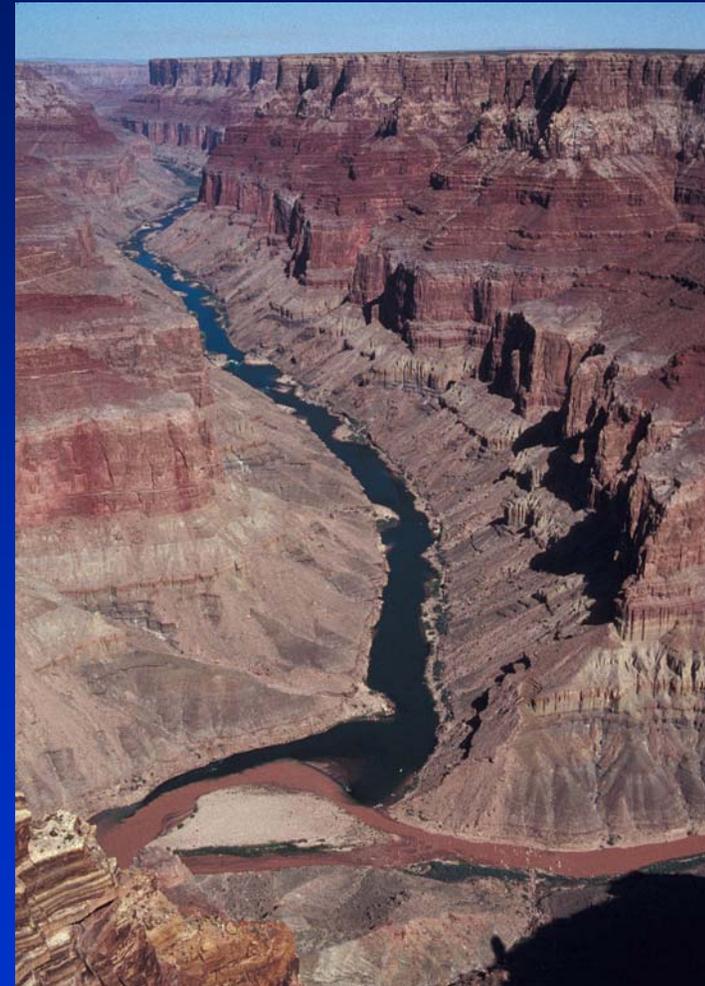
- Socioeconomics

  - Hydropower

  - Recreation

# Heritage Resource CMINs

- 11.1.1 Determine status of historic properties under ROD operations (11.1.1.a Determine whether physical integrity is being retained sufficiently to convey significance)
- 11.1.2 Determine the efficacy of treatments for mitigation of adverse effects
- 11.1.3 Determine thresholds for impacts that threaten integrity (11.1.3.a Are current monitoring programs collecting the necessary information to assess integrity?)
- 11.1.4 How effective is monitoring and what are the appropriate strategies to capture change?
- 11.2.1 Are traditionally important resources and locations being affected?



# Heritage Resource Monitoring

## Current Program Status

- Most cultural resource monitoring has been funded directly by BOR to meet Section 106 obligations, not requirements of GCPA.
- The monitoring work conducted by NPS has been reviewed annually by PA signatories but has not been subject to scientific peer review, except through the 2000 PEP.
- There has been no formal review of tribal monitoring efforts.



# Current Archeological Site Monitoring Program

- Variable sample of 40-70 arch sites monitored each year by NPS (total population =318 sites; 177 are actively monitored)
- Sites monitored on a variable cycle (2x per year, once per year, once every 2-3 years, once every 5 years) depending on levels of impacts from erosion and visitor use or on resource sensitivity (monitoring frequency changes when impacts increase or decrease)
- Impacts to features/artifacts/structures evaluated as active, inactive, or non-existent
- Impacts documented with repeat photographs
- Current program partially addresses CMINs 11.1.1 and 11.1.2

# Issues with Current Archeological Site Monitoring Program

- provides mainly qualitative condition information for Section 106 compliance purposes
- is not designed to provide trend data
- no clear linkages to ecosystem processes and functions
- does not allow dam effects to be distinguished from other causes of erosion (e.g., visitor use)
- Sample of sites monitored each year is non-random; sites with most impacts are monitored most frequently. This does not allow meaningful evaluation of system-wide resource condition status and trends

# Current Tribal Monitoring of Cultural Resources

- Hopi, Hualapai and Southern Paiute monitor resources of specific cultural concern via annual river trip
- Resources of concern include National Register eligible places (arch sites, TCPs) and non-eligible resources (e.g., native plants)
- Monitoring approaches vary by tribe:
  - qualitative assessments of specific resources (all 3 tribes)
  - repeat photos of select locations (Southern Paiute Consortium)
  - plant transects at culturally valued locations (SPC, Hualapai)
  - repeat surveys to track Hopi perceptions of ecosystem health (pilot study by Hopi Tribe, proposed as long-term monitoring)

# Issues with Current Tribal Monitoring Program

- Only small amounts of funding are currently allocated for tribal monitoring, all tied to Terrestrial Ecosystem Monitoring
- TEM program does not cover full range of resources of concern (e.g., mineral collecting areas , Traditional Cultural Properties)
- Monitoring goals/objectives not explicit (except Hopi pilot study)
- Tribal plant transects track vegetation trends at specific locations but do not allow for system wide assessments
- Individualized approaches not readily integrated with results from other tribes/programs/data
- Tribes want to monitor and address visitor impacts, although this is primarily an NPS management issue, outside the AMP
- Monitoring results are not currently contributing to evaluation of dam effects or AMP decision making process

# PEP review of cultural program (primarily focused on heritage resources)

- Protocol Evaluation Panel convened spring, 2000
- 17 experts participated
- PEP team divided into 4 sub-panels: Section 106 compliance, Native American issues, archaeological research, and geomorphology (No monitoring sub-panel!)
- Unlike other PEPs, the review focused on all aspects of the cultural program, not specifically the monitoring protocols
- The PEP review resulted in 3 core recommendations and 8 supplementary recommendations

# PEP Assessment of Monitoring Program

- Positives: NPS has long term monitoring record (began ca. 1992) and tactics and personnel have been fairly consistent
- However, the panel also noted:

“The monitoring program thus far has been implemented with good intentions but has generated few positive results. Many of the problems can be traced back to the original Programmatic Agreement (PA) and the Monitoring and Remedial Action Plan (MRAP). The assumptions and procedures contained in these documents apparently have never been questioned by those responsible for conducting the work.”

## The Cultural PEP criticized the cultural monitoring program on several fronts

“A great deal of monitoring seems to be taking place, but it is not part of a unified plan. Neither is the monitoring leading logically to the development of the HPP or to incorporation into the Adaptive Management decisions. Monitoring (a tactic) has been substituted for management (a strategy). This has turned the process on its head and is counterproductive.”

# Additional PEP Panel Observations

“The ongoing monitoring of archaeological sites is providing longitudinal information on the condition of the sites, however, the interaction between site condition and impacting agents is not being fully recorded or evaluated.... Field reviews...revealed that little information is being collected on physical processes. For example, rates of erosion ... are not being quantified. In order to evaluate the actual loss of archaeological data over a span of time, this information is critical.”

# Key PEP Recommendations

1. **Develop a unified long-term monitoring plan reflecting responsibilities and authorities of the parties under PA, ROD and GCPA :** “In the future, archeological site monitoring should be guided by a very specific (focused) research or management design; it should not just be a long-term, standard activity.”
2. **Redefine the Cultural Resources Monitoring Program to meet specific program objectives:** “The monitoring program should have two [primary] purposes.... 1) permit NPS to assess effectiveness of their management strategies (e.g. check dam effectiveness) and 2) [allow] BOR to evaluate effects of different flow regimes on archaeological sites, native plants and other resources directly affected by changing water levels and gain and loss of sediment. In other words, monitoring should be designed and organized to serve as the basis for periodic quantitative evaluations of effect of dam operations, effectiveness of erosion control measures, and development of treatment plans.”

# Additional PEP Recommendations

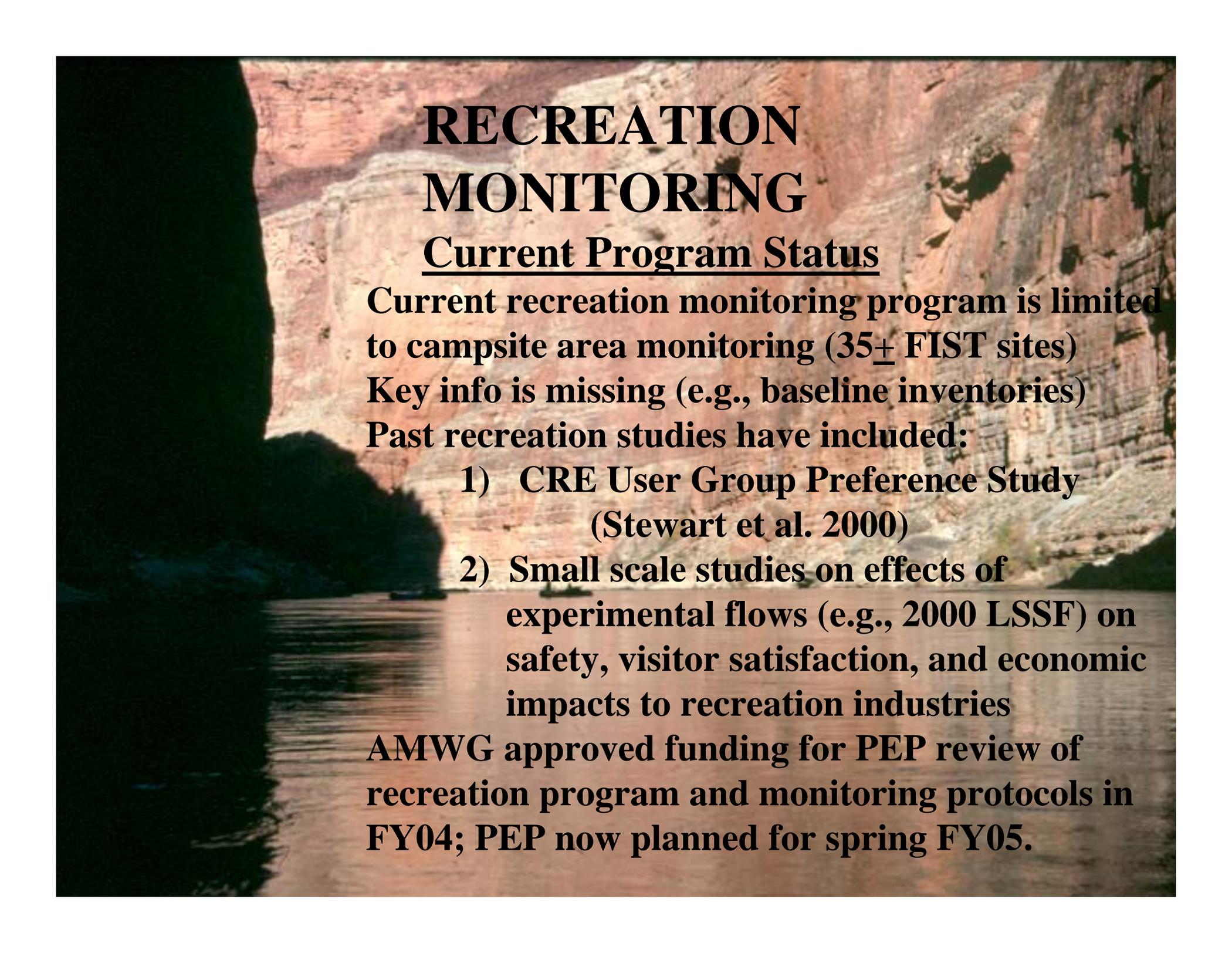
1. Previously collected monitoring data should be evaluated to determine its usefulness as baseline information for the monitoring plan
2. Include quantifiable information on dam effects
3. Increase sharing of information and responsibilities between Native American monitoring programs and other monitoring activities by NPS and GCMRC
4. Reinstate repeat mapping at selected sites to track progressive development of arroyos, surface deflation, etc.
5. “Given the responsibility of GCMRC for long-term monitoring and for ecosystem modeling, it seems essential and highly appropriate that the GCMRC take on the role as the centralized data repository for cultural information.”



# Recommendations for Future Monitoring of Heritage Resources

- Redesign program to track status and trends of dam effects on archaeological sites and other historic properties
- Use random stratified sample of archeological sites to assess system-wide effects
- Stratify site population by vulnerability indices (Thompson and Potochnik 2000)
- Quantify erosional impacts and track erosional/depositional trends relative to dam ops, climatic variables (via weather stations), human impacts, and other geomorphic “drivers”
- Complete National Register significance assessments, so that loss of integrity can be properly evaluated (CMIN 11.1.1)
- Develop predictive erosion model per Pederson et al. (2003) recommendation to assess efficacy of check dams (CMIN 11.1.2)





# **RECREATION MONITORING**

## **Current Program Status**

**Current recreation monitoring program is limited to campsite area monitoring (35± FIST sites)**

**Key info is missing (e.g., baseline inventories)**

**Past recreation studies have included:**

**1) CRE User Group Preference Study  
(Stewart et al. 2000)**

**2) Small scale studies on effects of experimental flows (e.g., 2000 LSSF) on safety, visitor satisfaction, and economic impacts to recreation industries**

**AMWG approved funding for PEP review of recreation program and monitoring protocols in FY04; PEP now planned for spring FY05.**

# RECREATION CMINs

- CMIN 9.1.1 Determine and track the changes in recreational quality, opportunity and use, impacts and perceptions of users in the CRE
- CMIN 9.1.2 D & T the frequency and scheduling of river-related use patterns
- CMIN 9.1.3 D & T the level of satisfaction for river-related recreational opportunities (RRROs) in the CRE
- CMIN 9.1.4 D & T the economic benefits of RRROs
- CMIN 9.2.1 D & T the change in quality and range of opportunities in consideration of visitor safety, and the inherent risk of river-related recreational opportunities
- CMIN 9.2.2 D & T accident rates for visitors participating in RRROs
- CMIN 9.3.1 D & T size, quality, and distribution of camping beaches by reach and stage level in Glen and Grand Canyons
- CMIN 9.3.2 D & T effects of ROD operations on the size, quality and distribution of camping beaches in the CRE
- CMIN 9.4.1 D & T effects of ROD operations on elements of wilderness experience specific to the CRE
- CMIN 9.5.1 D & T the frequency and scheduling of research and monitoring activity in the Glen and Grand Canyon

# VISITOR EXPERIENCE

- How do dam operations effect the level of visitor satisfaction with recreational experiences in the CRE relative to experiential goals established by NPS?
- Methods: Visitor Satisfaction Surveys (combined with creel data for Lees Ferry reach)
- Target: Lees Ferry anglers, private boaters, commercial river-runners (clients and guides), hikers using CRE.
- Frequency: every 5 years for each group/topic (plus annual summaries of creel data)



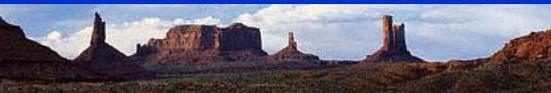
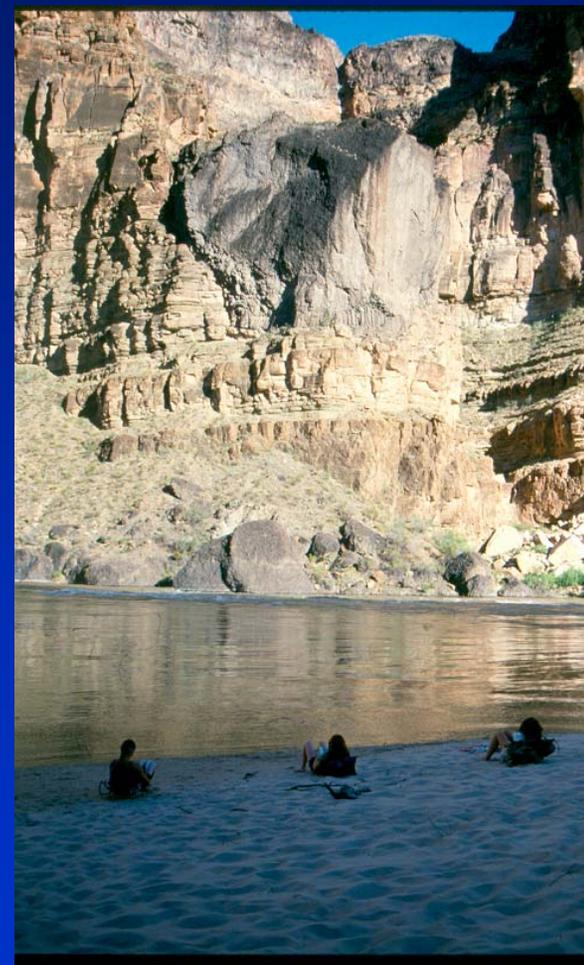
# VISITOR SAFETY

- How do dam operations effect visitor safety?
- Target: Anglers at Lees Ferry, river runners
- Methods: Annual surveys of guides and outfitters to determine numbers/types of incidents (equipment damage, boat strandings, injuries) relative to varying dam ops
- Frequency: annual survey  
(Data analyzed in relation to specific flow regimes)



# CAMPSITE MONITORING

- Assessment of previous campsite I&M protocols undertaken in FY01; final report available (Kaplinski et al. 2003)
- Report found that campsite I&M protocols have been highly variable (inconsistent) through time
- Report recommends:
  - Conduct comprehensive inventory of all currently used camps in CRE
  - Ground truth remotely-sensed campable sand areas (Breedlove et al. 2003) and determine campable area boundaries
  - convene panel to develop long-term monitoring protocols for camp site area linked to visitor capacity
- FY06-07 budget will include projects to address Recommendations 1 & 2.  
FY04 budget funds PEP in FY05.



# SOCIOECONOMICS

- 1999 NRC review was highly critical of AMP for not placing more emphasis on this program element
- There is no monitoring program in place at this time
- Past studies have been either
  - Small scale analyses of impacts of experimental flow events on elements of the recreation industry, or
  - Non-peer reviewed, in-house evaluations by WAPA or BOR of hydropower costs of experimental flows
- AMWG approved funding for PEP review of the socioeconomic program and monitoring protocols in FY04
- No specific recommendations included in CMP (but annual reports from WAPA on power generation, market values, and hydropower revenues, as a minimum requirement?)

# The End