Environmental Work Group Report -- Current Environmental Flows

I. Introduction: What are environmental flows?
   A. Water in the Southwest. In the generally arid conditions of Arizona, surface water in perennial and intermittent streams is often the dramatically limiting factor for riparian vegetation, and wildlife and fish habitat. A high proportion of plants and wildlife (including fish) depend directly or indirectly on riparian and aquatic habitats [INSERT REVELANT STATS].
   B. Objective. This work group report makes a reasonable estimate of the quantity of water in use to maintain the current condition of Arizona fauna and flora. That quantity is the environmental flow.
   C. Ecosystems are dynamic. Riparian and aquatic systems are among the most dynamic, expanding or contracting in response to precipitation, drought, and withdrawals of water. Therefore, this report cannot be more than a snapshot in time in which the environmental flows quantified here are the dependent variables. When conditions are drier, or withdrawals for cultural uses increase, riparian and aquatic communities will be reduced in health and size.

II. The components of environmental flow
   A. Base flow (add definition)
   B. Evapo-transpiration (ET) of riparian and aquatic vegetation (add discussion, if determined to be needed)
   C. Flood flows (add discussion, including why flood flow will not be quantified in environmental flow totals)
   D. Under flow (susbflow) (add current definition relating to Holocene floodplain alluvium, ref. ADWR subflow report and discussion on why it will not be quantified in environmental flow totals.
   E. Further discussion of interaction of the environmental flow components if needed.
      1. Add additional discussion (if needed) on how environmental surface flows usually depend on under flow in the floodplain aquifer, and often the groundwater movement in regional aquifer.
      2. Add discussion on the characteristics of properly functioning environmental flow conditions, and how they depend on flood flows for channel maintenance, favorable native fish habitat, and bank and floodplain recharge.

III. Quantifying Environmental Flows

A. Analysis by groundwater basin (define) and by county

1. This section may include brief descriptions and key features of the 18 groundwater basins.
2. This section may also include the bases for environmental flows in State or federally designated areas: wilderness areas, wild and scenic rivers, national wildlife refuges, areas of critical habitat, unique water, etc.

B. Determination of water needs for specific components of environmental flow

1. Water needs of sport fish
2. Water needs of riparian vegetation
   a. Native vegetation or proper functioning riparian areas + tamarisk and other "less desirable" species
   b. Opportunities for water management thru vegetation management (might be better as general comment in Conclusions
   c. How ET is quantified
3. Other sources of needed environmental water
   a. Tributaries and springs
   b. Effluent
   c. Reservoirs and stockponds
   d. Other

C. Presentation of the Findings

1. Data which can be quantified will be presented in a table
   a. Table and Maps will be organized by groundwater basin and county
   b. A column for water features will itemize primary drainages, tributaries, existing instream flows, federal or state designations, springs, effluent or other water, reservoirs, stockpond numbers, other features such as floodplain groundwater depth when available
   c. Existing environmental values will include quantified water feature characteristics (where available) and wildlife species with emphasis on listed species
   d. Current environmental flows will be quantified for base flow (acre-feet per year), riparian ET based on [GS? TNC? ARS? Other?] data
   e. Quantification of additional environmental flow features, such as miles of perennial stream, spring and effluent discharge, reservoir numbers and storage, and environmental allocations (water rights designated for environmental purposes)
2. Data to be presented qualitatively in most cases: flood flow component, stockpond volume, federal or state designations, and in some cases environmental flow allocations

IV. Conclusion/Recommendation

A. Future status of environmental flows in a State projecting 100-1000% growth over 100 years

1. A contributor to the State's economy, not only in tourism and recreation, but in air and water quality, soil productivity, human health, etc.
    a. The risks of removing strands of the "web of ecosystem life"
    b. The nature and value of environmental and economic sustainability
    c. A necessary factor in the overall quality of life
2. Adequacy of Protection
    a. Water Rights?
    b. New legislation?
    c. Evolving ethic?

B. Recommendation???