

# **Water Acquisition Plan Progress Report**

**US Fish and Wildlife Service**

presented to  
CALFED Management Group  
9 May 2000

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## **Agenda**

**Summary**  
**Background**  
**Approach**  
**Biological Need**  
**Hydrologic Characteristics**  
**Economic Considerations**  
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## Summary

Combining biologically based AFRP flow priorities with relevant hydrologic and operational information, we have developed a series of interactive spreadsheet models for selected controlled streams to provide a systematic, databased means of determining (b)(3) acquisition priorities on an annual basis. These models allow, for each stream, the identification of the flow priorities that are expected to be met on a monthly basis with existing hydrology in all water year types, and the flow priorities that may need to be acquired to achieve AFRP flow targets.

Additionally, we are refining a model that allows this within stream information to be further sorted based on stream or species rankings and economic factors to prioritize (b)(3) acquisitions across streams.

Remaining information and approaches include biologically based flow priorities for uncontrolled tributaries (Mill, Deer, Battle creeks, etc.), consensus on between stream and species priorities, and approaches for assessing economic considerations of water acquisition.

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## Background

CVPIA Section 3406(b)(3) directs the Secretary to implement an acquisition program, coordinated with the AFRP, to supplement (b)(2) water

Acquisition program uses limited Restoration Fund monies to acquire limited water to satisfy instream flow needs, thus there is a need to prioritize acquisitions

Acquisition program needs guidance from the Service to determine priorities: where, when, and how much water to acquire

The Service has developed a systematic, databased approach and models to identify flow priorities and translate them to acquisition priorities

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## **Approach**

**Water acquisition is driven by:**

**Biological need**

**Hydrologic characteristics (including operations)**

**Economic considerations**

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## **Biological Need**

**Current biological flow needs are based on scenarios developed by the Service:**

**October 1996 Draft Guidelines for Allocation of Water Acquired Pursuant to Section 3408(b)(3) of the CVPIA (*Feather, Bear, Yuba, Mokelumne, Calaveras, Merced, Tuolumne, and Stanislaus rivers*)**

**Flow scenarios have not been developed for unregulated tributaries (*Butte, Mill, Deer, Battle, Big Chico creeks, etc.*)**

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## Hydrologic Characteristics

**In 1998 and 1999, compiled hydrologic, operational, and water rights information in several documents:**

**Hydrologic and Water Rights Analyses for Feather, Bear, and Yuba Rivers**

**Hydrologic and Water Rights Analyses for Mokelumne, Calaveras, Stanislaus, Tuolumne, and Merced Rivers**

**Hydrologic and Water Rights Analyses for Selected Sacramento Valley Spring Run Salmon Streams (Battle, Mill, Deer, Butte, Cow, Big Chico, Cottonwood, and Clear creeks)**

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**For each stream, these documents include:**

**Hydrologic/operational descriptions**

**Statistical probability of flows by month in five water year types**

**Hydrologic indicators, where appropriate**

**Potential base flows/existing fishery management flows**

**Water rights descriptions**

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**In 1999 and 2000, we developed interactive spreadsheet models that combine AFRP flow needs with hydrologic characteristics for each river. These spreadsheets show:**

**AFRP flow priorities**

**Expected monthly flows for all water year types**

**When expected monthly flows meet AFRP priorities**

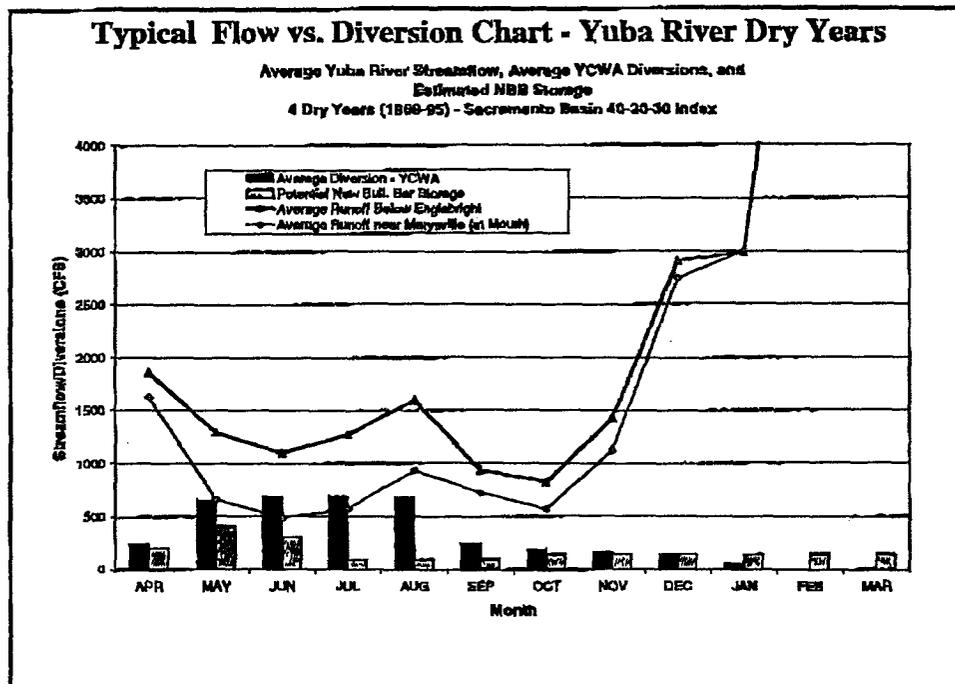
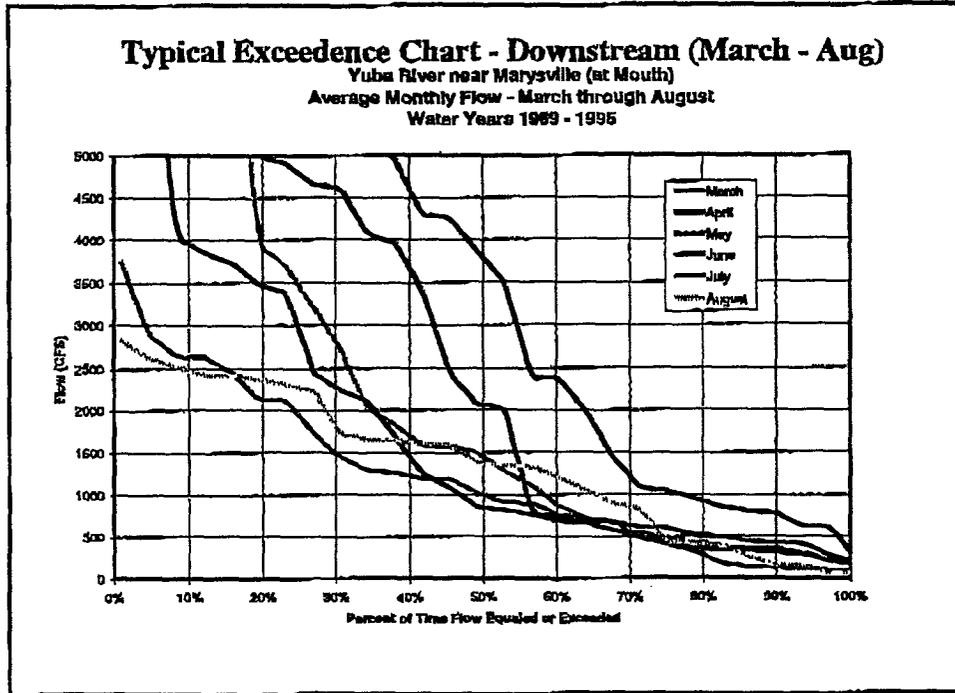
**Remaining unmet AFRP flow priorities for which water may be acquired**

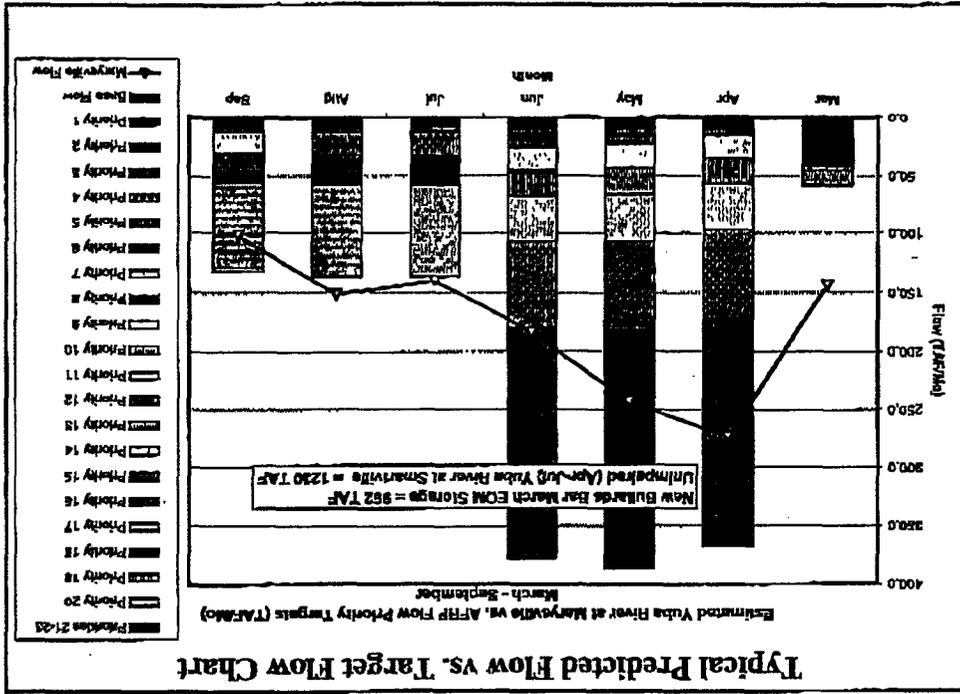
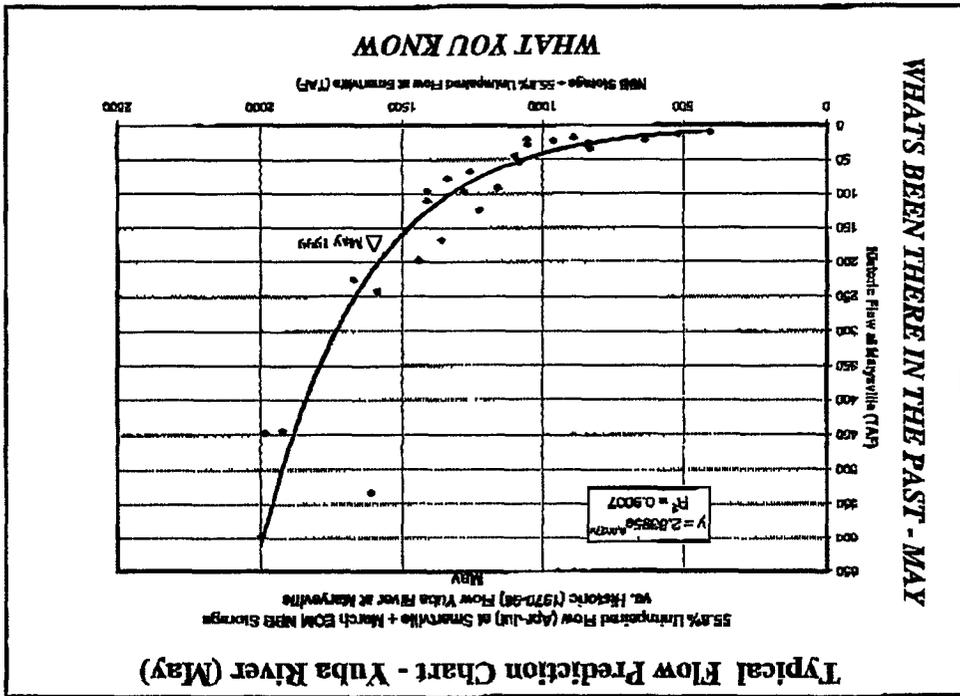
**Effects on operations/storage of meeting flow needs**

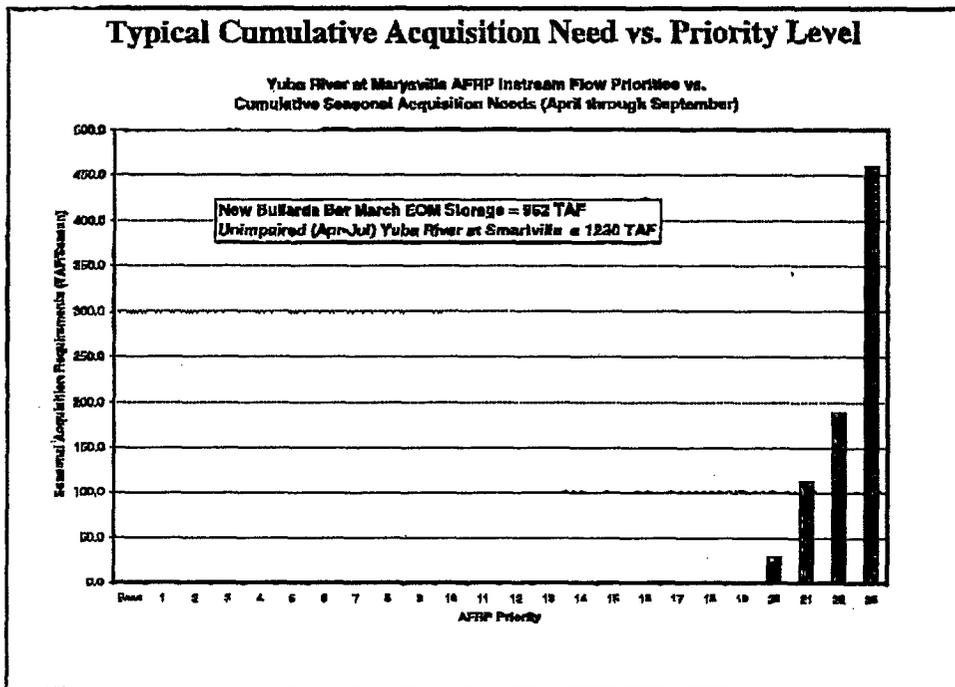
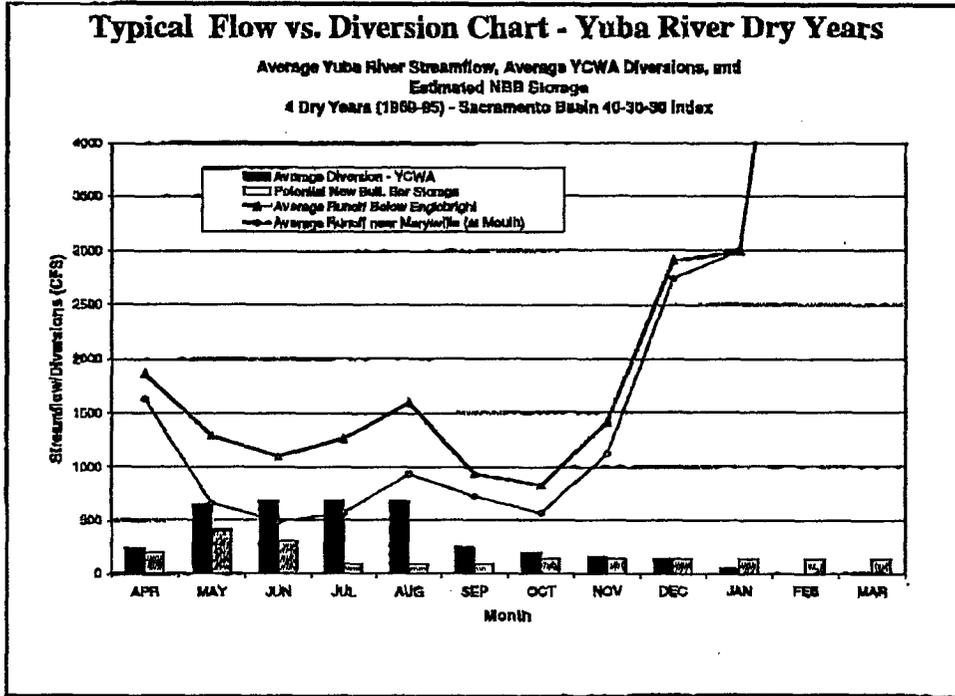
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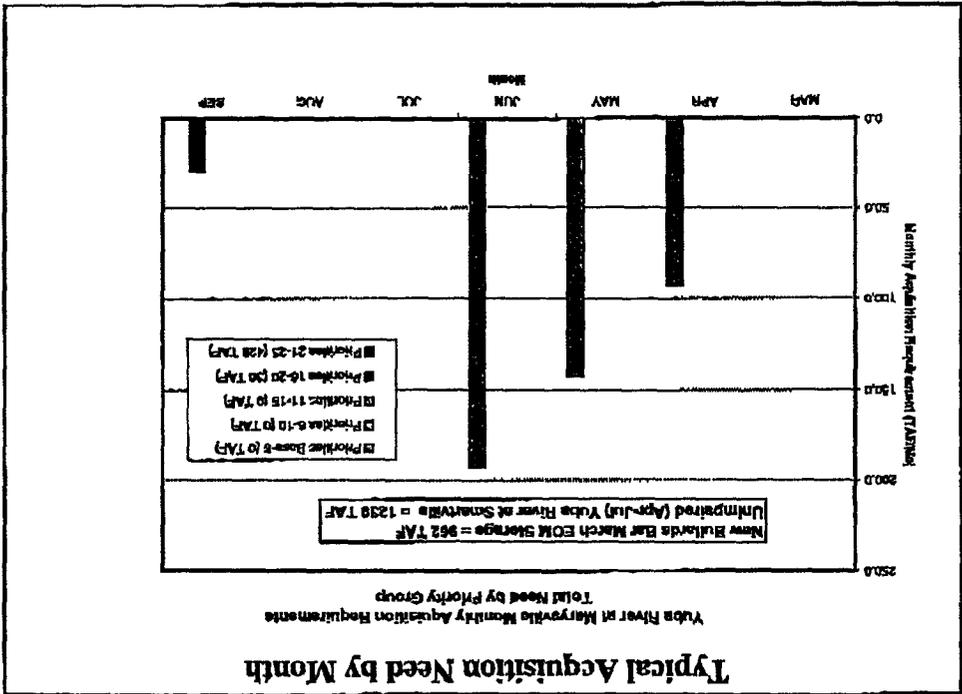
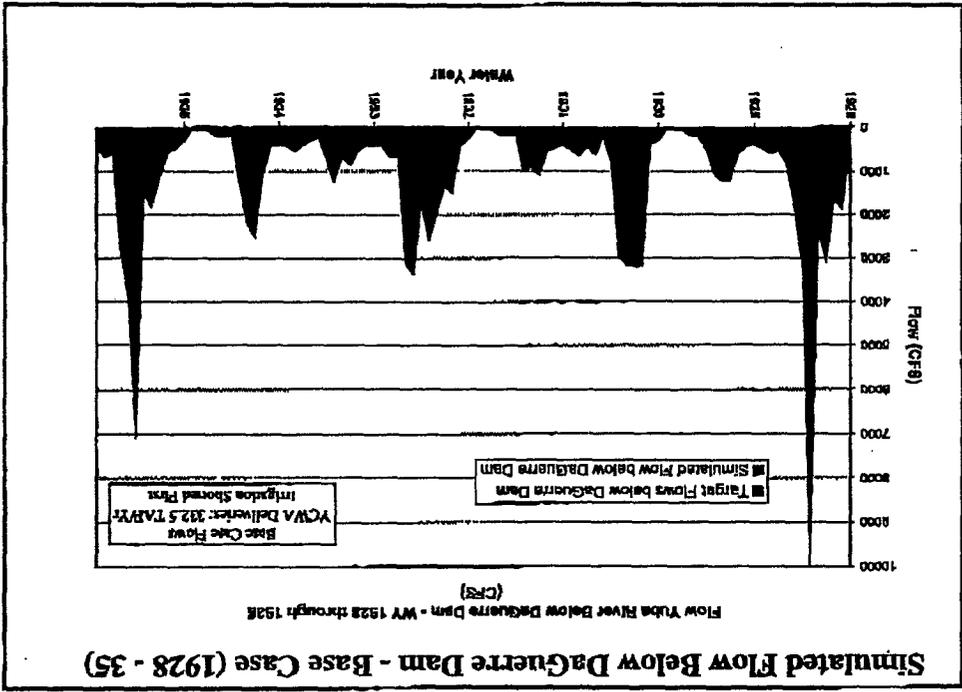
**Yuba River examples of spreadsheet model results for determining acquisition needs...**

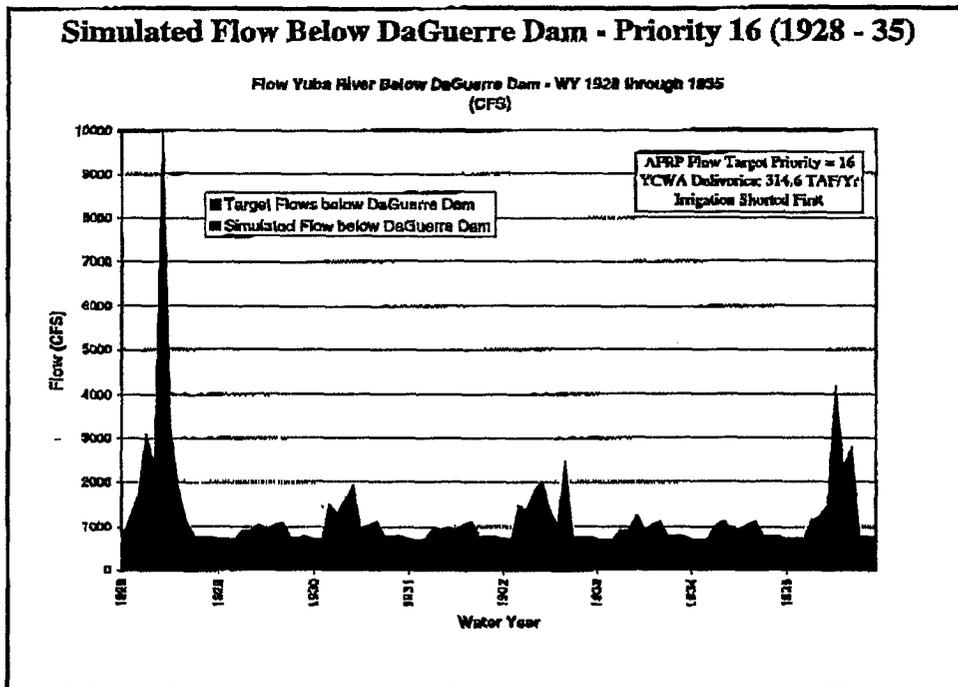
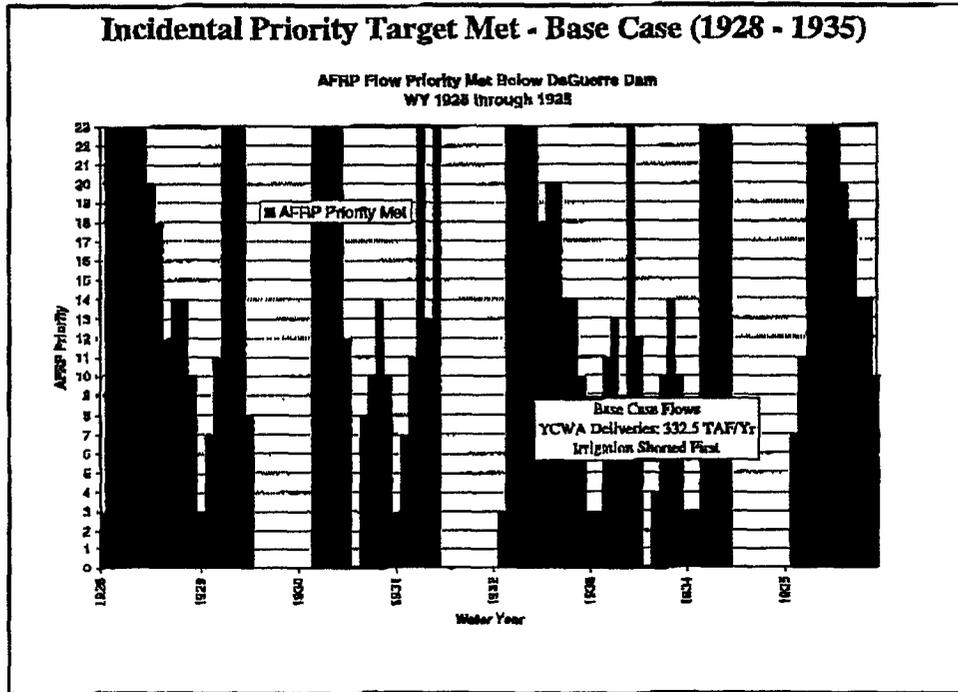
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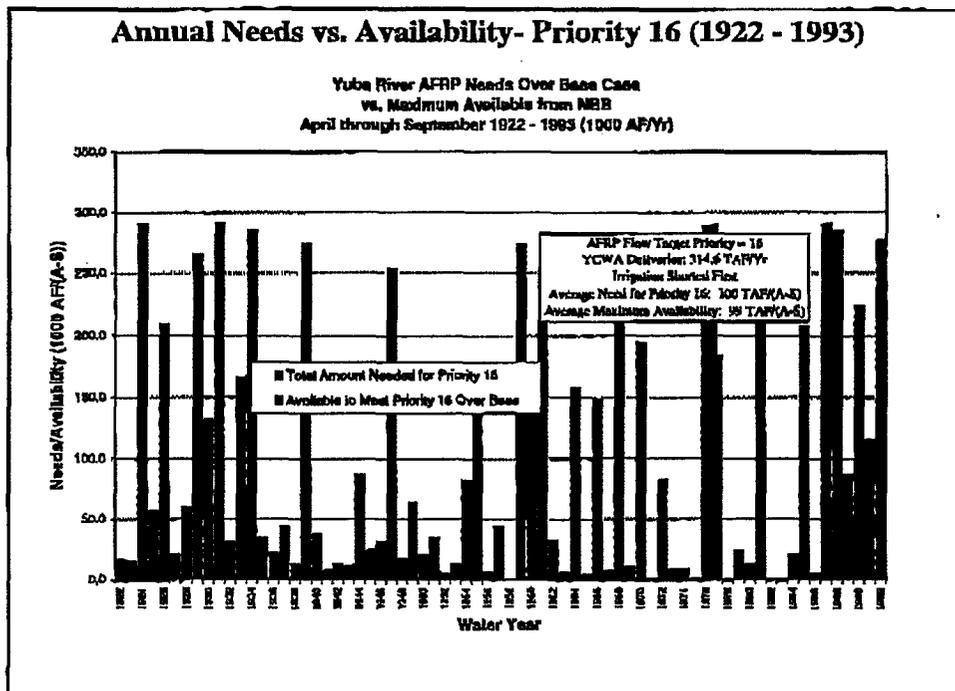












## Economic Considerations: A draft water acquisition priority model

Given identification of within stream AFRP flow priorities for which water may be acquired, we have developed a draft model that allows water purchase decisions based on:

- AFRP flow priorities within each stream
- Relative importance for stocks and streams
- Hydrologic characteristics for each stream
- Cost of acquisition on each stream
- Annual spending strategy
- Competition for water

**The model makes water purchase decisions based on several user controlled parameters**

Flow block and fish stock weighting factors

Annual spending strategy (spending target, desired drought protection, potential for year-end carry-over etc.)

Amount of competition for water as it affects cost

**Can be used to examine scenarios for different stock and stream rankings, water acquisition strategies, and water markets**

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*...this model, and its assumptions are in preliminary form, and will be refined based on continued discussions with biologists, economists, and policy makers...*

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## **Future Direction**

### **Refine biological needs:**

Gain consensus from biologists on flow needs, stock and stream rankings, and other biological questions regulated streams

### **Refine hydrologic characteristics:**

Complete ECOSYM: Modify models to test a range of AFRP flow options, test shortage sharing options, assess upper limits of water available for each stream, and integrate with PROSIM and Delta Standards

### **Refine economic considerations:**

Investigate, model and compare alternative long-term acquisition strategies

### **CVPIA and CALFED Coordination**

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