

**RESOLUTION OF THE  
WHITE MOUNTAIN APACHE TRIBE OF THE  
FORT APACHE INDIAN RESERVATION**

**WHEREAS,** the Alchesay/Williams Creek National fish Hatchery Complex on the Fort Apache Indian Reservation presently supplies native and non-native sport fish to the White Mountain Apache Tribe, eleven other tribes, the State of Arizona, and two military bases; and

**WHEREAS,** the sport fishing and recreation program of the Tribe provides important recreation and economic benefits to the Tribe and Tribal members and to the region as a whole; and

**WHEREAS,** the hatcheries also support the Apache Trout and loach minnow recovery efforts of the Tribe and the United States Fish and Wildlife Service; and

**WHEREAS,** the recent drought conditions in the White Mountains has resulted in declining flows from the springs upon which the hatcheries depend as well as increased water temperatures; and

**WHEREAS,** recent fires and ensuing floods at the Mescalero National Fish Hatchery, which provides recreational sport fish to more than 11 Pueblos and Tribes, have resulted in suspension of operations at the Mescalero hatchery; and

**WHEREAS,** the suspension of operations at the Mescalero hatchery has resulted in an immediate need for increased production of fish to meet current and projected demands for recreational sport fish in the Southwest; and

**WHEREAS,** the Tribal Council has been advised that there are improvements that can be made to the existing facilities at the Alchesay/Williams Creek Complex that will address the water quality and water quantity problems and also will provide capacity for an immediate increase in production of fish at the two facilities to meet the regional shortfall of fish due to the suspension of operations at the Mescalero hatchery; and

**WHEREAS,** the improvements to the hatchery complex will be needed even after a replacement hatchery is built at Mescalero, due to unmet requests for fish at the Alchesay/Williams Creek and former Mescalero hatcheries in recent years and projected increased demand for fish over the long term as tribal and state populations grow and increased outdoor recreation opportunities are needed for the health and well-being of the people of the southwest; and

**Resolution No. 11-2000-319**

**WHEREAS,** the improvements will also provide capabilities needed for the Tribe to expand its native fish conservation program; and

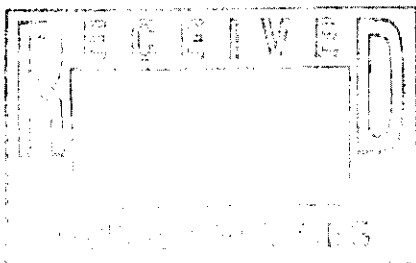
**WHEREAS,** the White Mountain Apache Tribe Wildlife and Outdoor Recreation Division, in consultation with managers at the Alchesay/Williams Creek Complex and the Arizona Fisheries Office at Pinetop has prepared a proposal for expansion and upgrade of the facilities at the two hatcheries on the Fort Apache Indian Reservation.

**BE IT RESOLVED** by the Tribal Council of the white Mountain Apache Tribe that it supports the proposed upgrades and expansion of the hatchery complex.

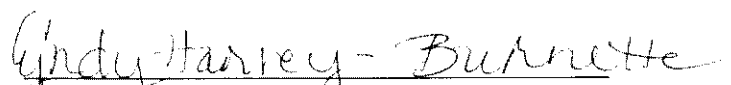
**BE IT FURTHER RESOLVED** by the Tribal Council of the White Mountain Apache Tribe that it authorizes and directs the Director, White Mountain Apache Tribe Wildlife and Outdoor Recreation Division, to submit the proposal to the U.S. Fish and Wildlife Service, Region 2, and seek the Service's agreement and support for the proposal.

**BE IT FURTHER RESOLVED** by the Tribal Council of the White Mountain Apache Tribe that it authorized and directs the Director, Wildlife and Outdoor Recreation Division, to work with the Fish and Wildlife Service, Tribal Special Counsel, the Tribe's neighboring community leaders, and other tribes and federal agencies to identify and pursue funding and technical assistance opportunities and take other steps necessary to implement the proposed expansion and upgrade.

The foregoing resolution was on duly adopted by a vote of November 3, 2000 for and five for and zero against by the Tribal Council of the White Mountain Apache Tribe, pursuant to authority vested in it by Article IV, Section 1 (a), (b), (f), (h), (i), (j), (s), (t) and (u) of the Constitution of the Tribe, ratified by the Tribe September 30, 1993, and approved by the Secretary of the Interior on November 12, 1993, pursuant to Section 16 of the Act of June 18, 1934 (48 Stat. 984).



  
Chairman of the Tribal Council

  
Secretary of the Tribal Council

# Alchesay/Williams Creek National Fish Hatchery Expansion Proposal

November 8, 2000

Prepared for  
U.S. Fish & Wildlife Service, Region 2

by  
White Mountain Apache Tribe,  
Wildlife & Outdoor Recreation Division

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## **Background**

Recent fires and ensuing floods at Mescalero, combined with drought conditions in the southwest have raised major concerns with the operation of the three National Fish Hatcheries on Indian lands in the Southwest. Two of these hatcheries are located on the Fort Apache Indian Reservation. The U.S. Fish and Wildlife Service convened a meeting in Albuquerque, New Mexico on October 3, 2000 with the Tribes being served by these National Fish Hatcheries to discuss the suspension of operations at the Mescalero National Fish Hatchery and water flow concerns at the Alchesay/Williams Creek National Fish Hatchery complex. The meeting was held to update affected Tribes on the causes of these problems and to address related short and long term impacts to fish production and stocking on Reservations throughout the region.

Representatives of various Tribes within Region 2, including those from The White Mountain Apache Tribe, attended this meeting. Upon participating in a discussion of background information, group reviewed a number of potential alternatives to mitigate accompanying fish stocking/production cutbacks, both short and long term. In order to ensure progress toward resolution of Tribal concerns, the group agreed to continue discussions in a later meeting, at which time, more formal and specific proposals would be submitted for discussion.

### **White Mountain Proposal**

A second meeting has been scheduled by the U. S. Fish & Wildlife Service on November 8, 2000 in Albuquerque, NM to evaluate proposed alternatives in deciding upon an appropriate plan of action regarding the hatcheries. This report is submitted in response to this request, and for consideration to address: 1) immediate operational problems and concerns existing at the Alchesay/Williams Creek Hatchery complex, and 2) providing increased production capacity to the Region and its hatchery "stakeholders" on an interim basis by expanding existing hatchery facilities. This proposal, if adopted, also would serve to provide the capacity needed in the long-term to meet projected increased demands for fish from the Alchesay/Williams Creek complex. While preliminary in nature, this

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report and its proposed actions have been reviewed and approved by the Tribal Council of the White Mountain Apache Tribe as being acceptable to the Tribe (in its preliminary form).

### **Problem/Issue**

Tribes within U.S.F.W.S. Region 2 that receive sport-fish stockings from federal hatcheries have largely relied upon either the Mescalero National Fish Hatchery, located on the Mescalero Indian Reservation in New Mexico, and/or the Alchesay/Williams Creek National Fish Hatchery Complex, located on the Fort Apache Indian Reservation in Arizona. Forest fires and ensuing floods at Mescalero prompted the U.S.F.W.S. to suspend operations at the Mescalero National Fish Hatchery. Furthermore, production capabilities at the Alchesay/Williams Creek National Fish Hatchery complex have been negatively impacted due to declining water flows associated with the region's prolonged drought conditions. Additional information on the details surrounding these operating conditions, and the decision to suspend hatchery operations at Mescalero, are attached in Exhibit 1.

### **Mescalero National Fish Hatchery**

The US Fish & Wildlife Service's Mescalero National Fish Hatchery has significant deficiencies that have limited production capabilities of the facility for decades. Over and above these pre-existing limitations, flood damage in 1999 killed all rainbow trout on station and similar mud-flows in 2000 killed half the fish maintained at the hatchery for stocking in New Mexico. Based on the poor site location, water quality and construction of the existing Mescalero facility, the U.S.F.W.S. has decided to explore the feasibility of constructing a new hatchery rather than continuing to invest in the existing facility (an approach which the Mescalero Apache Tribe and other Tribes support). Accordingly, the U.S.F.W.S. will suspend fish production at the Mescalero NFH on November 1, 2000.

### **Alchesay/Williams Creek National Fish Hatcheries**

The current low flow conditions at the Alchesay/Williams Creek Hatchery Complex are due to

prolonged drought conditions in the Southwest. These conditions, if not abated, will limit the current capability of the hatchery to meet its own production obligations. The drought in the White Mountains of eastern Arizona has resulted in declining flows from the springs upon which both the Alchesay and Williams Creek units depend. Coupled with the drop in water flows, is a significant increase in water temperatures resulting in potentially lethal conditions for the fish held at both stations. In addition, the Alchesay/Williams Creek Hatchery Complex continues to operate without two critical full-time positions. Without taking actions to address these water quantity/quality and staffing problems, the Alchesay/Williams Creek Complex will be unable to alleviate shortfalls due to closure of the Mescalero hatchery and will have problems meeting production demands for 2001 and beyond.

## **Regional Shortfall - 2001 and beyond**

Due to the closure of Mescalero, the Tribes in New Mexico will face a shortfall of 165,000, 10-inch rainbow trout from March 1 to September 30, 2001. In years following, the shortfall will be 212,000, 10-inch rainbows/year. These figures are based on current U.S.F.W.S. Region 2 stocking records.

With respect to Alchesay/Williams Creek Complex, any shortfalls attributable to declining water quantity/quality are weather dependent and will not be known until spring 2001. If hatchery spring flows continue to decline as they have over the past five years (average annual flows), without further action, the Alchesay/Williams Creek Hatchery Complex will be unable to meet production requirements by as much as 30% in 2001, or approximately 300,000 fish.

## **Proposed Resolution - Expanding Existing Facilities**

### **Alchesay/Williams Creek National Fish Hatchery Complex Expansion**

#### **Production Capability vs. Regional Needs**

Due to the critical need to meet Region 2 fish requests in the next few months and over the next few

## *Alchesay/Williams Creek National Fish Hatchery Expansion Proposal*

years, the most feasible and cost-effective alternative would be to take immediate steps to expand production capabilities at the Alchesay/Williams Creek Hatchery Complex. This would alleviate near-term (next five years) shortfalls in production due to the suspension of operations at the Mescalero facility, while a new site/facility in New Mexico is evaluated, designed and constructed. Realistically, it will take several years (4-7 years) to obtain the funding necessary to replace the Mescalero facility and build a new facility. The proposed expansion at Alchesay/Williams Creek could be completed in a rather short time frame, as set forth in the next section.

An advantage of expanding the Alchesay/Williams Creek Complex at this time is that the increased capacity not only will address the near-term problems created by suspension of operations at Mescalero, but also will provide the capacity necessary to meet projected production demands for the long term. Presently, demands for fish exceed the current capacity of the Alchesay/Williams Creek Complex. Arizona's population is rapidly growing, as is the need for expanded outdoor recreation opportunities throughout the state. Increased demands for fish can be expected not only from tribes, but also from military installations and from the State of Arizona. Additionally, an expansion of the current facilities would enable the Tribe to expand its native fish programs.

### **Expansion Requirements**

Through discussions with Alchesay/Williams Creek Complex managers there are improvements that can be integrated into the existing facility that will enable an immediate increase in production at the two facilities. These following improvements address the water quality/quantity problems and staffing shortfalls that are limiting hatchery production. According to Hatchery Managers, the current hatchery infrastructure (hatchery buildings, raceways, tankhouse, etc) is largely in place to handle the increased production needed to meet the initial regional shortfall outlined above. More detailed information on these expansion items is provided in Exhibit 2.



*Alchesay/Williams Creek National Fish Hatchery Expansion Proposal*

**TOTAL EXPANSION INVESTMENT:** \$2,325,000.00  
(year 1)  
\$150,000.00/year

thereafter

**Improve Water Supply (quality & quantity):**

Explore and construct Supplemental Fish Production Wells at Alchesay/Williams Creek Complex.

Time-line to have operational - 90 days  
Cost - \$420,000

Capture of Columbine Springs at Alchesay  
Time-line to have operational - 90 days  
Cost - \$225,000

Water Treatment and Recirculation at Alchesay/Williams Creek Complex  
Time-line to have operational - 18 months  
Cost - \$1,600,000

**Staffing Needs:**

Fill Two Vacant Positions at Alchesay/Williams Creek Complex

Time-line to have positions filled - 90 days  
Cost - \$80,000

## **Mescalero Hatchery Replacement**

This proposal identifies opportunities to expand existing Hatchery facilities to boost hatchery production of sport fish, on an interim basis, to support fish allocations throughout Region 2. This proposal, however, does not diminish nor supercede the long-term regional need to bring back on-line (in whatever form) a new hatchery facility to replace that lost through the closure of Mescalero National Fish Hatchery. The production capacity of the closed Mescalero facility was 212,000 fish/year but the need is for at least 350,000 fish/year from the facility that will replace it. Regardless of where and how it is rebuilt, it is critical to the White Mountain Apache Tribe that appropriate efforts be directed to have this facility replaced within the next 5 years so that the Alchesay/Williams Creek Hatchery Complex may meet its own requests for fish after that. Accordingly, the Tribe is willing to support and advance whatever reasonable efforts are required to

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pursue the completion of this replacement facility.

**Alchesay/Williams Creek Operations**

Once a replacement New Mexico Hatchery is brought online, the expanded Alchesay/Williams Creek Hatchery Complex will be fully utilized to meet the growing demand for sport fishing opportunities in the White Mountains and throughout the region. In addition, a portion of the expanded facilities can be dedicated to native fish production efforts that are consistent with Tribal restoration management plans. With the exception of the Apache Trout program, these native fish rearing facilities do not presently exist at the Alchesay/Williams Creek Hatchery Complex.

The Tribe believes that there will be significant support for expansion of the complex not only from the tribes and agencies who presently obtain fish from Alchesay/Williams Creek, but also from the neighboring communities. The Tribe will work with the Service and other tribes and federal agencies to secure funding for the expansion.

## **DROUGHT CONDITIONS IN ARIZONA**

The capability of the Alchesay/Williams Creek National Fish Hatchery Complex to continue production of Apache trout for recovery and recreation; and to provide rescue response and facilities for loach minnows in drying habitats is being compromised by limited staff, failing water resources, and aging facilities.

The Williams Creek Unit of the Hatchery Complex is entirely dependent upon the output of the Williams Creek Spring. Drought conditions have affected spring flows and river conditions in most of northern Arizona. Decreasing spring flows have cut production capability at the Fish and Wildlife Service's Alchesay/Williams Creek National Fish Hatchery Complex, reducing the numbers of fish available for not only recreational fishing in northern Arizona, southern Colorado, and some portions of New Mexico, but also to Native American tribes in the three states and recovery actions for the threatened Apache trout. At the same time, extremely low flow conditions in habitat occupied by the threatened loach minnow have required placing the hatchery on call to receive fish rescued from habitats decimated by lack of flows.

The drought in the White Mountains of eastern Arizona has resulted in declining flows from the springs upon which both the Alchesay and the Williams Creek Units of the Complex depend. Coupled with the drop in water flows is a significant increase in water temperatures, resulting in potentially lethal conditions for the fish held at the stations.

Active management, redirection of limited staffing and funding resources, movement of fish from one unit of the complex to another in order to address water availability, expansion and repair of existing facilities to accommodate emergency conditions during this year and in subsequent years, establishment of specialized fish holding facilities and equipment for refugia of rescued loach minnow, and provision of emergency backup wells and water recirculation capabilities at both units of the complex are considered essential to ensuring management capability for both recreational and endangered fish management.

Each action requires significant funding commitments that were not included in existing budget estimates. Without additional capacity to provide sufficient water for production goals, those goals will most likely have to be readjusted significantly downward to a much reduced number of fish that can be supported by the limited amount of water. Cooperative programs with both the Arizona Game and Fish Department and with the White Mountain Apache Tribe would be impacted by such reductions, particularly in the ongoing recovery efforts for the Apache trout.

In order to address the limiting factor of water availability, Alchesay/Williams Creek National Fish Hatchery would investigate and develop solutions in a two phase process. The first priority would be to test whether a well system (primary well and back up) would provide sufficient water without affecting the shallow ground water table that feeds the existing spring or other nearby water sources of value to the White Mountain Apache Tribe. Should a new well system prove feasible and sufficient, Phase 2 - drilling and operation would be initiated. If Phase 1 shows that a well system is impracticable either because it would not provide sufficient water or that it would impact other nearby water sources, a recirculation system of the existing water

supply would be investigated. The Service continues to work closely with the White Mountain Apache Tribe with respect to the Alchesay/Williams Creek Hatchery Complex and we greatly appreciate the assistance of the Tribe in actively seeking solutions.

As the Service and the White Mountain Apache Tribe search for long term solutions to the dwindling water supply available to the hatchery, immediate drought-related actions will be necessary to address the potential crisis of the Federally listed loach minnow in the East Fork White River. Flow continue to recede and the loach minnows depending upon this habitat are threatened. In order to avoid a crisis, wild fish will have to be rescued, taken into captivity for the period of time their habitat remains in jeopardy, and maintained in order to be reintroduced to the wild for ultimate recovery. These goals will require the creation of emergency refugia facilities and provision of staff to accommodate the increased daily workload of maintaining the wild loach minnow.

## DROUGHT AND FIRE CONDITIONS IN NEW MEXICO

Naturally dry climatic conditions throughout the state of New Mexico, combined with the existing high potential for the state's forested lands to experience catastrophic, stand replacing wildfires, have placed most of the aquatic resources of the state in danger and have resulted in significant commitments of Fish and Wildlife Service fisheries professionals and facilities to rescue species, maintain them in refugia, and rehabilitate damaged habitats.

Recent wildfires in northern New Mexico (Cerro Grande and Viveash) have blackened tens of thousands of acres and destabilized entire watersheds within the Rio Grande and Pecos basins. Local, state, Tribal and Federal entities have requested the assistance of the Fish and Wildlife Service Division of Fisheries in protecting the aquatic resources of these basins. In every instance the Service has responded, but none of these actions were included in existing or projected budgets and are taxing the limited ability of the Service to accomplish its existing work load, much less the additional demands.

Ash flows from the Viveash Fire in the Pecos drainage have resulted in fish kills in high elevation streams. Responding to emergency requests by the New Mexico Department of Game and Fish, the **Mora National Fish Hatchery and Technology Center** received Rio Grande cutthroat trout into quarantine and is maintaining the wild fish for the state. These efforts may have to be retained for up to 5 years until the watersheds recover sufficiently (revegetated) from the wildfire. Because the genetic and health characteristics of these fish are unknown, they must be quarantined, utilizing limited facilities available for that purpose and rendering those facilities unavailable for other uses.

The **New Mexico Fishery Resources Office** is working with the Native American tribes impacted by the Cerro Grande wildfire and others that are located in fire prone systems to address habitat protection for native fishes. Watershed rehabilitation will take several years, requiring the Service, through the Fishery Resources Office, to dedicate staff to support efforts by the tribes and land management agencies such as the Forest Service and the National Park Service, in protection and rehabilitation of vulnerable aquatic systems.

The **Mescalero National Fish Hatchery** provides recreational sport fish to more than 11 Native American Pueblos and Tribes. In 1999, the Telephone Canyon Wildfire decimated the watershed above the hatchery. Worse, following the fire, thunderstorms created mudslides in the destabilized valley, with a wall of boulders, debris, and silt coming through the hatchery grounds. The silt-laden water killed tens of thousands of rainbow trout that were about to be stocked on the Mescalero Apache and other Indian Reservations. Without the funding that was requested to rehabilitate the hatchery after the first flood event, the production of sport trout has been cut in half. That production has been further impacted by the storms and subsequent flooding of July 8, 2000. It is estimated that half the existing fish held on station died from the influx of silt into the raceways. The hatchery also serves as the primary Service facility for holding and breeding captive populations of the endangered Gila trout. In many instances, the ability of the hatchery to receive and maintain these trout from areas that are in danger of destruction through wildfire is the only protection from extirpation for significant populations of this species. The endangered trout, held separately in indoor tanks, were not impacted directly.

However, the ability of the hatchery to maintain these fish and to produce rainbow trout has been so crippled that the Service is planning suspension of operations at Mescalero until a feasibility study of whether the production capability of the facility can be replaced on site or at another location.

Severe and anticipated long-term drought conditions in southern New Mexico and west Texas are expected to eliminate the habitats of several listed fish and aquatic species. Because of the extremely limited ranges of some of these species, the drying up of one spring can result in the extinction of an entire species. Thus, it is essential that duplicate populations of some of these organisms be maintained in captivity to ensure population viability and future reintroduction efforts. For many of these species, the **Dexter National Fish Hatchery and Technology Center** is the only facility with the expertise to receive wild populations and maintain them. However, the capability of the station is limited, particularly with respect to available staff to care for new and unplanned for arrivals that must be protected.

## FISHERY RESOURCES CAPABILITIES OF THE SOUTHWEST REGION

The Division of Fisheries oversees three distinct aquatic responsibilities of the Fish and Wildlife Service in the 4-state region of Oklahoma, Texas, New Mexico, and Arizona.

**Production** of sport fish for recreational programs on federal and Tribal lands; production of threatened and endangered aquatic species for population expansion and reintroduction into historic habitats; short- and long-term holding of native species threatened by temporary habitat degradation; and identification of new technology to advance fish culture operations occur within the 6 National Fish Hatcheries and 3 National Fish Hatchery and Technology Centers maintained by the Region.

**Monitoring** of wild populations of sport fish, native and nonnative populations, and endangered species, interacting with Native American tribes and other entities to maintain healthy wild populations through habitat conservation and improvement, harvest management, and stocking efforts are the responsibilities of the Fishery Resources Offices located in each state of the region.

**Fish health** of both wild and hatchery populations has become a significant concern of state, Federal, and Tribal resource managers. The spread of such diseases as whirling disease and largemouth bass virus has the potential to significantly affect both the health of aquatic systems and the economies based upon the use of those systems. The lead for monitoring fish health is held by the Region's Fish Health Center.

Current conditions throughout the Region of drastically decreasing aquatic habitats due to drought, wildfire, or other causes have increased the demand on already limited physical facilities and staff within the Fisheries Division. Operations plans are under formulation to ensure that populations of aquatic species in severe jeopardy can be taken into custodial care at specific hatcheries to ensure against extinction until short term adverse conditions ameliorate. However, two of the most devastating factors now confronting aquatic systems within this Region, drought and fire, are expected to produce conditions that require more long term solutions.

**Fishery Resources Offices** are on standby to rescue populations of fish and other aquatic species under imminent threat of extinction because of lack of water, impending fire, or floods in fire-ravaged watersheds.

**National Fish Hatcheries** are redistributing extremely limited resources to try to accommodate incoming fish that need refuge.

**Fish health experts** are working to ensure that wild populations that have to be taken in are not carrying diseases that would decimate existing hatchery stocks or be transmitted to other wild populations upon re-release to other habitats.

Complicating attempts to rescue aquatic species, the Hatcheries are facing drought-diminished

water sources. They are hard pressed to maintain those stocks they have on hand, much less new populations that come in with hours notice and require water, facilities, special feed, and almost continual custodial care until stabilized. Our hatcheries are operating emergency rooms without requisite life support systems. Springs that have supplied Hatcheries for decades are drying up, water supplies are compromised by increasing contaminant loads, physical facilities designed and built 50 years ago do not have capacity to address specialized fish holding requirements. New techniques to address these issues are constantly under review by the Technology Centers, but budgets continue to limit staff and resources needed to improve the physical plant, ultimately constraining the capability of the Service to accommodate fish or other species that require care.

Fishery Resources Offices provide expert advice and support upon request by other Federal entities, private land owners, and sovereign tribes. However, as more entities require this assistance to address increasingly frequent and severe threats to aquatic systems, the staff and funding resources of these offices quickly become outstripped.

Fish health of wild and captive stocks affects every aspect of fish management, from determination that hatchery stocks are disease free to monitoring wild populations. All four states within the Region have requested assistance and expertise from the one Health Center. Limited budgets and staffing capabilities have required that not all requests can be fulfilled and not all potential assistance provided.



## **“Drought and Southwestern Aquatic Resources: a pending crisis”**

### **Preface**

The recurring vision of western wild fires on our TV screens this summer that continue into fall, and the gallant efforts of fire fighters to save threatened communities, is but one of the visible symbols that reflect the reality of the persistent drought plaguing the people and the natural resources of the four southwestern States within Region 2 of the U.S. Fish and Wildlife Service. Less visible than massive wildfires are the impacts the drought has had on aquatic resources of the area including native and threatened and endangered flora and fauna. Suffering from two years of “La Nina” winters when precipitation was far below 30, 50 and 100 year averages, combined with stifling heat waves produced under stalled, dry, high pressure ridges in the atmosphere, southwestern aquatic resources have suffered severe setbacks. Many springs have dried up completely and others have significantly reduced flows. Stream flows are much lower than normal and have elevated temperatures. Additionally, the prognostic temperature and precipitation forecasts made by the Climate Prediction Center (CPC) for the National Weather Service are not encouraging. Relief is no where in sight!

Going into 2001, the CPC predicts drier than normal conditions in the Southwest, and probabilities for above normal temperatures are highest in Southwest and the South. Over the past several months, climatologists have predicted a continuation and deepening of the current drought. They also believe that the Southwest is in the third year of a 20-year drought similar to the drought that extended from the late 1940's through about 1971, prior to the abundant moisture levels produced by the “El Nino” winters that began in October 1972 and continued into the early 1990's.

The Service is not alone in it's effort to address the drought issues. Other federal and State agencies, communities, and irrigation districts are all involved in implementing water conservation efforts and developing plans, strategies and grant proposals to help ameliorate the challenges posed by the drought.

Based on it's mandated responsibilities, this document outlines the aquatic resource priorities of the Service under the prevailing circumstances presented by the drought. The strategies presented in this document are a compilation of information provided by the Fisheries Program staff in Region 2 at the field and Regional level. Proper planning is required to address the critical aquatic resource issues associated with this drought. This document presents that planning effort. Issues, needs, alternatives and solutions are addressed on a State by State basis and represent a consensus of expertise of Service fishery biologists within Region 2.

## Issues, Needs, Alternatives and Solutions

### ARIZONA

Arizona has been severely impacted by the current, extended drought. Impacts to agriculture, the livestock industry, recreation and tourism, all water related enterprises, and aquatic species dependent on average precipitation have been extensive. These adverse conditions prompted Governor Jane Dee Hull to issue a "Drought Proclamation" outlining the impacts and risks to the State's resources and enterprises due to water shortages and wildfires.

This was followed by Secretary of Agriculture Dan Glickman declaring 11 of Arizona's 15 counties as Agricultural Disaster Areas due to the drought. Included were Apache and Navajo counties, location of the Alchesay-Williams Creek National Fish Hatchery Complex. The Palmer Drought Index Percentiles compiled by the National Oceanic and Atmospheric Administration show the White Mountains of Arizona (southern Apache and Navajo counties) to be in the lowest 1% of precipitation received state-wide and all surrounding areas to be in the lowest 10%. They classify the entire area as under extreme drought and forecast the immediate need for over 15 inches of precipitation to end the drought. As noted in the **preface**, climatologists predict a deepening of the drought rather than abatement of it.

#### Alchesay-Williams Creek NFH

##### Issue

The Alchesay-Williams Creek National Fish Hatchery produces five species of trout, including the native Apache trout, *Oncorhynchus apache*, a threatened species. Trout are produced for the White Mountain Apache Tribe, San Carlos Apache Tribe, Hopi Tribe, and the Navajo Nation in Arizona, the Jicarilla Apache Tribe and Acoma and Zuni Pueblos in New Mexico, and the Southern Ute and Ute Mountain Ute Tribes in Colorado. The Alchesay unit also maintains facilities to culture the loach minnow, another threatened species endemic to the area.

The extended drought has begun to have a serious detrimental effect on the production capabilities of the hatchery complex. The declining spring flows at Williams Creek and the low flows and elevated temperatures at Alchesay have reached the point that regular production levels can no longer be sustained. Fish production water at the Williams Creek unit is derived primarily from Williams Springs with lesser amounts from Middle Spring and Horse Pasture Spring. Fish production water at the Alchesay unit is derived from Alchesay Spring (not a true spring but a river underflow of the North Fork) with supplementation directly from the North Fork of the White River.

There have been two major fish losses at Williams Creek this summer directly attributable to the lower flows. The oxygen generating and Low Head Oxygen induction systems have enabled the hatchery to maintain former production levels in spite of declining flows, but spring output continues to decline and has reached the point that production must be cut back in order to avoid

a catastrophic loss of fish including the threatened Apache trout maintained on the hatchery. With reduced flows, concentrations of unionized ammonia in lower rearing units causes stress to gill filaments, result-ing in high susceptibility to bacterial gill disease and frequent treatments with Chloramine T.

Spring flows at Williams Creek are now under 1300 GPM. The past 30 year average is 1993 GPM, thus we are about 700 gallons, or over 35%, below normal for this time of year. Looking further at 30 year averages, we know we cannot expect spring flows to begin increasing until sometime in February 2001 when we hope to see some effects from snow melt. With two "non-winters" the past two years, it is critical that we receive significant moisture this winter in order to at least stabilize, but hopefully to reverse, the current decline in spring flows. Water temperatures of the Alchesay supply have been elevated due to the reduced flows, necessitating reduction in densities of fish carried in raceways there. Therefore, both units fish production capabilities have been impacted by the drought. Unfortunately, as noted earlier, the precipitation forecasts for the coming winter are not encouraging.

In order for the Alchesay-Williams Creek NFH to carry out its mission under mandated Federal Indian Trust Responsibilities, alternative sources of water for hatchery operations must be considered and pursued. In order to address the emergency conditions presented by the current drought, the following actions and emergency supplemental budget requests need to be approved, funded and implemented.

### **Needs, Alternatives and Solutions**

**Columbine Spring:** Columbine Springs are located about 0.7 mile above the Alchesay hatchery. Although previously used as a domestic water supply for the White Mountain Apache Tribe, Columbine Springs have been flowing into the North Fork of the White River for about two years. When approached about the possibility of using the spring flows for the fish production tank house at Alchesay, the White Mountain Apache Tribal was agreeable as long as they could get the water back for domestic use in case they also experience drought related problems with their current Miner Flat Well Field that produces domestic water for several Reservation communities.

Under these conditions, if a pipeline and appropriate connections were installed, the hatchery could use the water until the Tribe needed it for other purposes. This would necessitate drilling a backup fish production well to provide water while the Tribe was using the Columbine Spring waters. In reality, a well is needed anyway. With both the Columbine Spring flows and a backup well, so that good quality water is always available, the Alchesay production tank house could be used year round, relieving some pressure from the Williams Creek production tank house where all hatching and early life stage rearing currently takes place.

**Action:** Install 6" PVC pipeline with associated valves and water control structures from Columbine Spring to Alchesay fish production tank house.

**Cost:** \$225,000

**Emergency Backup Fish Production Wells - Alchesay and Williams Creek Units:**

Both units of the Alchesay-Williams Creek NFH Complex require backup/augmentation fish production wells in order to protect existing fishery resources on the station and to maintain production commitments to the Indian Nations in Arizona, Colorado and New Mexico.

Test wells would be drilled at each station to determine the quantity and quality of underground water available on a sustained pumping basis. Once drilled and tested, the wells are to be equipped with appropriate sized pumps to deliver the quantity of water available. A second well would then be drilled, cased and pump installed to back up the first well during break downs or scheduled maintenance. A backup/standby power supply and transfer switch is required at each site to power the wells during electrical outages.

**Action:** Drill test wells, and if suitable quantity and quality of water is found, construct production wells for fish production purposes.

**Cost:** \$210,000 per station = \$420,000 for the Complex

**Water Treatment and Recirculation:** If sufficient water is not available from groundwater sources, treatment and recirculation of a portion of the existing flows should be considered at the Williams Creek unit. Water can be taken from Pond 3 and recirculated back up the system to C, D and E banks of raceways. Treatment would include solids removal, disinfection and oxygen injection prior to pumping the water back for reuse. A building would be required to house the treatment equipment and pump station.

**Action:** Research, fund and construct state of the art water recirculation/reuse system

**Cost:** \$1,600,000

**Loach Minnow Refugium Biotech Position:** The Loach Minnow Refugium requires daily maintenance and upkeep. This threatened species, *Rhinichthys cobitis*, needs consistent care and observation which currently cannot be provided because two PFT positions remain vacant due to a lack of funding. Under the current drought conditions, production of loach minnow may also be required for repatriation of populations lost or reduced as a result of low flows, elevated temperatures and possibly complete desiccation of habitats.

**Action:** Hire a Biological Technician, GS-404-4, to provide daily care for the Loach Minnow Refugium. Purchase specialized feeds required to maintain, produce and rear loach minnow.

**Cost:** \$30,000 per annum added to base funding

**Fill Two (2) Vacant Positions at Alchesay-Williams Creek NFH:** Two positions at this facility have been vacant for four years due to lack of funding. Refill these vacant positions.

**Action:** Hire a WG-7 Motor Vehicle Operator/Fish Culturist and a WG-6/7 Maintenance Person

**Cost:** \$80,000 per annum added to base funding

**Alchesay-Williams Creek NFH Complex Total    \$2,355,000**

# Williams Creek Main Spring Average Monthly Flow

