




America's Most



Endangered Rivers



of 2000



BRINGING RIVERS TO LIFE



American Rivers

FOUNDED 1973

www.americanrivers.org

About American Rivers

Since our founding in 1973, American Rivers has been dedicated to protecting and restoring North America's river systems and to fostering a river stewardship ethic. We have successfully preserved more than 22,000 miles of nationally and regionally significant rivers and over 5.5 million acres of riverside lands. Along with our conservation efforts, American Rivers promotes public awareness about the importance of healthy rivers and the threats they face.



As the leader of a nationwide river conservation movement, we are striving to secure a future in which healthy rivers support diverse species of wildlife, fish, and plants, are safe for human consumption and recreation, contribute to sustainable local economies, and improve the quality of life for all Americans.

American Rivers has a strong track record of enhancing grassroots protection efforts through our nationally recognized conservation expertise and public education campaigns. By partnering with a broad array of stakeholders, we advocate river conservation solutions that are community-based, scientifically valid, and economically viable.

We have a growing membership of more than 28,000 people. Our publications include a quarterly newsletter, an annual report, and an in-depth yearly report, *America's Most Endangered Rivers*. With a staff of 40, we operate a national office in Washington, D.C. and offices in Seattle, WA; Phoenix, AZ; Lincoln, NE; Davenport, IA; Great Falls, MT; Falmouth, ME; and we are about to open our newest office in Chattanooga, TN.



To find out more about our organization or to receive membership information, please contact us at (202) 347-7550 (or toll free, 877-4RIVERS) or visit our Web site at www.americanrivers.org.

American Rivers is a national nonprofit river conservation organization recognized under IRS Tax Code 501(c)(3).



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Introduction



We have straightened the curves, blocked the flows, and hardened the banks of thousands of miles of waterways, making it difficult for our nation's rivers to support life.

Pop quiz: which group of animals is disappearing fastest?

- A. Animals that live on land
- B. Animals that live in North American rivers and streams
- C. Animals that live in the ocean

Answer: B.

Recent scientific reports warn that North America's freshwater species — the fish, snails, amphibians, mussels and other animals that live in our rivers and streams — are dying out five times faster than animals that live on land, and three times faster than marine mammals. In fact, freshwater species are disappearing as fast as tropical rainforest species, which are generally considered to be the most imperiled species on earth.



Already, 17 species of freshwater fish and one in ten freshwater mussels have disappeared forever. Today, 65 percent of our crayfishes, 35 percent of amphibians, and 67 percent of mussels are rare or imperiled (Sources: Rivers of Life, www.tnc.org; *Conservation Biology*, 13:1220-1222).

There are a number of reasons for this decline in freshwater species, but one significant cause has been the widespread physical alteration of rivers: the construction of dams, levees, and stabilized riverbanks.

Critical river, wetland, and floodplain habitat for native freshwater species has been degraded or destroyed — and continues to be threatened — by these structural alterations that fundamentally change the shapes and natural flows of rivers and water quality.

Dams built to support navigation, generate hydropower, and divert water for irrigation block fish migrations, disrupt the transport of sediment and nutrients, and eliminate natural

Threats Facing This Year's Most Endangered Rivers

	Dam(s)	Barge Traffic/ Navigation	Excessive water consumption/ diversions	Flood Control Project(s)	Road	Mining	Poor water quality
Lower Snake River	x	x					x
Missouri River	x	x		x			
Ventura River	x						
Copper River					x		
Tri-State River Basins	x		x				x
Coal River						x	x
Rio Grande	x		x	x			x
Mississippi & White Rivers		x		x			
N. Fork Feather River	x						
Clear Creek				x			
Green River	x						
Presumpscot River	x						
Clark Fork						x	

variations in river flow that trigger fish reproduction and build wildlife habitat. Dams impact four of the top five rivers on this year's Most Endangered Rivers list and have driven certain species of salmon and fish like the pallid sturgeon to the brink of extinction.

Leaves built to control flooding destroy riverside wetlands and eliminate important spawning and feeding areas for fish and other species. Stabilizing riverbanks with rock (called "rip-rap") and channelizing rivers to support barges and reduce flooding eliminates islands, sand bars, and side channels. Flood



control projects imperil a variety of Mississippi River birds like the endangered least tern, as well as Rio Grande species like the endangered silvery minnow.

We have a number of key opportunities this year to restore our rivers and the native

fish and wildlife that call them home. By expanding habitat restoration programs, reforming dam operations, and using non-structural alternatives to flood control — like helping repeatedly flooded homes and businesses relocate out of harm's way — we can help bring our rivers back to life.

I hope you will visit us online at www.americanrivers.org, where we are building a new river resource center and interactive community to help individuals, communities and local groups protect and restore rivers across the country. Find out how you can help this year's most endangered rivers and add to the collective "river IQ" by sharing your own experiences and restoration success stories.

Rebecca R. Wodder
President, American Rivers



America's Most Endangered Rivers of 2000



1. Lower Snake River
2. Missouri River
3. Ventura River
4. Copper River
5. Tri-State River Basins
6. Coal River
7. Rio Grande
8. Mississippi & White Rivers
9. North Fork Feather River
10. Clear Creek
11. Green River
12. Presumpscot River
13. Clark Fork

Lower Snake River

THREAT: FOUR FEDERAL DAMS

Summary

This summer, the Clinton-Gore Administration will decide whether to remove four dams on the Lower Snake River to avoid the extinction of the river's legendary salmon and steelhead. Scientists have concluded that dam removal must be the cornerstone of salmon recovery efforts. But Administration officials may postpone dam removal and rely on unproven habitat and hatchery reforms and major new restrictions on salmon harvest. Delaying dam removal will dramatically increase the risk of extinction, according to federal studies. The Administration has

already missed a December 1999 decision deadline. The American public must demand immediate action to save the salmon and the communities that depend on them.

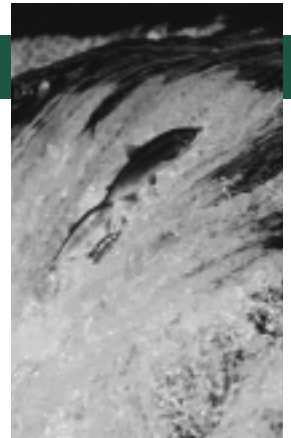


The River

The largest tributary of the Columbia River, the Snake River once produced more salmon and steelhead than any other tributary in the basin. When Lewis and Clark traveled down the Lower Snake on their famous expedition to the Pacific Ocean in 1805, the river was home to over two million salmon and steelhead. Each year, the fish traveled as far as 900 miles from the ocean to spawning grounds in the mountains of Idaho and Oregon. Today, Lewis and Clark would not recognize the Lower Snake. The river has been transformed into a series of slackwater pools separated by massive dams, creating conditions lethal to salmon. The lifecycle of Snake River salmon is inextricably linked to the river. Adult salmon lay and fertilize their eggs in the gravel bottoms of the river and its tributaries. After rearing in fresh water, young fish journey to the sea. As a salmon travels down river, its body undergoes changes to prepare for life in the ocean. When it is time for the salmon to reproduce, the fish uses a remarkable homing ability to find its way back to the river where it was born to spawn and die. This cycle of life and death has gone on for millennia.

The Risk

Salmon populations have been reduced over the years by habitat loss, over-fishing, and the construction of four dams on the Lower Columbia River. But the construction of four dams — Ice Harbor, Lower Monumental, Little Goose, and Lower Granite — on the Lower Snake River by the Army Corps of Engineers in the 1960's and '70s has driven salmon and steelhead runs to the brink of extinction. Young fish used to migrate to the Pacific Ocean in the Snake River's cool, free-flowing current. Today, they must struggle through the enormous reservoirs behind the dams, where they are exposed to predators, disease and lethally high water temperatures. Many fish die when forced through the dams' hydropower turbines. Costly efforts to collect the young fish with giant screens at the dams and transport them to the ocean by barge have failed to stop the decline. The Corps



LOWER GRANITE DAM (LEFT) AND THE THREE OTHER LOWER SNAKE RIVER DAMS MUST BE BREACHED TO SAVE SALMON. BREACHING WOULD MEAN REMOVING THE EARTHEN PORTIONS OF THE DAMS. LOWER GRANITE WOULD THEN RESEMBLE THIS PICTURE (BOTTOM) TAKEN IN 1973, OF THE DAM UNDER CONSTRUCTION. PHOTOS COURTESY ARMY CORPS OF ENGINEERS

Lower Snake River continued

The Lower Snake River dams don't make sense for salmon, the economy, or the people of the northwest.

recently conceded that fish barging would not lead to salmon recovery. The dams also take a heavy toll on adult salmon returning upstream to spawn. Many salmon have trouble finding the fish ladders on the dams. High water temperatures caused by the dams delay migration, and many fish are forced to climb ladders at the dams several times because they “fall back” below the dams. Scientists believe that many of the adults that do eventually reach their spawning grounds upstream are often too exhausted from the grueling journey to spawn successfully. Finally, the reservoirs have flooded spawning habitat.

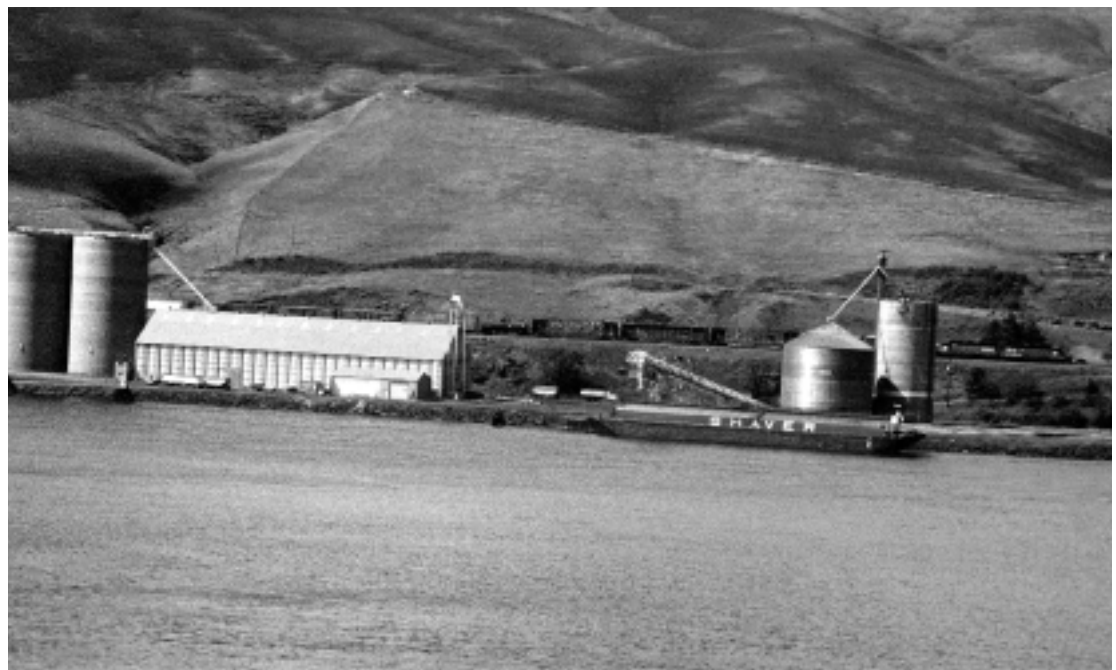
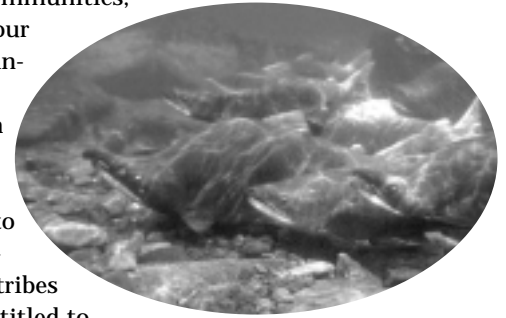
The end result has been disastrous for Snake River salmon and steelhead, which are not returning to spawn in sufficient numbers to avoid extinction. In 1999, not a single chinook salmon returned to spawning grounds in two Snake River tributaries. Federal scientists believe that some salmon stocks could go extinct within the decade. If the salmon go extinct, the Snake River Basin will lose a vital link in its web of life. Salmon have historically been an important source of food for grizzly

bears, bald eagles, and other wildlife. After spawning, salmon die and their bodies decompose, providing essential nutrients for both plants and aquatic life.

The failure to rebuild salmon and steelhead runs would devastate fishing-dependent industries and communities, including four tribes guaranteed the right to fish by federal treaty.

According to federal estimates, the tribes could be entitled to over \$10 billion in compensation — money that would come from federal taxpayers — if there is not enough salmon to support tribal fisheries. Commercial fisheries from California to Alaska would also suffer and many jobs would be lost. Sport fishing opportunities — a vital source of income and jobs in rural communities — would also disappear.

In contrast, many new economic opportunities would be created for the region by taking the dams out. Dam removal would create 12,000 temporary jobs and more than 2,000



INVESTMENTS IN HIGHWAY AND RAIL TRANSPORTATION CAN REPLACE THE NAVIGATION BENEFITS THE DAMS PROVIDE.



permanent jobs. A recent study by the Idaho Fish and Wildlife Foundation found that a restored salmon and steelhead fishery would produce \$170 million annually in economic activity for Idaho alone.

Dam removal is far less costly than other salmon recovery alternatives such as severe new restrictions on logging, farming and fishing.



For example, acquiring water from southern Idaho irrigators to improve salmon migration could cost more than \$1 billion annually and eliminate more than 3,000 farm-related jobs. And, in order to comply with the Clean Water Act

the Lower Snake Dams would have to be repaired — which could cost more than \$800 million.

What Can Be Done

The Clinton Administration must decide to remove the four dams to avoid the extinction of Snake River salmon and steelhead. It should heed federal studies warning that any salmon recovery plan that does not include dam removal is likely to fail. The Administration must also recognize that not removing the dams would impose economic costs and severe constraints on the region much greater than those associated with dam removal. Congress and the Administration must act quickly

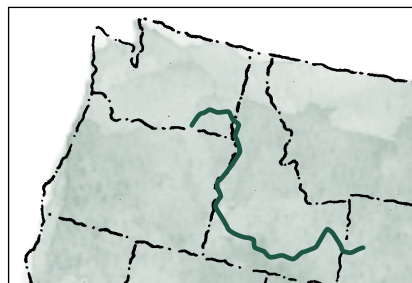
to replace the benefits provided by the dams — through targeted investments in transportation, irrigation, and power infrastructures — to protect existing jobs and rural communities. Studies show that rail and highway upgrades could cost-effectively offset the loss of barge navigation and that irrigation infrastructure at Ice Harbor Dam could be replaced. Clean sources of energy are available at minimal cost to replace the energy now produced by the dams. With the right investments, it is possible to preserve the region's economy and restore salmon for generations to come.

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WWW.AMERICANRIVERS.ORG
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CAMPAIGN

WWW.REMOVEDAMS.ORG
SAVE OUR WILD SALMON
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WWW.NWW.USACE.ARMY.MIL
ARMY CORPS OF ENGINEERS

[HTTP://RESEARCH.NWFSC.
NOAA.GOV/NWFSC-HOMEPAGE.
NORTHWEST FISHERIES
SCIENCE CENTER](http://HTTP://RESEARCH.NWFSC.NOAA.GOV/NWFSC-HOMEPAGE.NORTHWEST FISHERIES SCIENCE CENTER)

WWW.CRITFC.ORG
COLUMBIA RIVER INTER-
TRIBAL FISH COMMISSION

WWW.NWPPC.ORG
NORTHWEST POWER
PLANNING COUNCIL

(ABOVE LEFT) WILD SALMON ARE VITAL TO THE ECONOMY AND CULTURE OF THE NORTHWEST. SALMON PHOTO ON PAGE 8 BY ANDREW HENDRY

(LEFT) THE ARMY CORPS' COSTLY EFFORTS TO CAPTURE YOUNG FISH AND HAUL THEM AROUND THE DAMS IN TRUCKS AND BARGES HAVE NOT HELPED THE SALMON.

Missouri River

DAM OPERATIONS

Summary

Meandering channels, thousands of islands and sandbars, and a rich floodplain of wetlands, grasses, and forests supporting abundant wildlife characterized the Missouri River that Lewis and Clark saw nearly 200 years ago. Today, the river has been largely transformed into a rock-lined barge canal and a series of slackwater reservoirs. Fortunately, recent proposals to reform dam operations, boost habitat restoration spending, and revitalize hometown riverfronts offer us an unprecedented opportunity to revitalize our nation's longest river. Federal officials face key decisions this year that will determine the river's fate.

The River

The Big Muddy begins at the confluence of the Jefferson, Madison, and Gallatin Rivers in Montana. Almost 1,000 miles from its headwaters, the Missouri picks up the Yellowstone River, turns south, and captures the Platte and Niobrara Rivers in Nebraska and the Kansas River in Kansas. It completes its 2,400-mile journey when it joins the Mississippi, just north of St. Louis. The basin it drains along the way covers roughly 530,000 square miles, about one-sixth the surface area of the lower 48 states.

Few rivers were as dynamic as the historic Missouri. Annual spring flooding triggered reproduction in native river wildlife. It also

maintained the Missouri's overall pattern of braided channels, islands, and sandbars. Life teemed in the sheltered backwaters, sloughs, chutes, oxbows, gravel bars, mud flats, deep pools, and marshes. Lewis and Clark, on their voyage up the Missouri in 1804, recorded scores of plants, insects, fish, birds, and mammals previously unknown to science.

The Risk

Today, the famous explorers would not recognize the Missouri.

Dams and channels built in the last 70 years dramatically altered the river, eliminating the natural meanders that once supported one of the world's most diverse fisheries. Below Sioux City, Iowa, channelization reduced the average width of the river by two-thirds and shortened the river by 127 miles, replacing shallow, slow moving braided channels with a deeper, faster, and "stable" barge canal. Nearly all the river's islands and sandbars are gone. Now, dozens of native Missouri River species are in trouble.

Most of the original Missouri in the Dakotas and eastern Montana is buried beneath the nation's largest reservoirs. The few remaining natural segments between the reservoirs are increasingly being lined with rock. In Montana, dam operations and poorly managed livestock have nearly eliminated cottonwood trees from the river's banks.

What Can Be Done

As the nation approaches the bicentennial of Lewis and Clark's voyage, we have a rare opportunity to restore the Missouri River.

To revitalize the Missouri River, we must:

Manage Dams for People and Wildlife:

Although recreation produces ten times as many benefits as barges, the Army Corps of Engineers continues to operate dams to benefit barges that annually carry less than 380,000 tons of corn, soybeans, and wheat. This year, the Corps will decide whether to



reform dam operations to include higher spring releases and lower summer releases. Specifically, the Corps should increase spring releases from 35,000 cubic feet per second (cfs) to 50,000 cfs between May 1 and June 15, and then reduce dam releases to 18,000 cfs during the summer, temporarily suspending barge traffic between July 1 and August 20.

Higher spring dam releases would create sandbars, attracting boaters and anglers and creating important nesting habitat for two endangered birds. The “spring rise” also acts as a reproductive trigger for native fish. The split navigation season would aid recreation by keeping reservoirs higher during the summer. Lower summer flows between Sioux City and Saint Louis would provide shallow water, attracting recreation. Barge traffic would continue in the spring and fall — when more than 80 percent of the river’s farm-related cargo moves. Corps studies show the higher spring flows would not harm floodplain farmers.

Bureau of Reclamation dams in western Montana must also be reformed to aid cottonwood generation, build trout habitat, and protect endangered species. Scientists should study whether higher dam releases would interfere with flood control, recreation, power production, and water supply. A new license for private hydropower dams in western Montana should be delayed until the Bureau completes this study.

Restore Natural Places, Reduce Flood Losses: Resource managers should acquire and restore chronically flooded farmland from willing sellers and reduce the

impact of grazing on river-side cottonwoods. Congress should appropriate \$15 million for the Missouri River Fish and Wildlife Mitigation Project to acquire land and restore floodplain habitat, and pass S. 1279, the Mis-



For More Information

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SOUTH DAKOTA WILDLIFE FEDERATION

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IOWA AUDUBON SOCIETY

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NATIONAL LEWIS & CLARK BICENTENNIAL COUNCIL

WWW.NWD-MR.USACE.ARMY.MIL/MANUAL/MAST-MAN
ARMY CORPS OF ENGINEERS: MISSOURI RIVER MASTER MANUAL

INFOLINK.CR.USGS.GOV
MISSOURI RIVER INFOLINK

souri River Valley Improvement Act, which would authorize \$320 million for habitat restoration, interpretive centers, trail and greenway development, and a river monitoring program.

Revitalize Riverfronts: Local officials should accelerate efforts to revitalize riverfronts. Dozens of programs are available to help communities establish parks, create trails and greenways, and protect historic riverfront buildings. Congress could boost funding for trail and greenway development and Lewis and Clark interpretive centers by passing S. 1279.

Personal Contacts

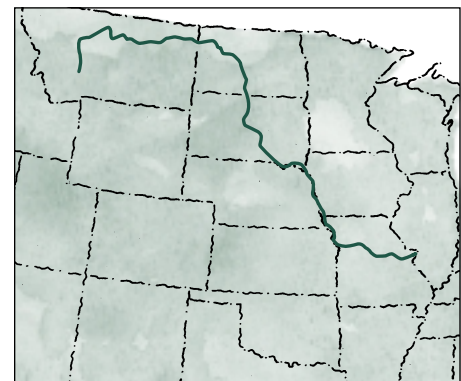
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THE CORPS OF ENGINEERS MUST CHANGE THE WAY IT OPERATES MISSOURI RIVER DAMS TO RESTORE HABITAT FOR THE ENDANGERED PALLID STURGEON (OPPOSITE PAGE) AND PIPING PLOVER (BELOW LEFT).



Ventura River

THREAT: DAM

Summary

Matilija Dam not only stands in the way of the Ventura River's endangered southern steelhead; it also prevents much-needed sand and sediment from flowing downstream and replenishing popular southern California surfing beaches. While it is easy to find widespread support for removing the dam, it will be harder to find money to complete the task. Federal, state, and local authorities must agree that removing the dam is a top priority and must work together to find the necessary funds.

The River

The mainstem of the Ventura River flows approximately 16 miles from the confluence of Matilija Creek and North Fork Matilija Creek (located within the Los Padres National Forest) to the Pacific Ocean near the City of Ventura. The 228 square mile watershed encompasses both steep mountain and coastal plain ecosystems.

Approximately 5,000 adult steelhead once returned every year to the Ventura River watershed. These runs have now been reduced to less than 100. California's steelhead restoration plan indicates that historically the Ventura River probably had one of the largest runs of steelhead in southern California — and that restoring the Ventura runs will be critical for steelhead recovery in the region. Scientists consider the southern steelhead a genetically distinct fish species, the parent of all steelhead on the Pacific Coast.

The Ventura River at one time also replenished the beaches of Ventura County with its flow of sand and sediment. Each year, the river supplied over 250,000 cubic yards of sediment to the beaches, which are popular with surfers and vacationers.

The overall health of the Ventura River has been improving recently, thanks to restoration activities such as a \$27 million upgrade to a sewage treatment plant and several river and wetlands restoration projects. However, the Matilija Dam stands in the way of the river's ongoing recovery.

The Risk

The Matilija Dam is a 200-foot high concrete arched structure that is owned by the Ventura County Flood Control District. It was built in 1947 as part of the river's flood control system and to provide water for the Ojai Valley. The dam lacks fish passage, so southern steelhead are blocked from approximately 50 percent of their historical spawning and rearing habitat. The fish were listed as endangered under the federal Endangered Species Act in 1997.

Because a massive amount of silt has built up behind the structure, Matilija Dam no longer provides flood control benefits and provides only minimal water storage capacity. The reservoir, which originally held 7,000 acre-feet of water, now holds only 500 acre-feet — and the storage capacity continues to decrease. An estimated 5 million to 7 million cubic yards of sediment is backed up behind the dam — which is enough to cover 3,000 football fields with one foot of sand. The removal and disposal of the sediment is likely to be the greatest cost associated with removing the dam and restoring the river.

The sediment trapped behind the dam has resulted in major erosion problems for the beaches of Ventura. Sand and sediment no longer travel downstream to replenish the



MATILIJDA DAM (RIGHT) BLOCKS ENDANGERED STEELHEAD FROM IMPORTANT HABITAT. THE DAM ALSO PREVENTS SAND FROM FLOWING DOWNSTREAM TO REPLENISH POPULAR BEACHES. THIS IS CAUSING SHORELINE EROSION (NEXT PAGE).



coastal area. Not only does this affect the ecosystem, but it hurts tourism in Ventura — a county where an estimated \$50 million is spent on coastal tourism annually — and threatens the sport of surfing at these world-renowned beaches.

What Can Be Done

Removal of the dam, combined with installation of fish passage at the Robles Diversion Dam located downstream, would open approximately 30 miles of habitat to endangered steelhead. Dam removal would also reduce beach erosion problems and would open up public access to the Matilija Wilderness for outdoor education and recreation — providing much-needed access to open spaces in crowded southern California and generating green tourism dollars for the area.

In June 1999, Ventura County officials agreed to support the removal of Matilija Dam subject to studies underway, as did other local, state, and federal public officials and agencies. In July 1999, the Bureau of Reclamation agreed to

study the cost and feasibility of removing the dam. This study, scheduled for completion in spring 2000, should provide a much more accurate cost for removing the structure. Past studies have put the removal cost anywhere from \$30 million to \$82 million.

The US Geological Survey also initiated studies to evaluate beach nourishment potential and impacts to sensitive species such as the southern steelhead and federally endangered tidewater goby. Congress has authorized the US Army Corps of Engineers to initiate studies in cooperation with the Bureau of Reclamation to facilitate the removal of Matilija Dam. A preliminary demonstration project by the County of Ventura to test removal techniques is scheduled for the fall of 2000.

Despite this forward movement in the effort to remove the Matilija Dam, a big obstacle still stands in the way — the money to complete the project. National, state, and local entities must continue to forge ahead with this task and restore these valuable resources not only for southern California, but



for the nation as well. The removal of Matilija Dam provides a unique opportunity to dismantle an ill-conceived project that no longer makes sense. Lack of money should not thwart the restoration of this national treasure.

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CAL TROUT

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CENTER

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SOUTHERN CALIFORNIA
STEELHEAD RECOVERY
COALITION



Copper River

THREAT: PROPOSED LOGGING ROAD

Summary

The 700,000-acre Copper River Delta is the largest wetlands complex on the Pacific Coast of North America and is world-renowned for its salmon runs. This legendary wilderness is threatened by a proposal to build a logging access road that could devastate important salmon streams and other bird and wildlife habitat. It could also open the door to additional development in the future. Two opportunities — purchasing a conservation easement and granting the area a wilderness designation — are now at hand to protect the Delta.

The River

Fed by the powerful Copper River, the Copper River Delta is a critical staging area for more than 16 million shorebirds and waterfowl and supports thriving salmon populations. The Delta is also a haven for grizzly and black bears, wolves, mountain goats, moose, mink, wolverines, sea lions, otters, and harbor seals.

The Delta has nurtured the people of the Copper River basin for thousands of years, providing generations of Eyak Indians with bountiful fish and wildlife. The seaside town of Cordova, home to more than half of the watershed's population, is economically dependent upon commercial and subsistence fishing.

The Copper River Delta, much of which is within the Chugach National Forest, has been designated a Western Hemisphere Shorebird Reserve Network Site, an emphasis area in the North American Waterfowl Management Plan, and a State Critical Wildlife Habitat Area.

The Risk

The most imminent threat is the Chugach Alaska Corporation's (CAC) proposal to build a road across the Delta in order to log its 8,000-acre inholding 30 miles east of the

Copper River. CAC is a for-profit Native corporation. The road would sever hundreds of streams that feed into the Delta, many of which are critical salmon habitat, and could severely impair the environmental, aesthetic, and subsistence values of the area.

Roads can have a devastating impact on river ecosystems. The construction and existence of a road accelerates erosion and increases the amount of sediment reaching streams. Too much sediment smothers and kills salmon eggs and reduces the availability of food for adult fish. A road also fragments wildlife habitat, increases noise and human disturbances, and imposes long-term changes on topography, soil, and vegetation. According to a report by CAC, forested wetlands cleared next to the road may not recover to existing conditions for over 200 years. The road would likely increase pressures to develop the known coal and potential oil deposits that underlie the area.

The Forest Service has granted CAC an easement allowing the corporation to develop the road without a full environmental review as required by the National Environmental Policy Act.

There is a strong incentive for CAC to look at alternatives to logging — the timber market has a poor long-term outlook and its inholding is very difficult to access. According to an independent economic analysis of the project by ECONorthwest, CAC could actually lose money due to the high expense of building the road — \$10–\$12 million — and the depressed state of the Asian timber markets.



THE PROPOSED ROAD WOULD SEVER HUNDREDS OF SALMON STREAMS, OPEN UP THE DELTA TO FURTHER HARMFUL DEVELOPMENT, AND DESTROY THE WILDERNESS CHARACTER OF THE AREA. PHOTOS COURTESY NATIONAL WILDLIFE FEDERATION; SCOTT ANAYA; P&R KEOUGH

What Can Be Done

Concerned citizens have a two-pronged plan to protect the Copper River Delta. The first part of the plan is to purchase a conservation easement on CAC's Delta acres, providing CAC with cash and commercial property in exchange for development rights. A conservation easement would guarantee a profit for CAC and its shareholders (which is otherwise unlikely given the poor outlook for timber markets and high road construction costs); allow CAC shareholders to continue using its lands for hunting, fishing, and other traditional uses; and preserve the invaluable Delta ecosystem.

Under an easement, CAC would not have to share up to 70 percent of its revenues with other Alaska Native regional corporations, as would be required under the Native Claims Settlement Act if the corporation logged the land. One potential source of money to purchase the conservation easement is the Land and Water Conservation Fund (LWCF), which received a significant appropriations increase for fiscal year 2000. Congress should appropriate funds this year to purchase a conservation easement on CAC's Delta land, benefiting the corporation's shareholders and saving this magnificent resource.

The second part of the plan is to provide lasting protection for the Delta by designating it a wilderness area. The Forest Service is currently revising its 15-year old Chugach National Forest Land and Resource Management Plan. In the spring of 2000, the Service will publish its Draft Environmental Impact Statement on the various management options, which will include wilderness designation for all or part of the Delta. Concerned Americans should participate in this impor-



tant decision process and urge the Forest Service to designate the Delta a wilderness area.

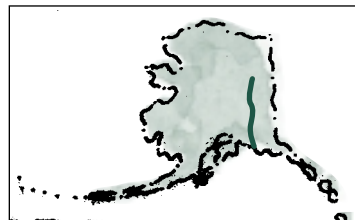
A wilderness designation would prevent incremental development of the Delta; honor statutory obligations to conserve the region's fish, wildlife, and habitat; and serve the interests of fishing-dependent Cordova by protecting the region's world-class salmon runs and maintaining a way of life.

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NATIONAL WILDLIFE FEDERATION

WWW.REDZONE.ORG/
EYAK PRESERVATION COUNCIL

WWW.PTIALASKA.NET/~MIDTOWN/COPPER
COPPER RIVER DELTA

WWW.FS.FED.US/R10/CHUGACH/
CHUGACH NATIONAL FOREST

Tri-State River Basins

THREAT: WATER WITHDRAWALS, DAMS, URBAN SPRAWL, NON-POINT POLLUTION

Summary

Water wars are no longer the exclusive domain of the arid West. Home to some of the richest and now most endangered populations of freshwater plants and animals in the world, the rivers of Alabama, Georgia, and Florida — the Alabama-Coosa-Tallapoosa (ACT) River Basin and the Apalachicola-Chattahoochee-Flint (ACF) River Basin — are under siege by the rapidly developing and water-thirsty southeastern U.S. The three states failed to reach an agreement to allocate their water resources by their self-imposed December 1999 deadline. Now they have until May 1 to develop a plan that both meets their water needs and complies with environmental laws.

The Rivers

The headwaters of these two regionally prominent river basins originate in the mountains of northwestern Georgia and southern Tennessee and extend southwest through the Piedmont Upland of northern Alabama and Georgia. The Chattahoochee joins the Flint near the Florida border to form the Apalachicola while the Coosa and Tallapoosa join to form the Alabama River. Both then flow through the Gulf Coastal Plain and empty into Apalachicola Bay and Mobile Bay respectively. Their estuaries support valuable fishing industries and are quite sensitive to the management of the rivers that feed them.

The varied geography and subtropical climate of the Tri-State Rivers create unique habitats critical to many species of fish, snails, mussels, plants, and other freshwater species. In addition to diverse aquatic habitat, these rivers sustain millions of people, including the Atlanta metropolitan area. They carry barges and commodities, generate hydropower energy, and provide a thriving billion-dollar sport fishing and recreational boating industry.

The Risk

Over-consumption of water by growing cities, factories, and farms, combined with the failure to take action against worsening water quality are the most immediate threats to the Tri-State River Basins.

Metro Atlanta is developing land at an unprecedented rate, and water consumption for agriculture in the Flint River basin is depleting groundwater sources. To support Atlanta's runaway growth and the other water needs of these basins, special interest water users are looking farther and farther away for water. The state of Georgia continues to support new and bigger dams and excessive consumption and diversion of water in the headwaters of the Chattahoochee, Coosa, Flint, and Tallapoosa Rivers

Meanwhile, water quality is getting worse. Urban, industrial, and agricultural development threaten several pristine reaches within the basin and will further degrade others. Alabama has no standards for nutrients such as nitrogen and phosphorus or for maintaining minimum water flows. While Georgia has such standards, they are inadequate to protect the region's water resources. Poor water quality throughout the region could require increasingly expensive water treatment, further harm critical species, and lead to massive fish kills, threatening valuable sport fisheries.

In the late 1980s, Congress and the courts responded to the battle over water among Alabama, Georgia, and Florida by establishing compacts for the ACT and ACF basins to negotiate their own water resource allocation plan. The governors of each state created negotiating teams to develop this plan by December 1998. They have extended the



SPRAWLING CITIES, FACTORIES, AND FARMS ARE PLACING INCREASING DEMANDS ON THE RIVERS OF THE TRI-STATE AREA, AND POLLUTING THE WATER THAT REMAINS — THREATENING THE REGION'S WATER QUALITY AND UNIQUE FISH AND WILDLIFE. PHOTOS COURTESY ALABAMA RIVERS ALLIANCE; UPPER CHATTAHOOCHEE RIVERKEEPER; ANDREW FAHLUND



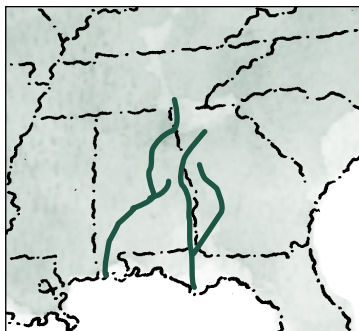
negotiations through May 2000. Meanwhile, the Army Corps of Engineers will complete an Environmental Impact Statement (EIS) that evaluates the anticipated impacts of various water allocation options. Based on the findings of the EIS, a federal commissioner will have 255 days to accept or reject the state-negotiated plan. The success or failure of this precedent-setting Tri-State compact will determine the fate of the Southeast's rich aquatic heritage.

What Can Be Done

To successfully protect the rivers of Alabama, Georgia and Florida, each water allocation plan must emphasize the ecology and water quality of the basins as much as the human and industrial needs for water. At a minimum, the three governors must support adequate minimum flows throughout each basin, not just at the state line. They must also agree on appropriate limits to water consumption.

Most importantly, rather than commit the region to a 50- or 100-year allocation based on imperfect science and demographic forecasting, the states' plan should allow "adaptive management." That would mean establishing a scientific advisory board for each basin, as the conservation community has proposed. A phased formula to allocate the water would place more conservative limits on water consumption at the start, then allow the restrictions to be loosened if ecological indicators show that fish, wildlife, and water quality are being adequately protected.

Whatever the states decide, the federal commissioner must reject any allocation formula that



fails to comply with federal environmental laws.

In addition, the states of Georgia and Alabama must improve their water quality standards. The state of Georgia must upgrade its standards to effectively limit urban, agricultural and industrial pollutants. Alabama must adopt basic standards that comply with the Clean Water Act.

The success or failure of the Tri-State Compact will reach far beyond the boundaries of the region. If done correctly, this unique interstate compact could set a precedent for future comprehensive water management efforts across the nation and the world.

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SOUTHERN ENVIRONMENTAL LAW CENTER

WWW.SIERRACLUB.ORG/SPRAWL/REPORT98/ATLANTA
SIERRA CLUB: ATLANTA, ONE OF NATION'S MOST SPRAWLING CITIES

Coal River

THREAT: MOUNTAINTOP REMOVAL MINING

Summary

The Coal River in West Virginia continues to be threatened by mountaintop removal coal mining — a process that decapitates mountains and fills streams with dirt and rock. Last fall, a court ruled to protect the Coal and other rivers from being buried by mining waste. Now, West Virginia officials are seeking to have the decision overturned. The outcome of these efforts, and decisions to be made by federal agencies in an upcoming assessment of mountaintop removal mining, will determine the fate of the Coal River and hundreds of other waterways affected by this controversial practice.

The River

The Coal River and its tributaries flow through some of West Virginia's most rugged and remote terrain. The Coal River basin supplies water to many of the region's municipalities, including St. Albans, one of the state's largest cities. As evidenced by West Virginia's booming tourism industry, the state's rivers and mountains are a major economic resource. The Coal River presents a variety of opportunities for boating. The river's bass, trout, wall-eye, and muskellunge make the area popular with anglers.

The Risk

Southwestern West Virginia, long valued for its rich coal reserves, faces a grave threat from mountaintop removal mining. In this practice, entire mountaintops are blasted away to reach thin seams of coal underneath, and millions of tons of rock and soil are dumped into adjacent valleys. The practice destroys forests, leaves a barren landscape, and buries the headwaters of rivers, which are essential to maintaining a healthy, dynamic river system.

The West Virginia Division of Environmental Protection (DEP) has permitted the burying of 1,000 miles of streams by these "valley fills." In a five-county region of West Virginia alone, a federal study found that 470 miles of streams have been filled, more than any other area studied. Because of sediment runoff from mountaintop removal, rivers like the Coal, which was once more than 12 feet deep, now run only inches deep in some places. Moreover, *U.S. News and World Report* estimated that 500 square miles of the Mountain State's landscape have been flattened.

In October 1999, a federal district court in West Virginia ordered a halt to permitting of many types of valley fills, finding that the fills violate stream protection provisions in the Surface Mine Control and Reclamation Act and the Clean Water Act. The Court's decision left no doubt regarding the devastation caused by mountaintop removal mining: "When valley fills are permitted in intermittent and perennial streams, they destroy those stream segments... This concentration of industrial waste is mortal to animal or aquatic life in the stream segment buried... These effects are inconsistent with State and federal water quality standards." If the ruling stands, it could bring stronger protection to the Coal and other rivers threatened by mountaintop removal mining by preventing permits from being issued indiscriminately for valley fills.

Unfortunately, the ruling is in serious jeopardy. The state DEP filed an appeal immediately, claiming that valley fills do not violate the Clean Water Act and that the surface mining rule prohibiting mining within 100 feet of a stream is not applicable to valley fills. The appeal sent the case to the 4th Circuit Court



in Richmond, Virginia. The federal district court in West Virginia stayed its decision, pending a settlement. In the meantime, mountaintop removal mining and the burying of rivers continue as before, and West Virginia's congressional delegation tried to pass legislation to overturn the court's decision.

What Can Be Done

Decisions made in 2000 will determine whether mountaintop removal mining will continue to destroy rivers. In June, the US Environmental Protection Agency, Office of Surface Mining, Army Corps of Engineers, US

Fish and Wildlife Service, and West Virginia DEP will release a draft Environmental Impact Statement (EIS) on the practice of mountaintop removal mining. This EIS is the first of its kind and will affect permitting throughout Appalachia. The purpose of the EIS is to assess the impacts of mountaintop removal operations and determine how to minimize their impacts on streams, other environmental resources, and local communities. After the agencies release the draft EIS, the public will have an opportunity to comment on the assessment. It is imperative that the agencies and Congress hear from concerned citizens and organizations that it is clearly not in the public interest to allow streams — and the life they support — to be buried by mining waste.

Decisions also will be made regarding the federal district court ruling, either through a settlement or by the 4th Circuit Court of Appeals. It is important that the issue be resolved to uphold the environmental protections for rivers called for by the federal district court. Federal protections under the Clean Water Act and the Surface Mine Control and Reclamation Act need to be enforced, not



For More Information

WWW.WVRIVERS.ORG/
WEST VIRGINIA RIVERS
COALITION

WWW.MOUNTAINTOPMINING.ORG/
VOICES FROM THE MOUNTAINS

WWW.DEP.STATE.WV.US/
WV DIVISION OF
ENVIRONMENTAL PROTECTION

WWW.EPA.GOV/REGION3/MTNTOP/
ENVIRONMENTAL PROTECTION
AGENCY: MOUNTAINTOP MINING

MOUNTAINTOP REMOVAL
MINING FLATTENS MOUNTAINS
(OPPOSITE PAGE) AND DUMPS
TONS OF WASTE ROCK INTO
VALLEYS AND STREAMS. THIS
STRETCH OF THE COAL RIVER
(LEFT) USED TO BE OVER TEN
FEET DEEP, BUT MINING
WASTE HAS REDUCED IT TO
MERE INCHES. PHOTOS COUR-
TESY WEST VIRGINIA RIVERS
COALITION.

compromised to allow the coal mining industry to dump millions of tons of waste into our streams.

Personal Contacts

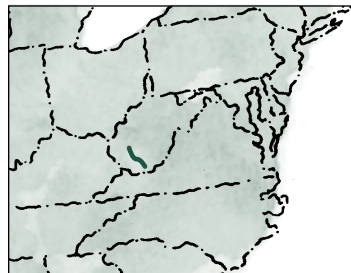
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Rio Grande

THREAT: EXCESSIVE DIVERSION AND OVERCONSUMPTION OF WATER; FLOOD CONTROL AND IRRIGATION PROJECTS; LAND DEVELOPMENT; POLLUTION



Summary

Water and life are being sapped from the legendary Rio Grande. In some places, massive diversions leave the river completely bereft of water. Yet, attempts to construct new water projects continue. Federal, state, and local decisions to be made in 2000 could determine whether the Rio Grande will survive as a living system. If significant changes to river management are not made soon, the Rio Grande will lose its ability to sustain the fish, birds, wildlife, and people that depend on it.

The River

The 1,960-mile Rio Grande, the fifth longest river in the United States, is woven into America's national mythology. It was the scene of the Spanish imperial quests and US conquest of one-third of Mexico's land. The Rio Grande's extensive watershed encompasses 335,000 square miles, equal in size to 11 percent of the continental United States.

Measured against the upper Colorado River, the upper Rio Grande has only about one-fifth as much water. And this not very large and wildly variable flow is being forced to meet relentlessly growing demands.

The devastated condition of the Rio Grande is most clearly illustrated in the final decline of the federally endangered silvery minnow. Once abundant throughout the 2,000-mile basin, the only existing population of the silvery minnow is now confined to a scant 40-

mile section below Albuquerque, NM, which has been completely dried up at times by agricultural diversions. Irrigation dams stop the fish from migrating naturally to areas with water and also make the fish more vulnerable to predators. As an important indicator species, the silvery minnow rep-

resents the dire situation of the ecosystem as a whole.

The Risk

The Rio Grande faces potential ecological collapse due to excessive consumption of its limited water supply and over-engineering of its fragile riverbed and riverside habitat.

Throughout the 20th century, river management for the Rio Grande has meant channelization, levee construction, destruction of native vegetation, dredging, and water diversion.

Diversions of water for irrigation and municipal use claim nearly 95 percent of the Rio Grande's average annual flow. In fact, claims to the Rio Grande's flow exceed the actual supply. Inefficient irrigation systems continue to drain most of the river's water and have contributed greatly to salinity downstream.

In the upper watershed, new municipal diversions threaten the already desiccated river. Ninety-eight percent of the middle Rio Grande watershed population lives in the Santa Fe, Albuquerque, Las Cruces, and El Paso metropolitan areas, some of the fastest growing communities in the nation. Currently, El Paso and Albuquerque draw 40 and 100 percent of their water, respectively, from groundwater aquifers. Faced with severe declines in these aquifers and population pressure, the cities have proposed major water projects to draw drinking water from the river. The plans call for the cities to draw up to 50 percent of their water from the river by 2005, possibly removing an additional 100,000 acre-feet of water (32,585,000,000 gallons) from a river that already runs dry periodically. At 204 gallons per day, Albuquerque's per capita water consumption, although declining through water conservation efforts, remains very high compared to El Paso and other cities in the West.

What Can Be Done

A number of decisions in 2000 will decide the fate of the Rio Grande:

- ◆ The City of Albuquerque's planned water project will create major new diversions from

UNCONTROLLED GROWTH AND IRRIGATION SUCK SO MUCH WATER FROM THE RIO GRANDE THAT SOME STRETCHES ARE LEFT COMPLETELY DRY (BELOW). HABITAT IN OTHER PARTS OF THE RIVER HAS BEEN DESTROYED BY CHANNELIZATION (NEXT PAGE). PHOTOS BY PAMELA PORTER, STEVE HARRIS AND US FISH AND WILDLIFE SERVICE



the river. Albuquerque's three-year agreement to use some of its water transferred from the San Juan River to supplement flows in the Rio Grande for the silvery minnow expired in 1999. The city now wants to use this water for its own municipal supply. In addition, the city began studies in 1999 to divert an additional 48,600 acre-feet of water from the Rio Grande for water supply. The City's draft Environmental Impact Statement must address the environmental hazards of the project, diverting less water from the river by reducing the City's high per-capita water use.

◆ The Middle Rio Grande Conservancy District, a highly-inefficient irrigation district located in New Mexico, may try to solidify its autonomy over the river with a bill in Congress transferring irrigation infrastructure assets from the Bureau of Reclamation to the District. This action would take away all public oversight for water conservation. Congress must not pass such a bill until the impact of all other Rio Grande projects is known, and the Conservancy District commits to stronger water conservation measures.

◆ The state of New Mexico, the U.S. Bureau of Reclamation, and the Army Corps of Engineers are undertaking a massive review of all irrigation, dam, and reservoir operations in the middle basin. Scoping for the draft EIS is being done now, and presents a critical opportunity to integrate the river's needs (timing and amount of flows and other considerations) into future operations.

◆ The City of El Paso and nearby communities have announced a \$350-million water project that includes major river diversions and four new water treatment facilities. Collectively, these projects would triple the amount of river water being diverted. The Texas/New Mexico Water Commission plans to purchase and retire agricultural water rights, but there is no guarantee that this will be adequate to offset the impacts of the new diversions, espe-



For More Information

WWW.RIOWEB.ORG/
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RESTORATION.COM](http://WWW.RIOGRANDE
RESTORATION.COM)
RIO GRANDE RESTORATION

cially given regional growth rates. The city will release a draft EIS on the plan in 2000. Local river advocates are asking for two things: save the river from full development of its waters; and reconnect the river and its floodplain. Specifically, they want 15 percent of construction costs devoted to enhancing river flows and funding restoration projects, but the Commission is balking at more than 2 percent, despite the huge impact of the project.

◆ Three long-standing flood control projects are being reauthorized by Congress in New Mexico and Texas. Federal agencies must include river restoration considerations in the draft documents being prepared.

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Mississippi & White Rivers

THREAT: FLOOD CONTROL AND NAVIGATION PROJECTS

Summary

This year, the U.S. Army Corps of Engineers will make major decisions that will seal the fate of the Mississippi and the White Rivers. The Corps will decide whether to extend the length of five Mississippi River locks and channelize the lower White River to accommodate additional barges; decide whether to build flood control projects which will destroy Mississippi River wetlands and further cut off the Mississippi from its already diminished floodplain; and decide whether to reform and expand habitat restoration efforts.

The Rivers

More than 400 different species of wildlife call the Mississippi River and its floodplain home, including the nation's most ancient lineage of fish and 40 percent of North America's migratory waterfowl. Recreation between Saint Paul and Saint Louis annually attracts 12 million visitors who spend \$1.2 billion, supporting more than 18,000 recreation-related jobs. Tourism in counties along the entire Mississippi generates more than \$15 billion in annual economic benefits. Yet the river continues to be threatened by polluted runoff from farms and city streets; the gradual, but extensive loss of floodplain forests, wetlands and side channels; dam operations that undermine the growth of marsh plants; and flood control projects that further cut off the Mississippi from its floodplain.

The lower White River features one of the largest contiguous expanses of forested bottomland wetlands in the Mississippi River Delta. This region contains two refuges — the White River National Wildlife Refuge and the Cache River National Wildlife Refuge — that support 300,000 wintering ducks. Experts consider the region's 350,000-acre expanse of wetlands to be the single most important wintering area for mallard ducks in North America.



The Risk

This year, the Corps will make major decisions affecting the future of the Mississippi and White Rivers:

NAVIGATION EXPANSION

The Corps will decide whether expected increases in barge traffic justify increasing the length of five Mississippi River locks from 600 to 1,200 feet. Unlike Corps projections, US Department of Agriculture data shows little demand for additional barges. Traffic shipments have not increased in the last two decades, and economists predict that annual corn, soybean and wheat exports will fall far below the Corps' prediction of nearly 7 billion bushels. The Corps has also failed to adequately assess the environmental impacts of additional barges, including impacts on the river's fishery and on side channel and backwater habitat.

The lower White River is threatened by a 254-mile channelization project. Rejected by Congress in 1988, the \$50 million project was reauthorized in 1996. The Corps would use river training structures to convert the White River into a nine-foot deep, 200-foot wide canal to move a handful of barges — reducing overbank flooding which aids fish spawning, isolating forested wetlands, and threatening commercial mussel beds. Species threatened by the project include the black bear, shovel-nose sturgeon, pallid sturgeon, bald eagle, cerulean warbler, and swallow-tailed kite.

FLOOD CONTROL PROJECTS

The Corps will soon decide to construct flood control projects that would destroy wetlands and cut off the Mississippi from a portion its



FLOOD CONTROL AND NAVIGATION PROJECTS BY THE CORPS OF ENGINEERS THREATEN CRITICAL FLOODPLAIN AND WETLAND HABITAT ON THE WHITE RIVER (ABOVE) AND MISSISSIPPI RIVER (NEXT PAGE). PHOTOS COURTESY TILDY LAFARGE, DUCKS UNLIMITED; US FISH & WILDLIFE SERVICE; CLARE GRENLER; MATT SICCHIO



floodplain.

Three flood control projects on tributaries to the Mississippi would accelerate the drainage of low-lying, marginal agricultural lands in the floodplain and destroy mussel habitat. The Corps is also proposing to destroy forested wetlands to enlarge existing levees along the Lower Mississippi River.

HABITAT RESTORATION REFORMS

The Corps will soon decide whether to expand and reform habitat restoration between Saint Paul and Saint Louis, and whether to launch new habitat restoration programs for the Lower Mississippi River and Coastal Louisiana.

POLLUTED RUNOFF

This year Mississippi River basin states must develop clean-up plans for polluted rivers. In addition, the Clinton Administration must develop a plan to combat a 6,000 square-mile “dead zone” in the Gulf of Mexico primarily caused by polluted runoff from midwestern farms. Nitrogen and phosphorus — nutrients found in fertilizers — have accumulated in the Mississippi and the Gulf, where they have sharply reduced the amount of dissolved oxygen available for aquatic life.

What Can Be Done

In order to protect the Mississippi River, the Corps of Engineers and the Clinton Administration must:

Expand and Reform Habitat Restoration Programs. The Corps should increase funding for Upper Mississippi River habitat restoration to \$25 million, and accelerate habitat restoration efforts along the Lower Mississippi River and Coastal Louisiana.

Correct Navigation Study Errors. The Corps must revise traffic forecasts to reflect recent export trends, and adequately measure the impacts of additional barges on fish and wildlife habitat, before proposing major new navigation investments. The Pentagon must also conduct an impartial review of the Corps’ estimates.

Reject White River Navigation Expansion. The Corps must reject proposals to extend White River navigation, which

would negatively impact two national wildlife refuges.



For More Information

WWW.AMERICANRIVERS.ORG
AMERICAN RIVERS’ MISSISSIPPI CAMPAIGN

WWW.NWF.ORG/NWF/GULFWETLANDS/WRIVLOC
NATIONAL WILDLIFE FEDERATION: WHITE RIVER

WWW.DUCKSUNLIMITED.ORG
DUCKS UNLIMITED

WWW.MVD.USACE.ARMY.MIL/
ARMY CORPS OF ENGINEERS:
MISSISSIPPI VALLEY DIVISION

WWW.MVR.USACE.ARMY.MIL/PDW/NAV_STUDY
ARMY CORPS NAVIGATION STUDY

would negatively impact two national wildlife refuges.

Carefully Evaluate Proposed Flood Control Projects. The Corps should evaluate alternatives to proposed flood control projects and use uplands, not floodplain wetlands, to acquire the fill material needed to raise existing levees. The Corps should also complete mitigation for past flood control projects.

Support the Upper Mississippi River Conservation Act of 2000, which expands voluntary polluted runoff reduction programs and creates a basinwide monitoring network.

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North Fork Feather River

THREAT: HYDROPOWER DAM OPERATIONS; TRANSFER OF DAM OWNERSHIP; ELECTRIC INDUSTRY DEREGULATION



Summary

Once considered the greatest trout fishery in California, the Feather River has been severely manipulated and degraded by dam construction for water supply and hydropower. The impacts of these dams could soon become even greater as many of the projects change hands during the state's move toward energy deregulation. The sale of the hydropower projects and the race to lower costs in the newly competitive energy market pose a serious threat to the river's health. At the same time these dams are also undergoing three separate reviews of their operating licenses by the Federal Energy Regulatory Commission (FERC), which if left uncoordinated could significantly limit efforts toward a comprehensive approach to restoration of this once mighty river.

The River

Flowing from the crest of the Sierra Nevada, the North Fork is the Feather River's largest and most famous tributary. Winding its way

through a majestic granite canyon, the North Fork's most notable characteristic is what is absent in the river — water! On average, more than 97 percent of the North Fork's summer flow is diverted into pipes and canals for use in power generation leaving little more than a trickle in more than 90 miles of the North Fork and its tributaries.

Before the river was harnessed for hydropower, it provided unparalleled fish and wildlife habitat. Over the years, its exceptional fishery has produced an estimated 1,000 wild trout per mile with an estimated

worth of \$5.8 million annually. The North Fork also contains some of the nation's premier whitewater. Studies have shown that the Feather could support a multi-million dollar whitewater boating industry, if water diversions and power generation did not interfere.



The Risk

Like many states, California is embracing energy deregulation to bring consumers a choice of electricity providers. The theory is that an open market will drive prices down and increase market efficiency. But the shift also poses a serious threat: rivers used for hydropower generation could be further exploited to suit the whims of the market. Pacific Gas & Electric (PG&E) has announced it will sell its entire hydropower system to the highest bidder, including those projects in the Feather basin. Prospective buyers — ranging from multinational energy corporations to local counties — have already lined up.

As regulated utilities sell their generation plants to the highest bidders, ownership of facilities may no longer be local, and power will be sold to customers thousands of miles away. Market forces will replace regulators in determining a project's revenues — meaning that funding for environmental mitigation will be less certain. Also, having multiple dam owners along a single river could seriously complicate attempts to coordinate dam operations and minimize environmental impacts.

Hydropower's chief advantage in the energy market is that it can be turned on or off at a moment's notice, responding quickly to changes in demand. Unfortunately, this involves huge fluctuations in water flows. Spawning fish, nesting birds, and streamside vegetation do not fare well when exposed to these daily — and sometimes hourly — trickle-to-torrent variations. With the current trend toward competition in electricity markets, these drastic fluctuations could become even more frequent and severe.

The hydropower dams on the North Fork Feather are also undergoing federal regulatory review for the first time in 50 years. This round of relicensing will dictate how the dams are operated for the next 50 years and presents a unique opportunity to secure dam operations that are amenable to fish, wildlife, and recreation. This opportunity, however, could easily slip away. While the licensed projects sit on the same river, each project is engaged in a separate relicensing process. There is lit-



tle or no coordination. The resulting new licenses could lead to continued disruption of the river's flow and its ability to sustain fish, wildlife, and recreation.

What Can Be Done

The California Public Utilities Commission is holding public hearings in the spring of 2000 on whether auctioning PG&E's facilities is in the public interest. In August, the state will begin an environmental review of PG&E's hydropower projects and the impacts of the sale. Concerned citizens must send a strong message that state and federal agencies must not allow energy deregulation to degrade rivers-important public resources for fish and wildlife, recreation, and water quality.

If the auction proceeds, projects within the watershed should be maintained under single ownership so fish, wildlife, and recreation values are not compromised in an effort to maximize profits from power generation and water supply. Provisions must be implemented to ensure that rivers are protected from the erratic swings of the energy market.

In addition, the current and new owner(s)

of the North Fork Feather River's hydropower projects must consolidate or coordinate the relicensing studies and subsequent operating conditions for the system as a whole. Coordination should have economic as well as ecological advantages.

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For More Information

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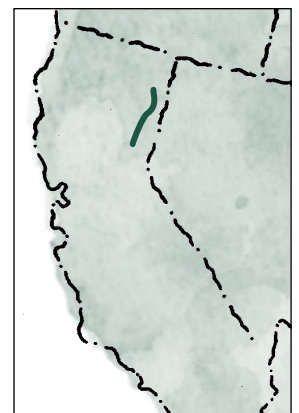
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REFORM COALITION

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DAMS DIVERT MOST OF THE NORTH FORK FEATHER RIVER'S WATER INTO PIPES (OPPOSITE PAGE, BELOW) TO GENERATE HYDROPOWER. IN A RECENT TEST-CASE SCENARIO, FLOWS WERE TEMPORARILY RESTORED TO THE RIVER — DEMONSTRATING THE RIVER'S ENORMOUS POTENTIAL FOR WHITEWATER BOATING (OPPOSITE PAGE, TOP). PHOTO THIS PAGE BY MAUREEN ROSE.



Clear Creek

THREAT: FLOOD CONTROL PROJECT

Summary

Clear Creek, one of Houston's last remaining bayous, is threatened by an ill-conceived flood control project. The Army Corps of Engineers' proposal, as well as a similar proposal by city officials, would convert the meandering river into a uniform channel with little ability to support life. Each proposal would cost approximately \$120 million, provide a low level of flood protection for suburban communities, and increase downstream flooding around Clear Lake. A better alternative is a \$60 million relocation project proposed by civic leaders that would provide more flood protection, prevent downstream flood impacts, and save Clear Creek and its floodplain from destruction.

The River

Clear Creek is a tidally influenced bayou that meanders for 47 miles through Fort Bend, Brazoria, Harris, and Galveston counties, draining a 260 square-mile watershed before emptying into Clear Lake and, ultimately, Galveston Bay.

The river's floodplain remains largely undeveloped, featuring green ash and towering oaks. The river and its floodplain support a wide variety of river wildlife, including wood ducks, spotted sandpipers, osprey, roseate spoonbills, more than fifty fish species, and three species of shrimp.

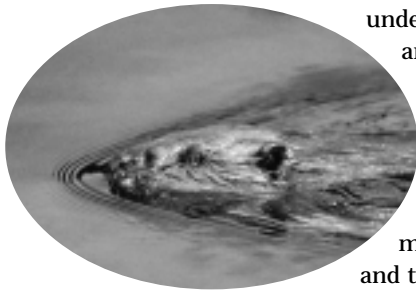
Clear Creek's floodplain serves a variety of purposes:

- ◆ During periods of high water, the floodplain acts as a natural sponge, storing and slowly releasing floodwaters. The creek's floodplain is nature's detention pond, providing water "storage," reducing the velocity of the river and increasing the capacity of the river channel to move floodwaters downstream.
- ◆ The floodplain also improves water quality. As water courses through the floodplain, plants serve as natural filters, trapping sediments and capturing pollutants.
- ◆ Trees and plants anchor the banks of Clear Creek, preventing erosion and providing shade

which reduces water temperatures — all important for fish habitat. Trees and leaves that fall into Clear Creek are broken down by aquatic insects and other organisms — and serve as the foundation of the creek's food chain.

- ◆ The floodplain also provides fish and wildlife with the places they need to feed and reproduce. Nearly 70 percent of all vertebrate species rely upon the land along a river's edge during their life cycles. A healthy riparian area creates a vegetated transition zone between the river and upland habitat, providing shelter, food, and migration corridors for river wildlife. Some fish species must migrate out of the river during floods to spawn in the floodplain.

- ◆ A natural floodplain like Clear Creek creates new opportunities for fishing, boating, and other types of recreation and nature-based tourism.



A FLOOD CONTROL PROJECT WOULD DESTROY HABITAT FOR FISH, BIRDS, AND WILDLIFE AND WOULD PROVIDE ONLY A SMALL AMOUNT OF FLOOD PROTECTION. MORE EFFECTIVE AND LESS EXPENSIVE ALTERNATIVES TO FLOOD PROTECTION EXIST. PHOTOS BY JUDY BAKER; MONA SHOUP



The Risk

The Corps of Engineers has been authorized to deepen and widen Clear Creek from the western end of Clear Lake to the Brazoria/ Galveston County line. The Corps' \$122 million project will destroy one of Houston's last remaining bayous in order to contain only a 10-year flood. More than 50 homes would continue to be threatened by flooding after the project is completed. In addition, the Corps' study underestimates the impacts of the project during high tides and storm surges on homes around Clear Lake. Harris County has proposed a \$115 million alternative channelization project that features a smaller channel, yet would still destroy 190 acres of forests and wetlands.

Both proposals would destroy the ecological value and natural beauty of Clear Creek and much of its floodplain for a small amount of flood protection. The natural functions the floodplain currently performs would disappear. Important wildlife habitat, such as tidal pools that nourish speckled trout, red fish, flounder shrimp and blue crabs would be lost.

What Can Be Done

Acquiring approximately 400 homes in Clear Creek's 100-year floodplain would provide a much greater level of flood protection, cost only \$60 million, and protect Clear Creek's natural resources. However, county officials anxious to promote development throughout the creek's watershed have rejected the non-structural flood control plan, and have concluded that the conversion of Clear Creek into a wider, deeper channel would better meet the drainage needs of suburban sprawl.

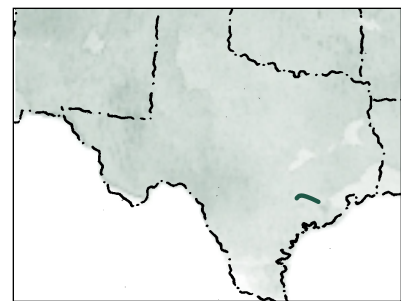
Governor George Bush should follow in his father's footsteps. When the former President was a Houston Congressman, he helped defeat a similar Corps of Engineers proposal to channelize Buffalo Bayou. Governor Bush should work with Congress and the Clinton Administration to promote a non-structural flood losses reduction project. In particular, Governor Bush should urge the Corps to make Clear Creek a Challenge 21 project, a new Corps relocation program created by Congress in 1999. More than 20,000 flooded homes have been relocated nationally since the Great Flood of 1993.

Congress and the Clinton-Gore Administration can continue to reform national flood control policies to promote non-structural



flood control alternatives like relocation and land acquisition. In particular, the Clinton-Gore Administration can reform Corps planning guidance to credit the benefits of non-structural projects — such as flood storage, improved water quality, wildlife habitat, and opportunities for recreation.

Finally, county and municipal officials should work with the Corps and the Federal Emergency Management Agency to identify and relocate repeatedly flooded homes and businesses, and to reform zoning laws to direct new development away from flood-prone areas. The City of Houston, Harris County and the City of Friendswood are among the nation's most repeatedly flooded communities — 17 of the nation's 20 most repeatedly flooded homes are located in the Houston area.



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CLEAR CREEK MAP

Green River

THREAT: DAM OPERATIONS

Summary

The Flaming Gorge Dam has severely altered the flows of the Green River, destroying habitat and placing native fish and wildlife in peril. Today, the river is almost completely bereft of the fish that once thrived in its historically warm, flood-prone waters. If the US Fish and Wildlife Service and the Bureau of Reclamation do not improve dam operations to allow the Green to flow more naturally, these agencies could serve the death sentence to the river and its complex web of life.

The River

Originating in Wyoming's Wind River Range, the Green River flows about 1230 kilometers to its confluence with the Colorado River in Canyonlands National Park, where it provides the mighty Colorado with half of its flow. The

Green is renowned for both the exciting rapids of its confined canyons and its beautiful broad floodplain valleys.

The river and its floodplain provide important habitat for fish and wildlife in this arid region, as well as exceptional recreational opportunities.

In the 1950's, a proposal to dam the Green River at Echo Park — in the heart of Dinosaur National Monument — sparked a national outcry that eventually defeated the proposal. The victory was tainted, however, as two other dams — Flaming Gorge Dam on the Green River and the Glen Canyon Dam on the Colorado River —

slipped in as a trade off. Built in 1963, 61 kilometers (38 miles) upstream of Dinosaur National Monument, Flaming Gorge Dam is a hydropower dam and storage facility that regulates the flow of the Green for 660 kilometers (410 miles) downstream as the river winds its way through Utah's

canyon country and two National Park units. Although the amount of water in the river has remained at historic levels, the dam has dramatically altered the river's timing and natural fluctuations to maximize power production.

The Risk

Over the past 40 years, Flaming Gorge Dam and its massive reservoir have severely damaged the health of the river downstream, therefore endangering the unique native fish that call the river home. The dam has:

- ◆ reduced peak spring flows;
- ◆ increased base flows throughout the remainder of the year;
- ◆ eliminated the natural flooding that once reshaped the riverbed on an annual basis;
- ◆ dramatically changed the temperature of the river by releasing water from the frigid depths of the bottom of the reservoir.

Because of these changes, populations of humpback chub, bonytail, Colorado pikeminnow, and the razorback sucker in the Green and the Colorado Rivers have declined to the point where they are now listed under the federal Endangered Species Act. By eliminating the natural timing and magnitude of the river's high spring flows and the inundation of low lying floodplains, the dam has deprived these unique fish of essential cues that spawning season has arrived and denied them access to critical spawning and feeding areas.



THE FLAMING GORGE DAM (RIGHT) HAS CHANGED THE FLOWS OF THE GREEN RIVER, IMPERILING MANY NATIVE SPECIES. PHOTOS COURTESY ED WICK; CHESTER RIDEOUT



The impacts of the Flaming Gorge Dam on the Green River are not irreversible, though. While the dam has been consistently operated to maximize electricity production with little consideration of downstream impacts, the legislation that created the dam called for a different management regime — one that gives much greater emphasis to river health. According to federally-sponsored studies, restoration of this magnificent river depends on managing the dam in such a way that its flows more closely mimic the Green River's natural ebb and flow.

What Can Be Done

During 2000 and 2001, the US Fish and Wildlife Service, the Bureau of Reclamation, and Western Area Power Administration will make their final recommendations about future operations and management of Flaming Gorge Dam. Despite federally-sponsored studies showing that continuing current management policies — based on maximizing power production and water storage — will likely lead to ecological collapse, draft proposals released by federal agencies do not call for adequate changes to restore the health of the river.



In order to prevent the extinction of the Green's unique fish, these two federal agencies must allow the river to flow more naturally below Flaming Gorge Dam through Canyonlands National Park. This is especially important for reaches identified as potentially important fish recovery areas, such as the confluence of the Green with the Yampa River and the lower reaches of the river in Desolation and Gray Canyon.

To ensure that flows mirror the river's natural timing, dam managers should base spring releases on actual, real-time flows and release



a certain percentage of water that flows into the reservoir into the river downstream of the dam. Dam managers should give the endangered fish the water they need and restore the Green River and its floodplain to function as a naturally sustainable ecosystem. It is time to strike a balance between hydropower energy production and ecological protection.

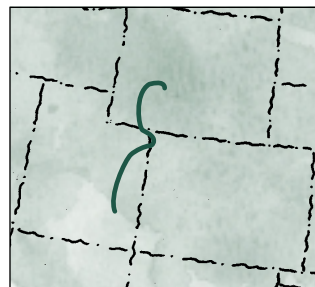
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FLAMING GORGE DAM
STATISTICS

Presumpscot River

THREAT: DAM OPERATIONS

Summary

Maine's Presumpscot River remains a relic of its industrial past. It is a river stuck in the 19th century as we enter the 21st century. The dams and pollution of the industrial revolution destroyed the river's bountiful population of sea-run fish and continue to degrade this historic resource. At the expense of fish, wildlife, and riverside communities, aging dams that powered mills and factories of a bygone era continue to harm the river to produce a miniscule amount of electricity for a South African-owned papermill. An opportunity to reclaim the river is at hand, however, as the Federal Energy Regulatory Commission (FERC) reviews the operating licenses of a number of dams along the river and decides how they will be operated for decades to come.

The River

The historic Presumpscot River is a short but significant river, flowing 24 miles from Maine's second largest lake to the Atlantic Ocean through the state's fastest growing population center. The river impressed early European settlers, who described the Presumpscot as "a foot deep in fish." Colonists were quick to harness the river to serve their needs and began building dams and mills in the early 1700's.



COMMUNITIES ALONG THE PRESUMPCOT HAVE AN UNPRECEDENTED OPPORTUNITY TO CHANGE THE WAY AGING DAMS OPERATE TO RESTORE THE RIVER'S HEALTH. PHOTOS COURTESY STEVE BROOKE; FRIENDS OF THE PRESUMPCOT RIVER.

Anxious to protect a lifeline of his people, Chief Polin of the local Aucocisco tribe twice walked more than 100 miles to petition the Colonial legislature in Boston to demand fish passage at the dams blocking the Presumpscot. When this approach failed, Chief Polin declared war and burned the mill in an attempt to save the fishery upon which his people depended. Soon thereafter, local colonists killed the chief. From that point forward, the Presumpscot was dammed, polluted, and abandoned by the communities. By the late 19th century, 17 dams plugged the river. With 10 dams remaining today, this once-vibrant river continues to lead a drastically compromised existence.

Despite the fact that dams block the Presumpscot every few miles, the situation has begun to improve. With the construction of a natural gas pipeline, Maine has a new source of electricity to replace Presumpscot-generated hydropower. The paper mill that that once depended on the Presumpscot for power has dramatically reduced its operation and has stopped discharging waste into the river from its now-closed pulp mill. As a result, water quality in the lower river has improved significantly.

Most importantly, local residents along the Presumpscot are banding together to reclaim their river and make it an asset to riverside communities. Some are calling for the removal of three dams, which have a combined capacity of barely three megawatts of electricity, to promote river restoration. The head of tide dam — Smelt Hill in Falmouth — has been targeted for removal in the summer of 2001 to begin the restoration of the Presumpscot's sea-run fishery.

The Risk

While the Presumpscot is on the rebound, it remains burdened and degraded by manipulation of water flows, multiple discharges from waste treatment plants, dam-caused shoreline





For More Information

WWW.AMERICANRIVERS.ORG
 AMERICAN RIVERS'
 HYDROPOWER RELICENSING
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WWW.PRESUMPCOTRIVER.ORG
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erosion, and lack of fish passage at dams. No comprehensive management plan has been developed to guide and coordinate the actions of the multiple arms of government that have a say in river management. Even though the population in the river basin is growing rapidly, government officials fail to show the leadership necessary to improve these problems.

Soon FERC will issue long-term licenses for six of the ten dams on the Presumpscot, sealing the river's fate for decades to come. With so many dams on such a short river, the health of the Presumpscot — and the fish, wildlife, and riverside communities that depend upon it — will suffer a severe blow if agencies do not undertake a comprehensive and coordinated review of the cumulative impact of all the dams — which is required by law as part of the relicensing proceedings.

What Can Be Done

It is imperative that FERC's decisions on the management of the dams help, not hinder, local efforts to restore the Presumpscot and make it a thriving river once again. Riverside communities like Westbrook are restoring their waterfronts, turning the river into a source of pride. Local civic groups, municipal interests, and river groups have come together under the banner of the Casco Bay Estuary Project to help clean up the river. Several orga-

nizations are working to raise funds to purchase Smelt Hill dam for removal, and others have intervened in the ongoing federal licensing of five middle-river dams to promote a coordinated, river-friendly management plan. With the combined efforts of residents along the river and across the entire state, the new millennium brings hope that Chief Polin's vision of a vibrant river full of fish can be reborn.

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Clark Fork River

THREAT: PROPOSED MINE

Summary

A proposed large-scale silver and copper mine threatens the Clark Fork River — a river named for the famed explorer Captain William Clark. The mine would further degrade water quality and wipe out important habitat for bull trout. It also threatens to destroy the region's grizzly bear population. Federal and state agencies will soon decide whether to allow the mine construction to proceed, or whether to protect the remarkable natural resources of the Clark Fork.

The River

The Clark Fork River begins in Montana with the union of several pristine mountain creeks. As it flows through a variety of forested, farmed, and heavily impacted industrial and urban areas, the Clark Fork picks up the Bitterroot, Blackfoot, and Flathead rivers. The bull trout, grizzly bear, westslope cutthroat trout, harlequin duck, fisher, wolverine, and lynx all call the Clark Fork watershed home.

The Clark Fork Superfund Complex on the upper river collectively represents 100 years of mining, smelting, and wood treating operations. Downstream, the river is a popular recreation destination, and provides drinking water to local communities. The river eventually empties into Idaho's popular Lake Pend Oreille, providing 90 percent of the inflow to this deep glacial lake that has been listed as a state Special Resource Water. This listing protects the lake

from new point-source pollution discharges directly to the lake or its tributaries within the state of Idaho. The listing does not protect the lake from pollution across the border in Montana, where the mine would be built.

The Risk

The exact site of the proposed mine is Rock Creek, a major tributary to the Clark Fork River entering just 25 miles upstream of Lake Pend Oreille. Rock Creek is part of the Cabinet Mountains Wilderness Area and has been identified by the U.S. Fish and Wildlife Service as important for the recovery of bull trout. Threatened bull trout spawn in just two sections of the Cabinet Gorge area of the lower Clark Fork, one of which is Rock Creek.

The mining company has plans to operate the Rock Creek mine for thirty years to extract silver and copper deposits located deep under the Cabinet Mountains Wilderness Area. The company would build a three-mile tunnel under the mountains and a 500-acre industrial site, which would operate 24 hours a day for thirty years. One hundred million tons of mine waste would be left piled 300 feet high, in 340 acres of an unlined impoundment within a quarter mile of the river. Three million gallons of treated wastewater would be discharged directly into the Clark Fork every day. In addition, the unlined tailings impoundment would leak a minimum of 29,000 gallons a day of contaminants into the groundwater.

The Clark Fork has been harmed for decades by logging, mining, highway construction, municipal sewage, and dams. Recently, however, towns and industries along the Clark Fork have been working to reverse some of the damage caused by these activities. Five years ago, they developed a multi-million dollar nutrient reduction program estimated to cut the amount of nitrogen and phosphorous entering Lake Pend Oreille by 12 to 15 percent. If the Rock Creek mine is built, nutrients entering the Clark Fork from the mining site will reverse these gains by up to half.

The mine could also negate progress with fish restoration. In the 1950s, the Noxon Rapids and Cabinet Gorge dams were built on



A PROPOSED MINE WOULD DESTROY HABITAT FOR TROUT AND GRIZZLY BEARS AND WOULD REVERSE PROGRESS UNDERWAY TO RESTORE THE CLARK FORK. PHOTOS COURTESY CARTER E. GOWL; ROCK CREEK ALLIANCE; JUDI BAKER; MARK WILSON; DOUGLAS DAY





For More Information

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the Clark Fork River, permanently fragmenting fish populations. Last year, the hydropower utility company operating the dams, AVISTA, agreed to spend millions of dollars so threatened bull trout could pass upstream of

the Cabinet Gorge dam to spawn in the

Rock Creek area. But bull trout passage at the dam would be less effective if Rock Creek habitat is diminished by the proposed mine. Independent fisheries biologists have stated that every remaining run of bull trout is critical to the survival of the species as a whole.

Finally, the mine would disturb a critical part of the Cabinet Mountains Wilderness Area, a wilderness corridor where an estimated twenty grizzly bears remain. Biologists fear the Rock Creek mine will effectively wipe out this fragile grizzly bear population forever.



What Can Be Done

The US Forest Service and Montana Department of Environmental Quality have joint authority to permit the mine. The two agencies must first finalize their current Environmental Impact Statement (EIS) for the mine. Then, the US Fish and Wildlife Service must issue a biological opinion based on the EIS. Once that is accomplished, the Forest Service and Department of Environmental Quality can issue Records of Decision to approve or deny the permit application. While the Environmental Protection Agency has authority to

deny the wastewater permit for the project, it has historically been reluctant to use this authority. The final EIS is expected this summer, and Records of Decision would follow within a few months.

The Rock Creek Alliance, representing nine member organizations in the region, has asked the Forest Service and Department of Environmental Quality to prepare a new EIS for the mine, because of insufficient information to accurately assess potential impacts. Moreover, the EPA has voiced concerns that there are “uncertainties and remaining information and data needs” concerning the proposed mine, in particular with regards to the “precedent setting” nature of the unlined tailings impoundment. The Forest Service, Department of Environmental Quality, and the EPA need to be convinced that the mine’s negative impact on the gradually improving water quality and fragile wildlife in the Clark Fork watershed are far too great to allow this project to move forward.

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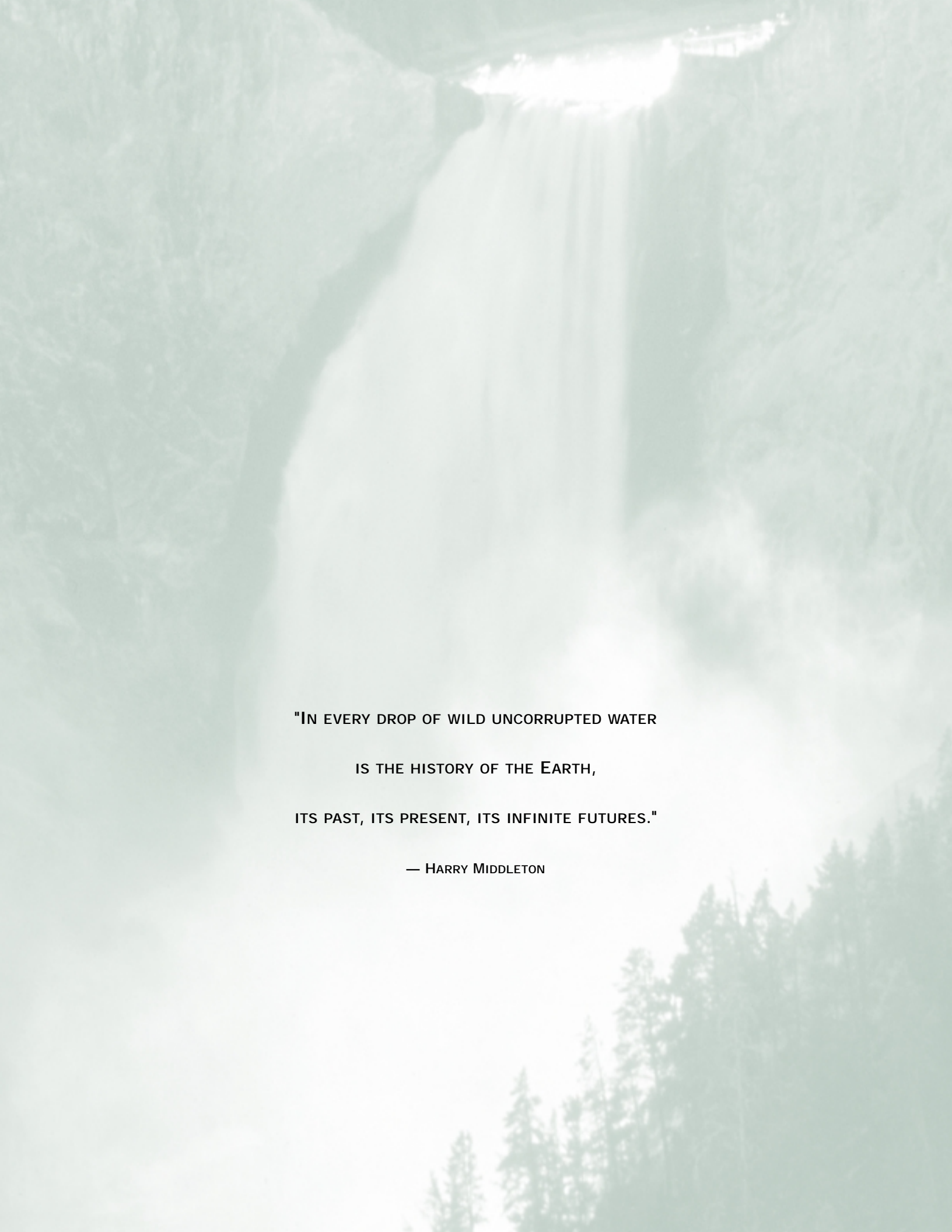
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**"IN EVERY DROP OF WILD UNCORRUPTED WATER
IS THE HISTORY OF THE EARTH,
ITS PAST, ITS PRESENT, ITS INFINITE FUTURES."**

— HARRY MIDDLETON

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