

CLEAN WATER • STRONG COMMUNITIES • CITIZEN ACTION

# WATERKEEPER®

## THE QUICK AND THE DEAD

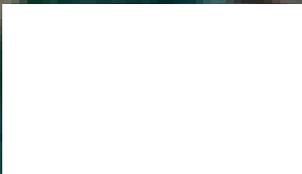
Industrial Cooling and Massive Ecological Destruction

**Jay-Z & Kofi Annan**  
Water for Life

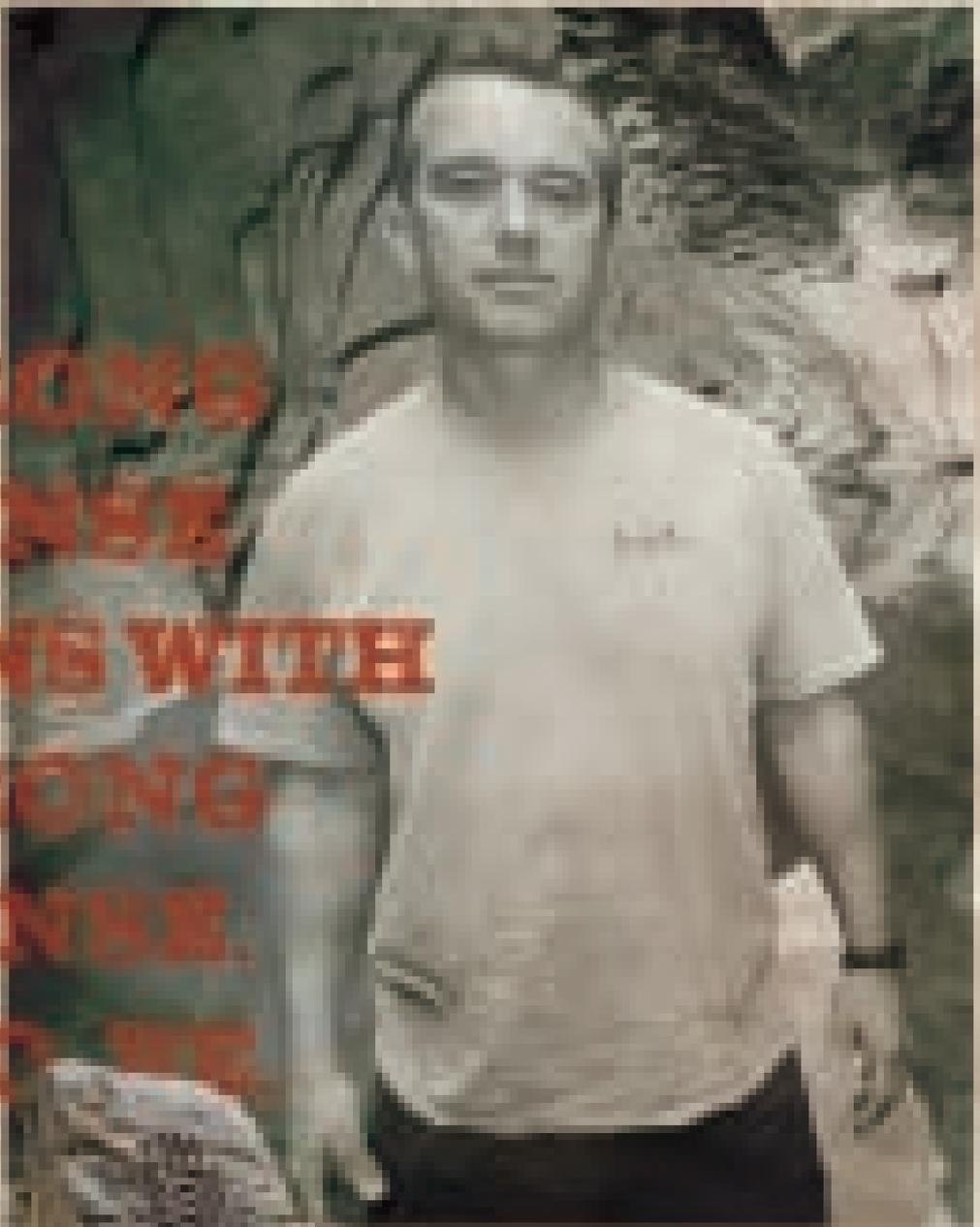
**Robert F. Kennedy, Jr.**  
Letter from the President

Winter 2007

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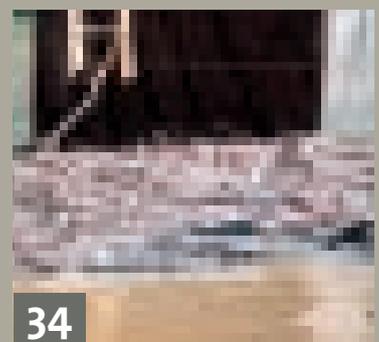
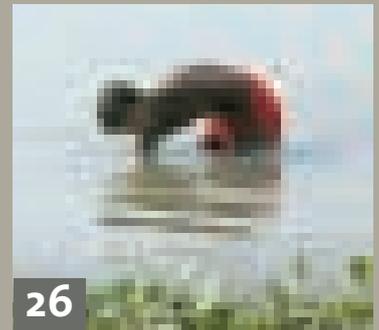
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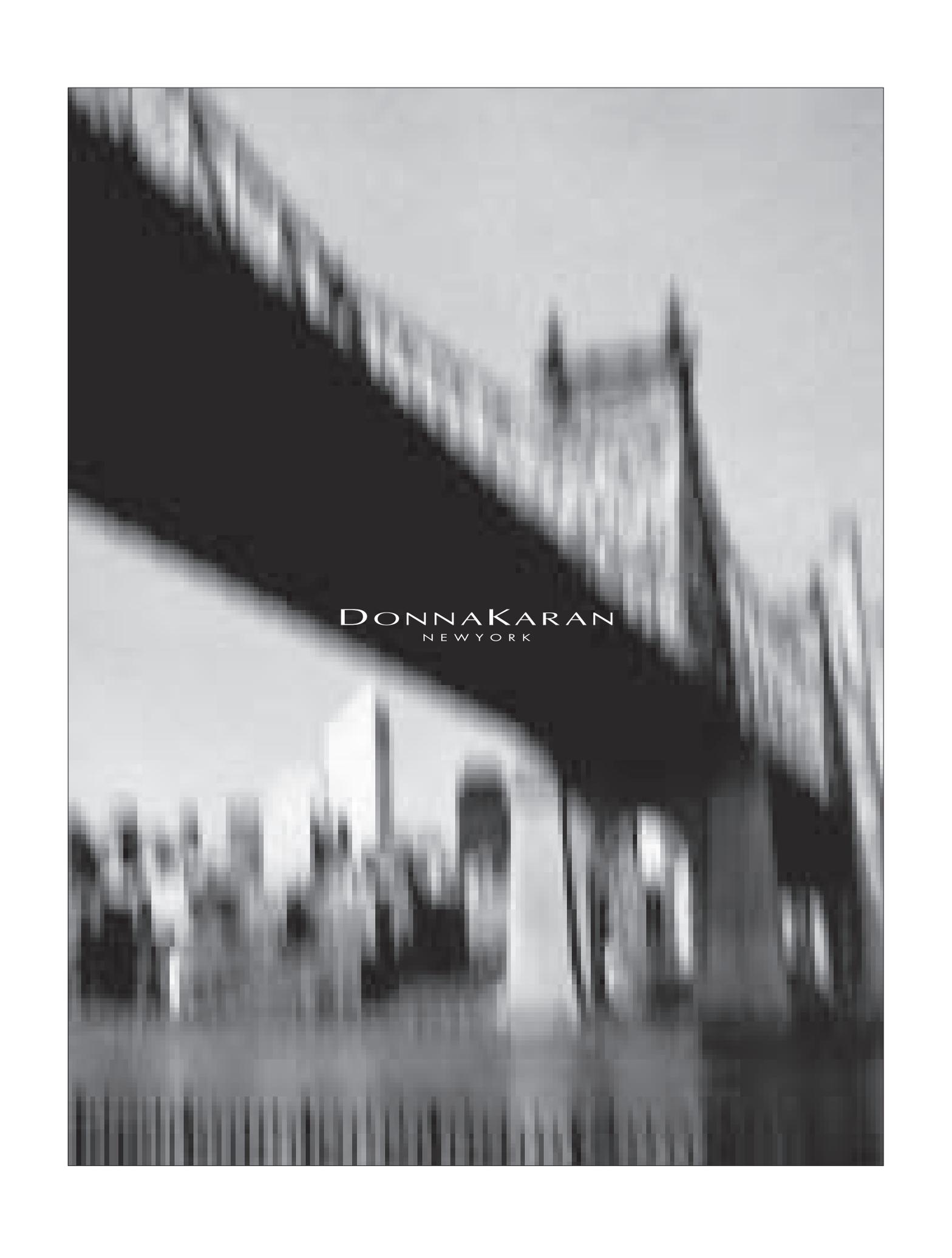
# WATERKEEPER

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DONNAKARAN  
NEW YORK



## Letter from the President

Robert F. Kennedy, Jr.

# Killing Fish by the Trillions

A few years ago, New York State Conservation Officers boarded a dinghy belonging to a fisherman named Jimmy Bleakly and found a few dozen undersized striped bass that Bleakly intended for his table. Department attorneys asked a state court judge to fine Bleakly the full penalty provided by the law — \$250 per fish, a ruinous amount for a blue-collar stiff like Bleakly. There is, of course, no excuse for taking undersized fish, but one thousand yards from where Bleakly was fishing, Consolidated Edison's Indian Point Power Plant sucks in and kills as many as one million undersized Hudson River fish every day. Neither state nor federal officials have ever attempted to penalize Con Ed for its illegal fish kill. While fishermen are often blamed for collapsing fisheries, power plant cooling systems are often the worse culprit.

On waterways around the nation billions of fish are sucked into power plants and factories and killed each day. While most fishermen scrupulously observe size and catch limits, power utilities indiscriminately destroy American fishes on a scale that is hard to conceive. Consider this: According to its own paid consultants, the Salem Nuclear Power Plant on the Delaware River kills 412 million white perch and 2 billion bay anchovies each year — that plant alone is responsible for the collapse of the Delaware River's principal fisheries.

The biggest tragedy is that the electric power plant industry has the resources and technology to eliminate most fish kills, but has aggressively fought every effort at reform. While the Clean Water Act for 35 years has made such fish kills illegal and required utilities to use the best avail-

able technologies to avoid killing fish, the industry, often working in cahoots with government regulators, has defied and subverted and disobeyed the law at every turn. Utilities lend each other experts, lawyers and lobbyists, and sponsor training sessions on how to defeat Clean Water Act requirements. By suing individual power plants over the years Waterkeepers have effected hard-won improvements. But the carnage continues. And wherever fish are slaughtered in these massive numbers, fisheries collapse and aquatic ecosystems fail.

Closed-cycle cooling — which recirculates water harmlessly like a car radiator — and other technologies can cut water use and fish kills by 95 percent. Yet, power plants across the country still use more than 60 trillion gallons of “once-through” cooling water and kill more than a trillion fish each year. Larger fish are crushed on the screens that filter debris out of the cooling water, while smaller fish, larva and other aquatic organisms are sucked inside the plant and superheated. Despite declining inland and coastal fisheries, industry and government allow these piscine slaughterhouses to flourish.

Stopping these massive fish kills is one of Waterkeeper Alliance's highest priorities.

In the fall issue of *Waterkeeper* I wrote in this column about the birth of Hudson Riverkeeper and the Waterkeeper movement. The Hudson River Fisherman's Association (Hudson Riverkeeper's predecessor organization) launched the national battle against power plant fish kills in 1965. The successful battle to halt construction of Con Ed's proposed Storm King Mountain pump storage facility galvanized the budding national en-

vironmental movement and provided the foundation for environmental law in the United States.

In the 1960's Con Ed, the New York power utility, pursued several massive and absurd hydroelectric energy projects, including one to dam (and destroy) Niagara Falls. In 1964, Con Ed received a license from the Federal Power Commission to construct a pumped-storage hydroelectric facility on top of Storm King Mountain, a beautiful and historically significant promontory on the shore of the Hudson River in Cornwall, just north of West Point. In 1965, however, a federal court set aside the Storm King license and remanded the matter back to the Federal Power Commission.

The court stated that “The Commission's renewed proceedings must include as a basic concern the preservation of natural beauty and national historic shrines, keeping in mind that, in our affluent society, the cost of a project is only one of several factors to be considered.” In addition, the court ruled that, “On remand, the Commission should take the whole fisheries question into consideration before deciding whether the Storm King project is licensed.”

That language opened up the courts to environmentalists for the first time in history. The Storm King decision gave environmentalists and fishermen “standing” to sue in cases where public waterways and fish would be harmed by pollution or damaging projects. By enlarging constitutional “standing” to embrace aesthetic, recreational and cultural injuries, the decision radically expanded the jurisdiction of federal courts, allowing them to hear cases by plaintiffs who wanted to protect public resources from polluters or devel-

The biggest tragedy is that the electric power industry has the resources and technology to eliminate most fish kills, but has aggressively fought every effort at reform.

opers. The court's decision marked the birth of American environmental law.

The Storm King decision also required the first full environmental impact statement ever. In 1969, Congress codified the Storm King decision into the nation's most important piece of environmental legislation, the National Environmental Policy Act (NEPA)—which forces federal agencies to assess environmental impacts of every major decision. The Storm King decision laid the constitutional groundwork for “citizen suits,” the critical enforcement provisions that make environmental law—from the Clean Water Act to the Endangered Species Act—function in absence of government enforcement. The Storm King fight had literally invented the term “environmental law” and launched a national movement for citizen protection of our environmental rights — the Waterkeepers.

But the battle over fish kills at power plants was far from over.

Concern about power plant intakes and fish kills was playing out in the licensing of five other Con Ed power plants, including the Indian Point nuclear reactor, just down the river from Storm King Mountain. In 1975, the Atomic Energy Commission agreed with the Hudson River Fishermen that catastrophic fish kills by those power plants could not be ignored. The new federal licenses required that all five plants install closed-cycle cooling system that would reduce the use of Hudson River water and fish kills by 95 percent.

Con Ed now wanted to resolve their public relations nightmares on Storm King and the power plants. After a decade of fierce political battle, the Hudson River Fishermen could no longer be shut out of the decision-making process by the power utility and state officials. Con Ed reached out to the Fishermen and other environmentalists to settle the lawsuit.

In December 1980, after 17 years of litigation, the parties announced the Hudson River Peace Treaty. The agreement required that Con Ed abandon the Storm King project, donate the land as a park, and fund millions of dollars in Hudson River rehabilitation and fishery research. In exchange, Con Ed would not immediately be required to convert the power plants to closed-cycle cooling systems. Instead, the company would design and install less expensive devices to prevent entrapment of larger fish on its intake

screens and take other steps to protect eggs and larvae from being sucked into the intakes. Con Ed was temporarily spared the costs of constructing cooling towers while it investigated new technologies for reducing fish kills. Unfortunately, none of these technologies was successful in significantly mitigating the carnage.

The killing of hundreds of billions of fish each year continued.

In 1992 Hudson Riverkeeper and six other Waterkeeper programs operating on Long Island Sound, Delaware River, San Francisco Bay, New York/New Jersey Harbor, Puget Sound and Casco Bay formed the Waterkeeper Alliance. As their first major collective legal action filed suit against EPA for failure to enforce the Clean Water Act and stop power plant cooling water fish kills.

The 1972 Clean Water Act required EPA to promulgate regulations to minimize fish kills. But in 1974, 60 power utilities, under the leadership of the Edison Electric Institute, an industry trade group, successfully challenged EPA's regulation. They based their case on a nit-picking technical error in the way EPA published the proposed regulations. Instead of republishing the new rules with a simple procedural fix, EPA inexplicably walked away from the rules, leaving a blank page in the federal register. This act of governmental collusion with the power industry allowed the power companies to operate without federal standards. The states were left holding the bag. Not surprisingly, no state had the expertise or stomach to challenge this powerful industry.

Waterkeeper's 1993 suit asked the court to order EPA to finally create regulations to control fish kills. Recognizing the merit of our lawsuit EPA caved and immediately agreed to schedule new regulations. But again, the Edison Electric Institute and 58 power utilities challenged EPA's agreement and succeeded in keeping the plan tied up in legal battles for more than a year.

Finally, in October 1995, a U.S. District Court judge ruled in our favor and ordered EPA to begin the regulatory process. Unfortunately that agreement (see Reed Super's feature article) gave EPA an extraordinary seven years to develop regulations to stop the killing.

Then, on May 17, 2001, just as EPA was about to finally publish its new regulations, Vice President Dick Cheney moved

in to derail the process and help the power industry violate the law. That industry had recently donated \$48 million to the Bush/Cheney campaign. After three months of closed-door meetings with energy industry lobbyists, beginning immediately after President Bush's inauguration, the Bush administration released Vice President Dick Cheney's infamous energy plan. The plan skirted conservation and environmental protection and threw open public coffers for billions of dollars of subsidies for oil, coal and nuclear industries, plus tax breaks and deregulation.

Among the casualties of the administration's energy plan was EPA's plan to stop catastrophic power plant fish kills. Soon after the Cheney task force released its report, the White House Office of Management and Budget and industry lackeys (newly appointed to EPA political positions) replaced EPA's proposed new rule with clever regulations that allowed business to proceed as usual.

Waterkeeper Alliance's fight to stop cooling water intake fish kills continues on two fronts. Around the nation Waterkeepers are challenging individual power plants, forcing them to stop the carnage one at a time. Meanwhile, we are suing EPA to force the federal government to enforce the long-dormant Clean Water Act cooling water requirements.

Power plant fish kills are illegal. The savings for the energy industry are nominal, but the costs for commercial and recreational fishermen are enormous. Ultimately, this massive culling of America's fish population contributes directly to what the American Academy for the Advancement of Science has warned is the imminent worldwide collapse of global fisheries.

Waterkeepers have long memories and no understanding of the word quit. Our fight to stop fish kills from power plants, a fight that began 40 years ago, won't end until we have strong federal regulations, requiring *all* power plants to install closed-cycle cooling systems and until our waterways thrive with fish. **W**



# ON THE COVER

The title "The Quick and the Dead" comes from James R. May & Maya van Rossum's landmark 1995 Vermont Law Review article on industrial cooling.  
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Kelp forest, Channel Islands California

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The official magazine of Waterkeeper Alliance

**MISSION:** Waterkeeper Alliance connects and supports local Waterkeeper programs to provide a voice for waterways and communities worldwide.

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Waterkeeper Alliance is the guardian of 156 local Waterkeeper programs worldwide — Riverkeeper, Baykeeper, Coastkeeper, Soundkeeper and other watershed advocates who patrol and protect their waterway, standing up to polluters and guaranteeing everyone's right to clean water.

The Alliance connects and supports our programs with legal, scientific and policy expertise and fights for clean water at the national and international level. Waterkeeper Alliance is the most effective protector of clean water because we truly act locally and organize globally.

NY/NJ Baykeeper



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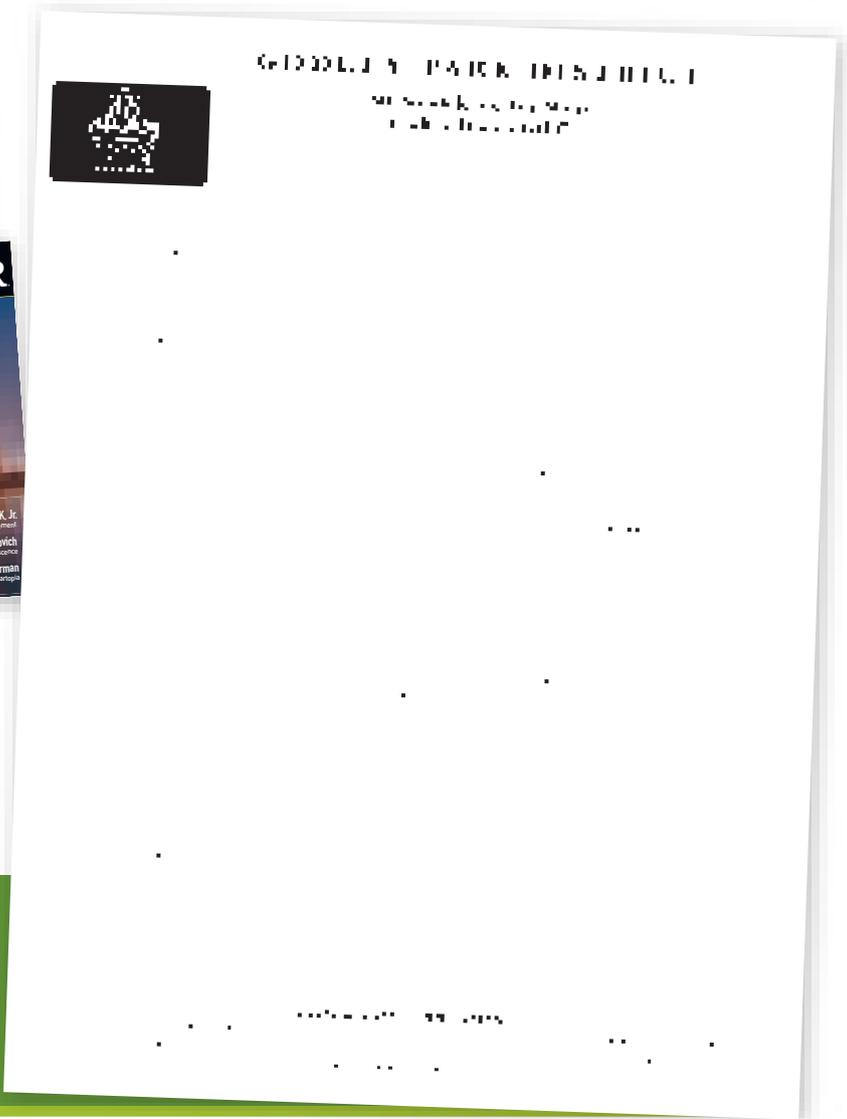
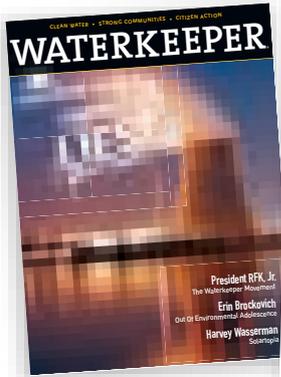
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# Nuclear Leaks, Radioactive Lies: Fall 2006 Issue

Dear *Waterkeeper*,  
Just a note to commend you on an interesting and encouraging *Waterkeeper* magazine Fall 2006. I am thrilled to hear about the Hudson River improvement thanks to Riverkeeper and Waterkeeper Alliance. I grew up in Hastings on Hudson many years ago (I'm 82) and actually worked for Anaconda during college vacations. Interesting articles and lovely photographs.  
*Sincerely,*  
*Elizabeth Ford*  
*Holland, OH*



**Letters to the Editor**  
Is there anything you'd like to say? Submit your letter to the editor via email [editor@waterkeeper.org](mailto:editor@waterkeeper.org) or by mail to *Waterkeeper* magazine, 50 S. Buckhout St., Ste 302, Irvington, NY 10533.



*Jerry Munson*  
*Rapid City, SD*

There once was a President George  
Who, with captains of industry, forged  
Pacts of pollution  
with no restitution  
That'll earn him the moniker "Scourge"

Let's give them  
something to  
talk about...



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*The nature of water.*



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N A T U R A L   A R T E S I A N   W A T E R

# { { Ripples } } } } } }



SANTA BARBARA CHANNELKEEPER

## Reducing the Overload Santa Barbara Passes Sewage Ordinance

The measure will reduce excess water flowing into the system and prevent sewage overflows during storms.

For years, Santa Barbara Channelkeeper has been lobbying city officials to implement meaningful and proactive measures to deal with Santa Barbara's sewage problems. In 2005 alone, 30 sewage spills swept through Santa Barbara's coastal corridor. But this September Channelkeeper was successful in urging city officials to enact legislation to fix Santa Barbara's faulty sewer pipes.

When in disrepair, sewer laterals, or pipes that carry wastewater from buildings to public sewer mains, allow excess water into the city sewage system. City officials estimate that up to 80 percent of laterals

in Santa Barbara are defective. In response to Channelkeeper's advocacy, the Santa Barbara City Council passed an ordinance that will require property owners to have laterals inspected by a licensed plumber and repair all defects. The measure will reduce excess water flowing into the system and prevent sewage overflows during storms.

The city council also addressed storage capacity problems that result in frequent sewage spills on Santa Barbara's East Side. Two new sewer pipes are being added to relieve the pressure of flows through pipes that overload and cause overflows during storms.

The waste pile at the NY Susquehanna & Western Railroad site must now be cleaned up.



HACKENSACK RIVERKEEPER

## Railroads Not Above the Law Riverkeeper, Baykeeper prevail against NY Susquehanna & Western Railroad

This September, a U.S. District Court Judge ruled in favor of Hackensack Riverkeeper and NY/NJ Baykeeper who sought to stop the New York Susquehanna and Western Railroad Corporation from spilling solid waste into the Hackensack River watershed. The judge's decision affirmed that the company's garbage dumps in North Bergen, NJ, must comply with federal environmental laws.

The railroad, a subsidiary of the New York-based Delaware Osteo Corporation, owns and operates five separate garbage dumps in the Hudson County municipality. Construction debris unloaded from trucks, including radioactive soils, is stored on the ground in large uncovered piles. Runoff from the piles, drifting dust and litter contaminate the surrounding Meadowlands, neighborhoods and the Hackensack River. The judge rejected the railroad's claim that they are exempt from federal environmental law. "This decision confirms that the loophole allowing railroads to pollute with impunity does not exist, and they have to follow the rules along with everyone else," says NY/NJ Baykeeper Andrew Willner.

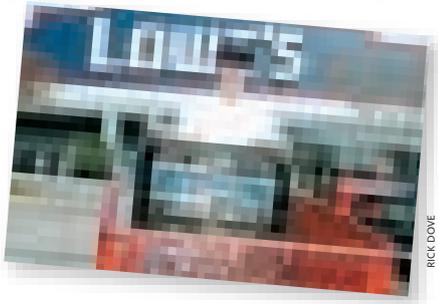


**Aprica**

## Corps of Engineers Faces Suit for Cypress Lake Clear Cut

### Collecting Evidence

Stacy Smith with Atchafalaya Basinkeeper buys "No Float" cypress mulch, cut from forests in southern Louisiana at Lowe's in Baton Rouge.



RICK DOVE

Ogeechee-Canoochee Riverkeeper sued the Army Corps of Engineers in federal court this November for illegally authorizing the clear-cutting of 60 acres of cypress trees in east Georgia. The Corps wrongly informed Cypress Lake, Inc. that they did not need a permit to harvest the basin's cypress, water tupelo and blackgum trees in violation of the federal Clean Water Act.

Cypress Lake is a several-hundred-acre forested lake that provides valuable habitat and storm and flood protection. Georgia cypress swamps face increasing pressure from encroaching development and logging for garden mulch. While most development on wetlands requires a permit, certain wetlands may be exempt if the trees regenerate naturally. In this case, the Corps determined that the exemption applied to Cypress Lake without ensuring the trees would regrow. But the trees on Cypress Lake will only regenerate if the lake is drained for several years.

## DON'T BUY IT

Coalition Calls on Retailers to Stop Selling Cypress Mulch

The Save Our Cypress Coalition, led by Atchafalaya Basinkeeper and Lower Mississippi Riverkeeper, is calling on Wal-Mart, Home Depot and Lowe's to stop purchasing and selling all cypress garden mulch until they can prove they are relying on only renewable sources. The coalition is concerned about the loss of cypress wetland forest. Louisiana's cypress forests play a critical role in hurricane protection and stabilization of the state's vulnerable coastline. There is currently no verifiable certification program to backup labeling claims or ensure that cypress mulch sold at stores is not harvested from vulnerable coastal wetland forests.

Wal-Mart, Home Depot and Lowe's are ignoring their own corporate responsibility standards for wood products. All three companies, when presented with the evidence of ongoing unsustainable logging practices, have refused to take steps to close the market for illegally cut cypress. Visit [www.saveourcypress.org](http://www.saveourcypress.org) for more information.

## Earthrace

This spring the speedboat Earthrace will complete an equatorial circumnavigation of the world via the Panama and Suez canals — 24,000 miles in 65 days, aiming to beat the current record of 75 days. The 78-foot wave-piercing trimaran is powered by two 540 h.p. engines burning 100 percent biodiesel fuel. The race will raise media and public awareness on renewable fuels and the need to conserve resources.

Biodiesel is a biodegradable fuel made from plant matter and animal fats that produces extremely low emissions. Earthrace is now on a worldwide tour until their official race commences March 2007 in Barbados. Raritan Riverkeeper Bill Schultz visited the craft in North Cove Marina in Manhattan in November. Check the schedule to see if Earthrace is coming to a port near you: [www.earthrace.net](http://www.earthrace.net)

RARITAN RIVERKEEPER

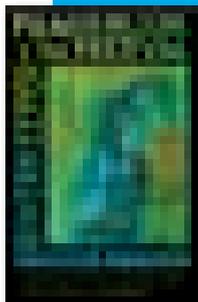


Raritan Riverkeeper with Earthrace

## Riverkeeper Film Festival

Neuse River Foundation held its 2nd Annual Riverkeeper Film Festival on November 11, 2006. The daylong event showcased 20 independent films from directors across the U.S., with films both new and old,

funny and serious, by first-time filmmakers and seasoned documentarians. The selections came from diverse genres including history, literature, art and the environment, but they all had one thing in common — water.



## DENIED:

### NJ Supremes Uphold Stream Protection Rule

On October 10, 2006, the New Jersey Supreme Court upheld one of the state's most critical programs to protect water quality and stream health — the 300-Foot Buffer Rule — against a challenge from the New Jersey Builders Association. The rule requires that streams of exceptional ecological, recreational or commercial significance have 300-foot natural buffers on either side to prevent pollution from stormwater runoff. In 2004, Delaware Riverkeeper and other environmental groups played a pivotal role in securing the requirement.

The Home Builders opposed the regulations and challenged the state's authority to issue the regulation, claiming the buffer requirement functioned as a "no build" law. An appellate court rejected the argument in April 2006, recognizing the state's broad authority to protect water quality and ecosystem health. In October the state Supreme Court upheld the decision. "The Supreme Court's denial to hear the Home Builders challenge reaffirms the state's powers and sets national precedent for stormwater management," said Maya van Rossum, Delaware Riverkeeper.

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EcoZone's fully-integrated set of marketing platforms provide corporations with the opportunity to meet their marketing and communication goals in a uniquely sustainable way - by measurably improving the quality of our lives and the environment.

## Tour de French Broad

A steamy bowl of chili and a warm welcome in Knoxville, Tennessee, was certainly the right way to finish the 219-mile journey down the entire length of the French Broad River. This fall, Hartwell Carson, French Broad Riverkeeper and Mark Vanderhoff of Black Dome Mountain Sports completed a 16-day trip down the French Broad to raise awareness of the challenges facing the river and its tributaries.

Along the way, French Broad Riverkeeper met with local communities, monitored the river's health and held public events including talks at colleges, clean-ups and paddles. One of the biggest problems the Riverkeeper spoke of was non-point source pollution from erosion at construction sites, pesticides and herbicides and other sources.



French Broad Riverkeeper Hartwell Carson and Mark Vanderhoff

## CONGRATULATIONS!



### Santa Barbara Channelkeeper

Congratulations to Santa Barbara Channelkeeper Kira Schmidt, who married fellow ocean enthusiast Justin Redmond on September 16, 2006. Here is the couple with the bride's parents overlooking the Santa Barbara Channel.

### Baby Baykeeper

Dilon Choksi Chugh was born to San Francisco Baykeeper, Sejal Choksi and her husband Jay Chugh on September 20, 2006. Since his birth, Dilon, whose name means "heart," has mastered the art of sticking out his tongue.



### Upper Neuse Riverkeeper

Upper Neuse Riverkeeper Larry Baldwin married Diane Jones on September 30, 2006, at Union Park at the confluence of the Neuse and Trent rivers.

## WATER CLEANER

### Milwaukee Riverkeeper: Crane-Assisted Cleanup

On Saturday, October 14, Milwaukee Riverkeeper held their third crane-assisted river cleanup on the Kinnickinnic River. Over 120 volunteers showed up to pull out a total of 105,000 pounds of garbage from the river, setting an all-time record for pounds of trash removed at a single cleanup site. The crane was in place by 8 am, ready to haul garbage from the river and into large dumpsters. By the end of the day, volunteers had filled five large dumpsters with shopping carts, tires and bicycles.

### San Diego Coastkeeper: 22nd Annual Coastal Cleanup Day

September 16 marked the 22nd Annual Coastal Cleanup Day, presented by San Diego County and San Diego Coastkeeper. Nearly 6,000 volunteers worked at 60 cleanup sites to help protect and restore the waters of San Diego County, CA. Volunteers removed 190,000 pounds of trash and recyclables. The most common items found on area beaches are cigarette butts and plastics, both of which can be deadly to marine life — killing tens of thousands of sea birds and marine mammals each year.

### Buffalo Niagara Riverkeeper: Autumn Beach Sweep

On September 15 and 16, 700 volunteers gathered for Buffalo Niagara Riverkeeper's most well attended and successful Autumn Beach Sweep event yet. Volunteers removed seven tons of debris from shorelines on 31 sites in the Buffalo and Niagara River watersheds. Team captains were more prepared than ever this year, with donated supplies and gift cards from local retailers. Items extracted from the river included two functional scooters, personal hygiene items from the city's failing sewage infrastructure and a fully intact birthday cake with one missing piece.



Buffalo Niagara Riverkeeper volunteers make it happen!

### South Riverkeeper: Oysters

South Riverkeeper partnered with Chesapeake Bay Foundation, Oyster Recovery Partnership, state agencies and others to harvest nine million oysters over a nine-acre reef this fall. In addition, Riverkeeper will also help construct an additional reef for a million baby oysters on existing shell bottom. When plans are completed the newly restored reefs will span 12.5 acres — tripling the oyster restoration on the South River over the last six years.

### Southcoast Cleanups Net Nearly Nine Tons of Trash

Over the course of one year, volunteers collected more than 17,500 pounds of marine debris from the shores of New Bedford, Massachusetts, as part of the Adopt A Shoreline Program, coordinated by Buzzards Baykeeper and UMASS Dartmouth. The program connects citizens, organizations and businesses to their waterfront by organizing monthly cleanups from April through October. Food wrappers, containers, cigarette butts, plastic bottles and styrofoam cups top the list of items washing up on our shores, severely impacting our environment, health and economy.



“When we heal the earth,  
we heal ourselves”  
~David Orr

## Great Leap Forward for Turtles

Puerto Rico House Passes Critical Bill

This November Puerto Rico's House of Representatives passed House Bill 2105 in favor of declaring the Northeastern Ecological Corridor a nature preserve. The passage of the bill is a giant success in efforts to protect one of Puerto Rico's last remaining pristine coastal habitats — 3,200 acres of forests, wetlands, beaches and coral communities, home to 40 endangered and threatened species — from the proposed development of mega-resorts and residential complexes. Waterkeeper Alliance and Puerto Rico Coastkeeper will now concentrate efforts in the Senate to pass the bill in the next legislative session to permanently protect the area for wildlife, the citizens of Puerto Rico and ecotourism.

## California Lawmaking: Bills Pass on Public Information and Enforcement

For decades, lack of public information on water quality and inconsistent enforcement of water pollution laws aggravated California's water problems. But this fall Governor Schwarzenegger signed into law two bills sponsored by California Coastkeeper that will make the state's water cleaner.

Currently, California offers very little information to the public on water quality. The state reports on the health of only 22 percent of its shoreline, 34 percent of its lakes and reservoirs, and a mere 15 percent of its rivers and streams. The new Water Quality Monitoring law requires comprehensive, statewide information on water quality so the public can make well-informed choices of how they use and manage water. The new Water Quality Enforcement law will allow state officials to step in when regional water boards fail to enforce clean water laws. "Inconsistent and lax enforcement of state and federal water pollution laws has prevented Californians from enjoying their own waterways," says California Coastkeeper Linda Sheehan. "We applaud the Governor's strong support for enforcing California's water quality laws."

## Talking Clean Water

### WATERKEEPERS AUSTRALIA

Waterkeeper Alliance Board Member and Catawba Riverkeeper Donna Lisenby left her North Carolina home to meet with Waterkeepers Australia this October, as part of Waterkeepers Australia's annual conference in Barwon Heads, Australia.

"Australia is like the canary down the mine for the world," said Lisenby. "They are in the unique position to provide an ecological warning to the rest of the world and also show leadership in dealing with diminishing water supplies."



### WATERKEEPERS COLOMBIA SOUTH AMERICA

Waterkeepers in Colombia are playing a critical role in safeguarding Colombian watersheds. In October, Cartagena Baykeeper Elizabeth Ramirez organized the First International Conference on Environmental Pollution and Sustainable Development in Ports and Coasts of the Caribbean — in the historical, walled city of Cartagena on South America's north Atlantic coast. Colombia's two Waterkeepers and two Waterkeeper Alliance staff members, along with other environmental organizations, government representatives, journalists, academics and students gathered to learn from local experts about state of Colombia's watersheds and what groups like Cartagena Baykeeper and Colombian Amazonia Waterkeeper are doing to protect them.

### PATUXENT: STATE OF THE RIVER

Patuxent Riverkeeper, Fred Tutman was principal coordinator for the first ever State of the River Summit, held at the Calvert Marine Museum in Maryland. The event garnered over 200 participants including Maryland Governor Robert Ehrlich and Congressman Steny Hoyer who came to hear panelists from all walks discuss the condition of the Patuxent River and consider strategies for its renewal. Riverkeeper Tutman presented the vital role direct citizen advocacy plays in shaping political will to protect our waterways. Patuxent Riverkeeper plans on hosting the event annually to give citizens and policy makers a forum to address the significant problems and hold policymakers accountable for making progress cleaning the longest intrastate river in the state.

## Russian Riverkeeper Stops Gravel Mine

Many of the elaborate structures of San Francisco — the Golden Gate Bridge, the Bay Bridge and the steep city streets — are built on earthen material taken from the Russian River. In fact, gravel mined to build these structures and many more around the San Francisco Bay have left the Russian River severely degraded. But this August, Russian Riverkeeper Don McEnhill squashed mining company Syar Industries plans to open a new gravel mine.

Gravel mining on the Russian River has eroded the riverbanks and wiped out vegetation. Open gravel pit mines have reduced groundwater storage and

have left permanent pollutant-filled holes along the Russian's floodplains. Russian Riverkeeper warned the North Coast Regional Water Quality Control Board that Syar's mining operations would make dire environmental conditions already worse, causing increased erosion and sedimentation in a river already impaired by sediment, and further threaten the existence of three species of endangered salmon. The warning encouraged the water quality board to deny Syar Industries' application.



Gravel is a major (and destructive) export of the Russian River Valley.

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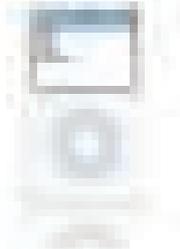


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# Free *the* Colorado River

By Lauren Brown, Waterkeeper Alliance



PETER NEELS

Colorado Riverkeeper  
John Weisheit

A landmark battle is playing out against the timeless flow of the Colorado River. The confrontation revolves around Glen Canyon Dam and a radical plan that may offer the only chance for a sustainable future for the Colorado River.

At the forefront of this plan is Colorado Riverkeeper John Weisheit, who is calling for the decommissioning of an American icon, Glen Canyon Dam. Never has a dam the size of Glen Canyon been decommissioned and demolished in the U.S. or anywhere else. He is also advocating the reform of how the federal government manages the Colorado River. Few are behind him; many against. Still, he marches (and paddles) forward.

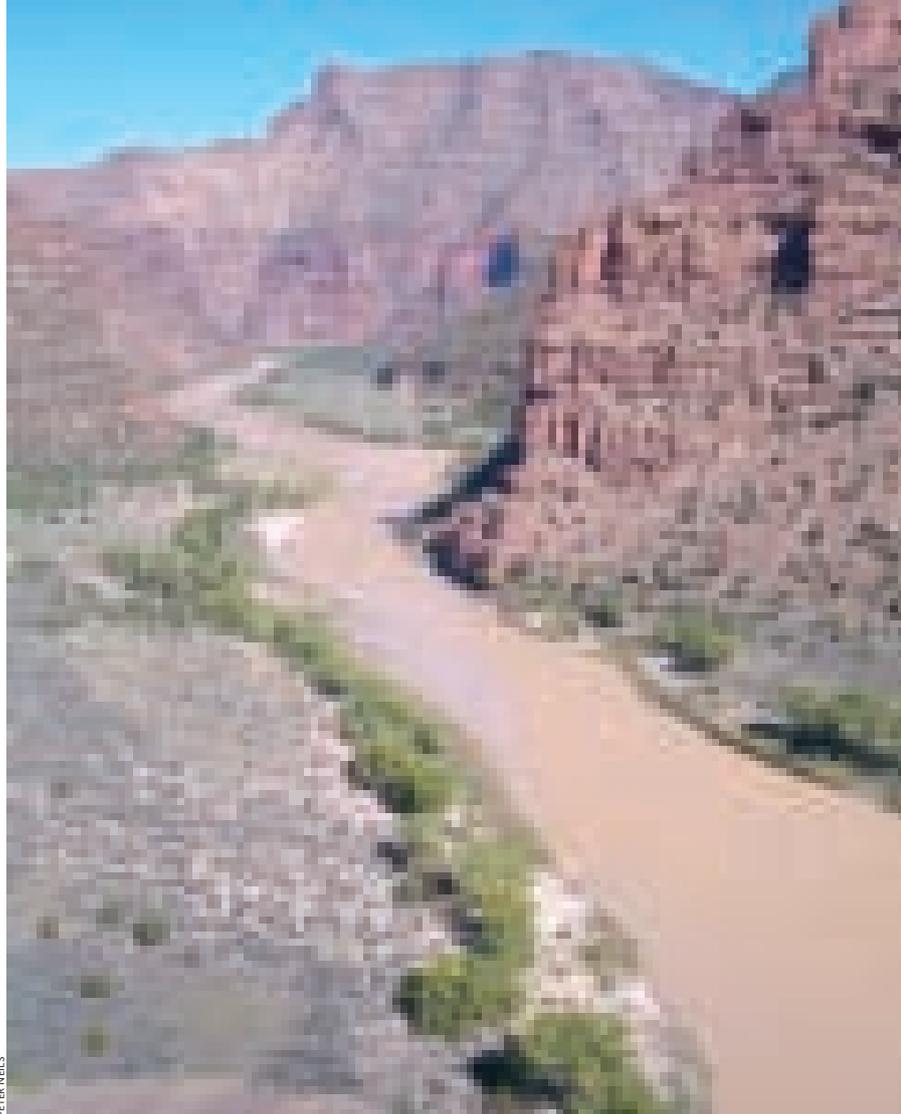
I had the opportunity to join John, his wife Susette, warrior queen-of-the-river, and five close friends for a nine-day paddle down the Green River, a major tributary to the Colorado. We navigated 50 rapids and camped along the canyon shores on sandy beaches. We piled all of our supplies, including tents, food and water, onto three rafts and two kayaks. As we made our way down the meandering river, wild horses, bighorn sheep and great blue herons reminded us that we were in indeed in one of the most remote places in the lower 48 states.

Sharing a raft with John we discussed the network of dams that harness the Colorado River and its tributaries and the consequences of such large-scale 'marvels' of engineering. "They should have never been built," he says. "They created many more problems than they solved."

Over millions of years the muddy Colorado River has patiently gouged deep winding corridors through soft sandstone. Ancient peoples built stone houses in valley clefts and crags. Then came the era of the dam and the American West would never be the same. In the early 1960s in an isolated spot on the Utah-Arizona border, the nation's burgeoning environmental movement engaged in fierce battle to stop construction of several dams along the Colorado River.

In the end, four of the largest dams were never built. But Glen Canyon Dam, located in southeastern Utah, was completed in 1963. Five million yards of concrete were poured nonstop at the dam site, and upon completion, the total height of the dam stood at 710 feet.

Over the next 20 years, water backed up for 186 miles along the Green River, inundating Glen Canyon and hundreds of miles of side canyons in Arizona and Utah, destroying some of the most beautiful riverine vistas in the country. The now-flooded Glen Canyon is often called the Lost Eden, largely because the side canyons with their deep shade and sculptured grottoes were historically the ecological pump for much of the life in the Grand



PETER NEILS

Canyon, 15 miles below Glen Canyon Dam, and beyond. Glen Canyon Dam created one of the world's largest man-made bodies of water, Lake Powell, drowning a thousand years of human history and a million years of natural history.

John tells me that Lake Powell is slowly but surely filling with the sediment. While the reservoir won't entirely fill with sediment for 500 to 700 years, significant storage capacity losses and safety problems will force the decommissioning of the dam after 200 years. Congress, John explains, knew this when they approved the dam, but didn't anticipate any solution.

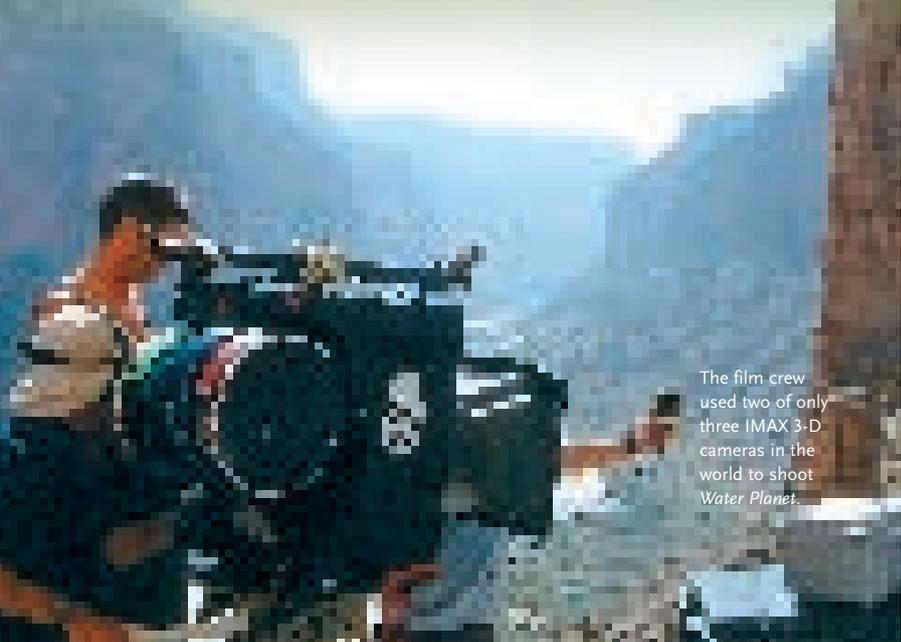
The accumulating sediment is not the only problem with the dam. "Lake Powell is also drying up," explains John. "It's not a drought that's draining Lake Powell, it's increasing demand for river water." The Colorado River is already over-allocated to downstream users and demand continues to grow as the population in the region continues to explode. Yet federal and state water managers continue to ignore the threat of major water shortage. "They essentially pray for rain, as did their predecessors 125 years ago," explains John. "Fundamentally, nothing has changed."

"The whole civilization out West is built on a false paradise," John warns. "It is not a matter of if,

The Green River in Utah passes through Desolation and Gray Canyons as it flows freely to join the Colorado River above Lake Powell.

John is equal parts gentle humility and fearless advocate.

# WATER PLANET Grand Canyon Expedition



The film crew used two of only three IMAX 3-D cameras in the world to shoot *Water Planet*.

BEN HORTON

This fall one of the largest Grand Canyon river expeditions in recent history set off on a 15-day river trip, launching the production of a new IMAX 3-D film entitled *Water Planet: Grand Canyon Adventure* presented by Teva. The expedition crew of 44 people included Robert F. Kennedy, Jr., a cadre of Teva's professional kayakers, director Greg MacGillivray and his film crew from MacGillivray Freeman Films. The film, slated for release in March 2008, will use the Grand Canyon as a backdrop to raise public awareness about endangered freshwater resources around the world.



The Waterkeeper dory prepared for launch

BEN HORTON

but when, the Colorado River plumbing system will collapse." When it does, water supply and power generation for metropolitan areas from Los Angeles to Denver will be affected, as well as the region's multi-billion dollar agricultural industry. The 60 million acre-feet of water in the reservoir provides a cushion in times of average river flows, but this reserve would vanish in a sustained drought.

The Colorado Riverkeeper and Living Rivers, its parent organization, are demanding that the federal government respond to this crisis and commence a dialogue with the Colorado River basin states (Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming) and Mexico to revise the outdated 1922 formula for allocating water. Known as the Colorado River Compact, this flawed agreement gives away more water on paper than the river historically delivers. They are calling for the development of a long-term sediment management plan that will restore the natural flow of sediment and sand down the river to restore habitat for native species.

And finally, take down Glen Canyon Dam. Reservoirs suffer tremendous evaporation loss in the hot arid southwest. John takes the stance that it would be more efficient to eliminate Glen Canyon Dam from the system and utilize Hoover Dam and adjacent underground storage to capture the limited amounts of surplus water.

For John, rowing down the Colorado River through the Grand Canyon from Glen Canyon Dam is akin to a funeral launch. John admits to crying on the river. He tells me it is hard for him to go down the Grand because "the river is dead." The Colorado River, once filled with life-sustaining sediment and silt, has been permanently altered by construction of Glen Canyon Dam, and now runs with cold clear water instead of the naturally nutrient-rich and life-sustaining turbid waters that once naturally flowed through Grand Canyon. This change has eroded riverbanks, impacted animals and vegetation, and resulted in the extinction of five species of fish in the Grand Canyon.

## The Colorado Riverkeeper

John was raised in Los Angeles. He learned to love the Colorado River during his summers vacationing there with his family. Later, he moved to Moab, where he has lived for the past 20 years. He chose Moab because he wanted to be above Glen Canyon Dam, where the river is still lithe with sediment, still vital and alive. John started rafting the river in 1980. In 1985 he says he was accepted by the river running community and in 1987 he began taking people down the river. "I was not an activist, I was a river guide. Then I became an activist."

John maintains a complicated and sometimes contentious relationship with the river guides on



Author Lauren Brown joined the Colorado Riverkeeper for his annual trip through a section of his watershed — one of the largest patrol areas in the Waterkeeper movement.

PETER NEILS

the Colorado River who make their living taking adventurers on trips timed to take advantage of the dam's releases for good whitewater. John is disappointed that he does not get more support from the river guide community. He says that at first they seemed to support his fight, but later they distanced themselves from John's battle. John explains his priorities, "The river must come first; not the outfitters, not the guides, not even my friends. Our power comes from the river."

"Too many guides refuse to put the river first," he grumbles. "Their job and their relationship with the outfitters who support them are more important to them than the river itself. We can't betray the needs of the river."

The failure to save Glen Canyon from inundation in the 1960s was deeply felt by many at the time, including environmentalist David R. Brower — who was instrumental in preventing the building of a dam in the Grand Canyon. Brower called the death of Glen Canyon the greatest disappointment of his life, and he spent the rest of his life attempting to undo the mistake. Brower co-founded Living Rivers and advocated fiercely for the draining Lake Powell until he died in November 2000.

John recalls a conversation with Brower which he now considers the turning point in his life. John told Brower he was disappointed that Brower did not do more to stop the construction of Glen Canyon Dam. David admitted it was worst mistake of his life, but it made him who he is today. Then Brower asked John: "What are you going to do about it, John?" John promised himself he would drive a national environmental campaign to de-commission Glen Canyon Dam and fight for the Colorado River. John became the Colorado Riverkeeper in October 2002.

John seems unassuming to those who pass him by and don't take the time to get to know him. He can be described as humble, pensive, quiet, soft-spoken and composed. He is deliberate in his choice of words as he speaks, and has a sarcastic and dry sense of humor. He frequently chuckles quietly to himself as if enjoying own private joke. John is equal parts gentle humility and fearless advocate.

"John reads the river," Susette says as she artfully but powerfully presses her paddles through the sediment-thick Green River. One night as our group sat around the campfire on the riverbank under a clear sky, Peter Neils took a break from playing his guitar to tell me, "John is a legendary boatman on this river." Peter explained that he is inspired by John's exceptionally expansive and comprehensive understanding of the Colorado River — its history, geology and its life-force. He turns back to his guitar to sing a song by Bill Oliver:

*Let's take out a couple of dams,  
the Hetch Hetchy and the Glen,  
Let's act like we know what we didn't know then,  
And take out a couple of dams.*

John believes Glen Canyon Dam is an American icon, a tribute representing the worst in human engineering, of manipulation of nature. John tells me that no matter what it takes, he will stand up and defend the river. "I just did not realize that standing up for the river would break my heart," he explains later as we paddle down the beautiful Green River. "But like Brower I will never abandon this river, not till the day I die." **W**

## BREAKING NEWS

### Dam Agency to Study Impacts on Endangered Species

The federal Bureau of Reclamation has agreed to study the impacts of Glen Canyon Dam on the endangered fish population after Colorado Riverkeeper and others charged the Bureau with violating federal law. This is a landmark achievement.

The construction of Glen Canyon Dam destroyed the Colorado River's warm-water ecosystem. Non-native fish species now dominate the Grand Canyon corridor. Native fish species such as Humpback Chub, Bonytail Chub, Razorback Sucker and Colorado Pikeminnow are all endangered. Other important species, including otters and muskrats, are also threatened or endangered.

"The hope is that the Humpback Chub can be rescued from imminent extinction and that the ongoing destruction caused by the current operations of Glen Canyon Dam on the Grand Canyon and Colorado River will be stopped," says Colorado Riverkeeper John Weisheit. "It is past time for a new assessment on the dam's operations."

# Waterkeepers

# India

By Cate White, Waterkeeper Alliance | Photos by Scott Edwards

The sacred Yamuna River doesn't just absorb the sins of pilgrims; it absorbs nearly 900 million gallons a day of untreated sewage and industrial waste. At the river's edge in the heart of New Delhi methane rises from the dark bottom, stirred by a young man named Raju who scavenges coins thrown from the overhead bridge for luck. A thick stench hangs in the air. Raju emerges with coins in hand. For Raju it is a good life. He prides himself on his ability to find fortune in the murky water — nearly 100 rupees a day, he says, twice the daily minimum wage in India.



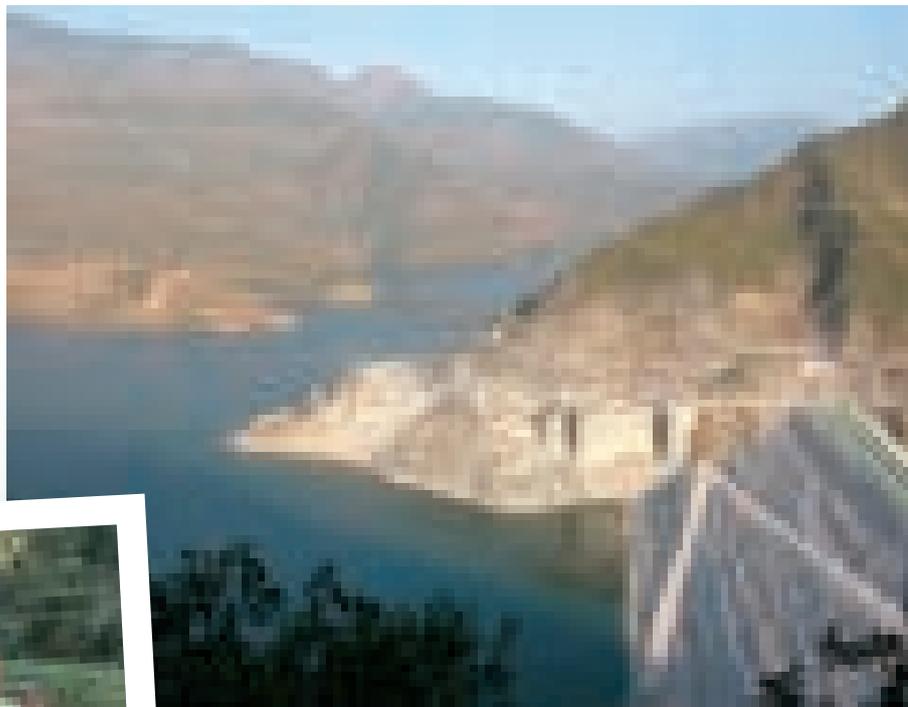
The Ganges and Yamuna rivers, both considered feminine deities in Hindu mythology, embrace India's fertile Gangetic Plain. In cities like Delhi, Agra and Varanasi millions live without sewage infrastructure or access to potable water. All this ensures that as India enters the world stage as a dominant economic force, she will not side-step the environmental degradation historically linked to the rise of other economic powers. Indian rivers already are some of the world's most polluted.

In November, Waterkeepers from across North America visited the newly formed Waterkeepers India to share experiences and attend the International Living Rivers Conference in New Delhi. Dr. Vandana Shiva, a former nuclear physicist now spearheading Riverkeeper programs in India, asks, "Why must India's future be America's past?" She urges a smarter kind of development that involves harvesting rainwater; employing sustainable agricultural practices; and empowering communities to fight for their right to clean water.

Ninety-four new dams and river obstructions are slated for construction by the Indian government, including a plan to dam the Tsangpo, a tributary of the great Brahmaputra River, which issues from the Tibetan plateau and courses through Bhutan before entering Arunachal Pradesh where indigenous people untouched by modernity exist. Waterkeepers India is a growing movement, strongly rooted in Indian communities that will fight this plan and fight for clean water. **w**



“When we see the lake, we see only sorrow.”



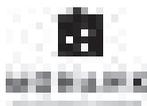
Dilla Devi's community was destroyed by the Tehri Dam in the foothills of the Himalayas, which traps the headwaters of the Ganges flowing off the Gangotri Glacier. The Waterkeeper Alliance delegation visited the site where the dam inundated a formerly productive agricultural region and vanquished traditional lifestyles as some 175,000 people were exiled to urban centers. Local women have joined forces to take action to reclaim the quality of their lives.



Waterkeepers at the International Living Rivers Conference in New Delhi, India.

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“We are here,  
not to bury  
the lake but  
to dig it out.  
To look for its  
heart, to find  
it and win it  
back.”

*Gord Downie*

# HEART OF A LAKE TOUR



Lake Ontario Waterkeeper Mark Mattson says 'thank-you' to the people struggling to make their communities better places to live. Inset: The Capitol Theatre in Port Hope, Ontario

By Krystyn Tully, Lake Ontario Waterkeeper  
Photos by Dylan Neild

This September Lake Ontario Waterkeeper brought its Heart of a Lake Tour to three southern Ontario towns. Each show featured an unforgettable presentation by Canadian music icon Gord Downie. Artists Andrea Nann and Tannis Rideout performed special works of dance and poetry. Waterkeeper Mark Mattson talked of environmental justice. The Tour was inspired by ordinary people's struggles to win back what they've lost: clean water. Access to their harbours. The respect of government and industry.

Heart of a Lake gave Lake Ontario Waterkeeper a chance to speak to thousands of people about the connection between clean water and a healthy civil society. And it was powerful: Theatres were packed. Local and national media listened. Ordinary citizens were inspired to action. **W**

## Jay-Z, United Nations and MTV Partner to Highlight the

# World Water Crisis

United Nations Secretary-General Kofi Annan, MTV President Christina Norman and President and CEO of Def Jam Records Shawn “Jay-Z” Carter have joined forces to address the world water crisis.

### Water for Life By United Nations Secretary General Kofi Annan

Most of us take water for granted: we turn on the tap and there’s plenty of it. Or, if we prefer, we can buy hundreds of different brands of it in supermarkets.

But for more than a billion members of the human family, who lack access to safe drinking water, this is an inconceivable dream. And some 2.6 billion people have no access to proper sanitation. The consequences are devastating.

Nearly 2 million children die every year because of unclean water and poor sanitation—far more than the casualties from violent conflicts.

All over the world, pollution, over-consumption and poor water management are decreasing the quality and quantity of water.

Competition among nations for freshwater is already a factor in many conflicts, and has the potential to cause many more in the future. In fact, nearly a half-century ago John F. Kennedy said that “Anyone who can solve the problems of water will be worthy of two Nobel Prizes — one for peace and one for science.”

The water crisis — like so many issues confronting our world — can only be fully addressed with the active participation of young people everywhere.

I am very pleased to announce a groundbreaking collaboration between the United Nations, MTV and Jay-Z to raise awareness about the world’s water crisis.

All of us at the United Nations are excited about this initiative. Working with MTV and Jay-Z, we hope this campaign will motivate youth to take action both in their own lives, and in support of broad eco-friendly initiatives.

MTV’s global reach and credibility can play an important role in educating and empowering its audience.

Jay-Z, through his enormous influence, will inspire young people to care, conserve and join in the search for solutions to our water crisis.

Together, we may yet inspire a young viewer to take up President Kennedy’s challenge, and claim both those Nobel Prizes.

“Nearly two million children die every year because of unclean water and poor sanitation.”

### The Diary of Jay-Z: Water for Life premiered on MTV on Friday, November 24, 2006



“The water crisis — like so many issues confronting our world — can only be fully addressed with the creative participation of young people everywhere,” said United Nations Secretary-General **Kofi Annan**. “Working with MTV and Jay-Z, all of us at the UN hope this campaign will motivate youth to take action both in their own lives, and in support of broad eco-friendly initiatives.”



MTV has a long history of partnering with artists and experts to raise awareness and educate our audience,” said **Christina Norman**, President of MTV. “By allowing MTV to document his journey, Jay-Z will be mobilizing a whole new generation of young people who may not be familiar with the water crisis to learn about and take action to help those suffering.”



After hearing and reading some of the startling statistics about the lack of clean water, I realized that I needed to bring attention to this issue,” stated **Shawn “Jay-Z” Carter**. “I know through joining with experts through the UN and partnering with MTV to bring the word to our communities, we can make a difference.”

You can learn more about the Water for Life Campaign at [www.un.org/waterforlifedecade](http://www.un.org/waterforlifedecade) and [www.mtv.com/thinkmtv](http://www.mtv.com/thinkmtv)



Jay-Z, Kofi Annan and MTV President Christina Norman kick off Water For Life at the United Nations Headquarters in New York on August 9, 2006.

UNITED NATIONS

## Ending the Silence on the World Water Crisis

By Shawn “Jay-Z” Carter

It’s the most basic element on the planet. It gives life to everything. And it’s seemingly plentiful. But more than a billion people can’t get clean water for drinking, cooking and bathing; 2.6 billion people don’t have access to adequate sanitation; and two million children die every year from contaminated water. It’s a silent crisis that’s holding back human progress.

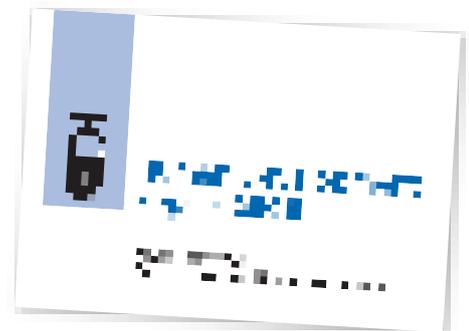
I wanted to help end the silence. So I approached the United Nations to learn more. And on my first world tour I saw firsthand what it’s like to be without this precious resource. In Luanda, Angola, I met Bela, who showed me how her family survives on only two small buckets of water a day, and how she passes open sewers just to get to school. In a small village in South Africa I climbed up and down steep cliffs. Young people must do this just to get freshwater back to their homes. But I also witnessed how flush toilets can change the lives of dozens of school children, and how a simple water pump can transform a village and give its young people a chance to thrive.

Because of over-population, pollution and global warming, 3.4 billion people now live in countries that are water scarce. But together we must make water a human right, because we all need water for life.

## United Nations Human Development Report 2006: ‘Beyond Scarcity: Power, Poverty and the Global Water Crisis’

Access to water and sanitation extends opportunities, enhances dignity and helps create a virtuous cycle of improving health and rising wealth. The report highlights poverty, unequal access, wars, migration and unsustainable consumption patterns as the main contributors of the water crisis. It puts forward the important message that we are in the midst of a crisis in water and sanitation that overwhelmingly affects the poor. A crisis, in which too many people do not have access to enough water under the right conditions to live.

- » One in every six human beings has no access to clean water within a kilometer of their homes.
- » Ensuring that every person has access to at least 20 liters of clean water each day is a minimum requirement for respecting the human right to water.
- » Some 1.8 million child deaths occur each year as a result of diarrhea — 4,900 deaths each day or an under-five population equivalent in size to that for London and New York combined.
- » Together, unclean water and poor sanitation are the world’s second biggest killer of children.
- » Almost two in three people lacking access to clean water and more than 660 million people without sanitation live on less than \$2 a day.
- » Unclean water and poor sanitation have claimed more lives over the past century than any other cause.



**INDUSTRIAL COOLING AND MASSIVE ECOLOGICAL DESTRUCTION**

# **THE QUICK AND**

PHOTO COURTESY WWW.PACIFICPINALCLES.COM

Water flows from a power plant cooling water outfall.

# THE DEAD

Industrial facilities — power plants, oil refineries and factories — draw water from rivers, lakes and oceans to cool their generators and other equipment. The largest of these plants suck in billions of gallons of water each day, killing aquatic life on an almost unimaginable scale. Micro-organisms, floating fish eggs and larvae are drawn through heat exchanging equipment and dumped back into waterways dead. Fish, sea turtles and marine mammals are pinned against the intake screens. A trillion fish are killed each year.

This killing is unnecessary. Widely available and affordable technologies reuse and recycle cooling water, preventing fish kills and thermal pollution. But 35 years after Congress first sought to solve this problem, the power industry continues its massive ecological destruction.

# Fighting Power Plants that Kill Fish by the Billions

By Reed Super

▶▶JUST BELOW the surface at most power plants — whether they split atoms or burn fossil fuels — are giant intake structures that withdraw massive volumes of water for cooling. They use the free, cold water to condense steam exhausted from their electricity-producing turbines, and then discharge heated water. In fact, that's why steam-electric power plants are typically sited near large bodies of water in the first place.

But the colossal water withdrawals — several billion gallons per day at the largest plants — also draw in and kill enormous numbers of aquatic organisms at all life stages, while also trapping larger adult fish and wildlife on intake screens. Like giant vacuums, power plants suck in massive amounts of water from our waterways, indiscriminately devour aquatic life and spew heated, lifeless water downstream.

More than 30 years ago, a slew of massive, well-publicized fish kills occurred at power plants

around the country. The Brayton Point power station on Mt. Hope Bay in Massachusetts entrained an astonishing 164 million menhaden and river herring on a single day, July 2, 1971. The P.H. Robinson plant in Galveston Bay, Texas impinged more than seven million fish in 12 months in 1969 and 1970, and the Indian Point nuclear facility on New York's Hudson River impinged 1.3 million fish over a 10-week period. In the late summer of 1971, more than two million dead menhaden clogged the screens at the Millstone plant in Niantic Bay, Connecticut. The public took notice and Congress took action, but the carnage never really stopped. In early February 2004, the San Onofre plant north of San Diego killed about 13,500 pounds of sardines in a 24-hour period. And while these extraordinary fish kills make news, the daily losses of billions of aquatic organisms go largely unnoticed by the average citizen.

## What Happens When Power Plants Swallow Aquatic Life

Water flows into the plant through intake canals or pipes...



... through a series of grates. The immense flow of water through the intake can trap and kill large fish, and even marine mammals and sea turtles.



The electric power industry is by far the greatest user of cooling water, withdrawing more than 78 trillion gallons per year from U.S. waters. Ironically, while generating electricity for the power grid, these plants sap biological energy from the aquatic ecosystem. Factories, particularly those in the pulp and paper, metals, chemicals and petroleum refining industries also use significant volumes for cooling. All together, industrial facilities withdraw more than 100 trillion gallons per year, which accounts for more than half of all fresh and saline water withdrawals from U.S. waters.

### Needless Killing

But none of these facilities actually need to kill fish, use surface water or even be located on the waterfront. State-of-the-art plants — and even less sophisticated ones built in arid regions — use little or no water for cooling. Instead they minimize water needs by recycling their used cooling water in a closed-cycle system. These plants utilize cooling towers — using the high-efficiency of evaporation to cool their equipment. Their water demands are vastly reduced, by 95 percent or more, and can be met with municipal water, groundwater or effluent from wastewater treatment plants, virtually eliminating fish kills. Or plants can be air cooled with giant radiators known as dry cooling towers, removing altogether their need for cooling water.

If such beneficial technologies exist, why aren't they universally used or required? One answer is that the electrification of America occurred well before aquatic life was understood and valued. Today, companies remain extremely reluctant to invest in technological upgrades that reduce their bottom line. And government lacks the political will to force them to protect our waterways.

Thus, while new plants are often (but not always) built with recirculating cooling systems, more than 1,000 existing power plants and factories nationwide still use antiquated and destructive once-

through cooling systems. While once-through cooling systems earn handsome profits for their owners, they wipe out aquatic life in nearby waterways. Waterkeepers have been fighting to reverse the tragedy since their founding on the Hudson River 40 years ago. The battle for our fisheries is far from over, but hopeful signs are emerging around the country.

### Intake

Cooling water intake structures may be large openings in a sea wall or pipes extending well offshore. They may be fitted with trash racks to exclude debris, or with more elaborate screens and fish handling systems designed to return larger fish to the water. Whether protected or not, the sheer volume and velocity of water withdrawals passing through them harm and kill aquatic life in the same two ways.

First, fish and shellfish, their eggs and larvae, and other organisms too small to be screened out are drawn through a cooling water intake structure into plants' heat exchangers. These entrained organisms are subjected to mechanical stress, thermal shock and chemical exposure that few, if any, survive.

Second, the force of water passing through the intake structure impinges larger organisms, such as adult and juvenile fish, invertebrates, reptiles and marine mammals, on the intake screens, causing harm or death through starvation, exhaustion, asphyxiation or descaling.

Entrainment and impingement affect the full spectrum of organisms at all life stages: eggs, larvae, juvenile and adult, from tiny photosynthetic organisms (phytoplankton) to fish, shrimp, crabs, birds and sea turtles — including threatened and endangered species.

The effects on the aquatic ecosystem are both obvious and more subtle. The extermination of adult fish deprives commercial, recreational and subsistence fisherman of their catch. Opportunities for

### ENTRAINMENT:

smaller fish and shellfish, eggs and larvae are drawn through the cooling water intake structure and into the plant's cooling system, pass through the heat exchanger and are discharged out of the facility. Few, if any, entrained organisms survive.

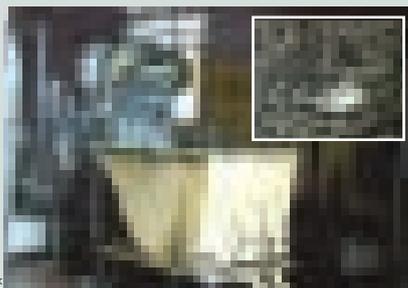
### IMPINGEMENT:

fish and other aquatic organisms become trapped on screening devices or other barriers installed at the entrance of the intake structure.

Water screens rotate in an endless cycle, capturing fish and debris.



The traveling screens remove fish and debris that would otherwise choke the intake.



Inside the plant debris and fish are collected and disposed.



EPA

EPA

EPA

## Lake Erie Power Plant kills a million fish per hour

# License to Kill

By Sandy Bihn, Western Lake Erie Waterkeeper

» ANGLERS WADE for walleye in the Maumee River during the spring walleye run, the best in the Great Lakes. This is spawning time and the catches are great. But few anglers are aware of their biggest competitor, and just how many walleye fry — the small fish and larvae — swim down the Maumee only to be swallowed by the Bayshore First Energy power plant. Estimates of impinged and entrained fish in the Bayshore power plant exceed 10 billion annually — that averages to over one million fish killed per hour. Because of the abundance of fish in the Maumee watershed, the Bayshore plant is Great Lakes' largest fish-killing power plant.

The state of Ohio does not require a permit or even mitigation conditions for these massive Bayshore First Energy fish kills. Odd, considering that on most days the Maumee River and Maumee Bay supply 750 million gallons of water to Bayshore First Energy power plant for cooling. Studies show that on average the whole Maumee River is drawn through the First Energy Bayshore plant each day.

The plant is also very secretive about the mortality of the fish. One report that surfaced in December 2005 said there were enough fish killed by the plant to feed Ohio's hungry families for years. But the word to the public was that the situation was not so bad and that the pumps just had to be replaced. When Western Lake Erie Waterkeeper called the Ohio Department of Natural Resources, we were told that all was fine — no problems.

The Bayshore plant is not the only fish-guzzling plant on the Maumee — the walleye bass and other fish that spawn in the warmed shallow waters of the Maumee



The biggest fish killer on the Great Lakes is First Energy's Bayshore power plant on the western shore of Lake Erie.

River are also pulled into two other power plants. Consumers Power sucks in 330 million gallons of water a day from the Erie Marsh on the north end of Maumee Bay and Detroit Edison draws another 1.9 billion gallons of water a day from the River Raisin, the eastern Maumee Bay and West Lake Erie waters. Combined, the three power plants use about three billion gallons of water daily from the most biologically productive waters of the Great Lakes, discharging waters five to eight degrees warmer than the natural temperature.

What's worse, the fish coming out of the Maumee River hoping to reach Lake Erie are also entrapped by the Army Corps of Engineers' dredge disposal facilities in Maumee Bay. The Corps constructed one dredge disposal island near the mouth of the Maumee River and another between the intake and outfall of the Bayshore First Energy power plant. Fish are trapped, herded in a

channel entering the power plant and then discharged into a cove created by the dredge disposal peninsula. The design and location of the dredge disposal island and peninsula vastly increase fish mortality.

To protect the walleye, small and large mouth bass and other fish, the Ohio Department of Natural Resources banned recreational and commercial fishing during spawning season and pending legislation seeks to ban commercial fishing altogether. The department has limited commercial fisherman to four walleye 15 inches or larger from March through May, limited the number perch catches and banned bass catches during spawning season. Anyone caught violating these rules is subject to revocation of their fishing license, fine and possible incarceration.

Yet there are no size or quantity limits for the fish kills in the Bayshore First Energy power plant intake, nor are there bans for the power plant during spawning season. The vital question is — why are recreational and commercial fisherman regulated but the power plants are free to kill fish anytime in any numbers?

After decades of work pulling the Great Lakes back from near death, algae blooms and dead zones are back in Lake Erie. The power plants continue to heat the waters and kill the fish of the incredibly beautiful and bountiful Western Lake Erie Basin. Despite massive fish kills the Maumee River boasts one of the largest populations of migrating walleye east of the Mississippi. To let these fish be swallowed up by thirsty power plants with antiquated technology is nothing short of a tragic loss that should be rectified — easily.

Bayshore kills an average of one million fish per hour — 10 billion annually. It is one of three open-cycle cooled power plants on the western shore of Lake Erie.

nature study, scientific research and aesthetic appreciation of aquatic life are also diminished, and commercial use of the fishery is devastated.

### One Step Forward, Two Steps Back

Even though available statistics provide only a partial picture of the severity of impacts, available data on mortality at power plant intake structures is staggering. The Salem nuclear plant in New Jersey withdraws more than three billion gallons per day — which is more than two million gallons every minute — from the biologically rich Delaware River. The plant's intake structures kill almost 845 million fish of at least eight important species each year, and the mortality of fish eggs and larvae is many times higher. Salem's death toll for some species quadruples the total take by commercial and recreational fishing on the river.

In Southern California, the San Onofre nuclear plant kills 57 tons of fish annually, causing a 50-70 percent decline in fish populations within three kilometers. Up north, two San Francisco Bay plants impinge and entrain more than 36,000 endangered Chinook salmon each year, along with other threatened and endangered species. In Florida, approximately 3,200 threatened or endangered sea turtles entered the intake structure at the St. Lucie nuclear plant from 1976 to 1994, resulting in mortality of 160 turtles.

These fish kills also disrupt the natural function of the entire ecosystem. The lost fish become unavailable as prey for wildlife higher on the food chain, such as birds, mammals and larger fish, or to serve as predators. In nature, the overwhelming majority of young fish that perish before maturity contribute to the aquatic ecosystem by consuming prey and ultimately providing fodder for predators. Because of their death at the intakes, however, entrained biota immediately become detritus for decomposers, transferring energy down the food chain from higher predators to lower organisms. When that happens, the water's ecological integrity is lost. But readily available cooling system upgrades can prevent this damage.

### Cooling Systems 101

There are three basic kinds of cooling systems available to power plants, the impacts of which vary by several orders of magnitude. The most destructive type of system, known as *once-through* or *open cycle* cooling, draws water from a source waterbody to absorb heat and then discharges it at an elevated temperature. None of this cooling water is recycled. In the U.S., more than 1,000 industrial facilities (including 500 large power plants) still use once-through cooling. Each day, each of the large plants withdraws more than 50 million gallons of cooling water — the largest of those withdraws hundreds of millions or even several billion gallons.

The environmental damage caused by once-through systems can be dramatically reduced — by 95 percent or more — by recycling cooling water. *Closed-cycle* systems “reduce the amount of cooling water needed and in turn directly reduce the number of aquatic organisms entrained in the cooling water intake structure, as well as impingement and other stresses on the ecosystem. Virtually all of the gas-fired power plants and 73 percent of the coal-fired plants built in the last 25 years have closed-cycle cooling.

Power plants with *dry cooling* systems release waste heat by sending steam through narrow tubes with cooling fins like a giant automotive radiator. As air is blown across the fins, either by natural drafts or fans, the steam cools and condenses back into water that is reused to generate more electricity. Air-cooling obviates cooling water needs, and thus eliminates fish kills. Power plants have used dry cooling systems for nearly 70 years. In the U.S., dry cooling was introduced in the late 1960s and, today, more than 600 power plants worldwide are dry-cooled.

### Battleground Hudson: Indian Point, Storm King and the Stripers

The Hudson Valley has long been considered the birthplace of modern environmentalism. It was there in the 1960s that citizens defeated Consolidated Edison's proposal to build a massive pumped-storage hydroelectric facility on top of Storm King Mountain. The Storm King decision famously established the public's right to sue to protect its ecological and aesthetic interests. Further, as John Cronin and Robert F. Kennedy, Jr. describe in *The Riverkeepers*, the fight against power plant fish kills

## The largest problem is too small to see with the naked eye.

The vast majority of aquatic life killed by industrial cooling water intake consists of the vitally important microorganisms at the base of the food chain. The world's oceans, lakes and rivers are awash with tiny organisms — eggs, larvae, minuscule fish and plankton. These tiny creatures are the foundation for the earth's aquatic ecosystems. They are an integral part of the food web, supporting the larger fish, marine mammals, birds, reptiles and humans.



Free floating striped bass eggs

© LYNDA RICHARDSON/CORBIS

## The Death Toll at Salem

According to PSE&G's 1999 permit renewal, Salem annually kills:



**OVER 59 MILLION**  
Blueback Herring



**OVER 77 MILLION**  
Weakfish



**OVER 134 MILLION**  
Atlantic Croaker



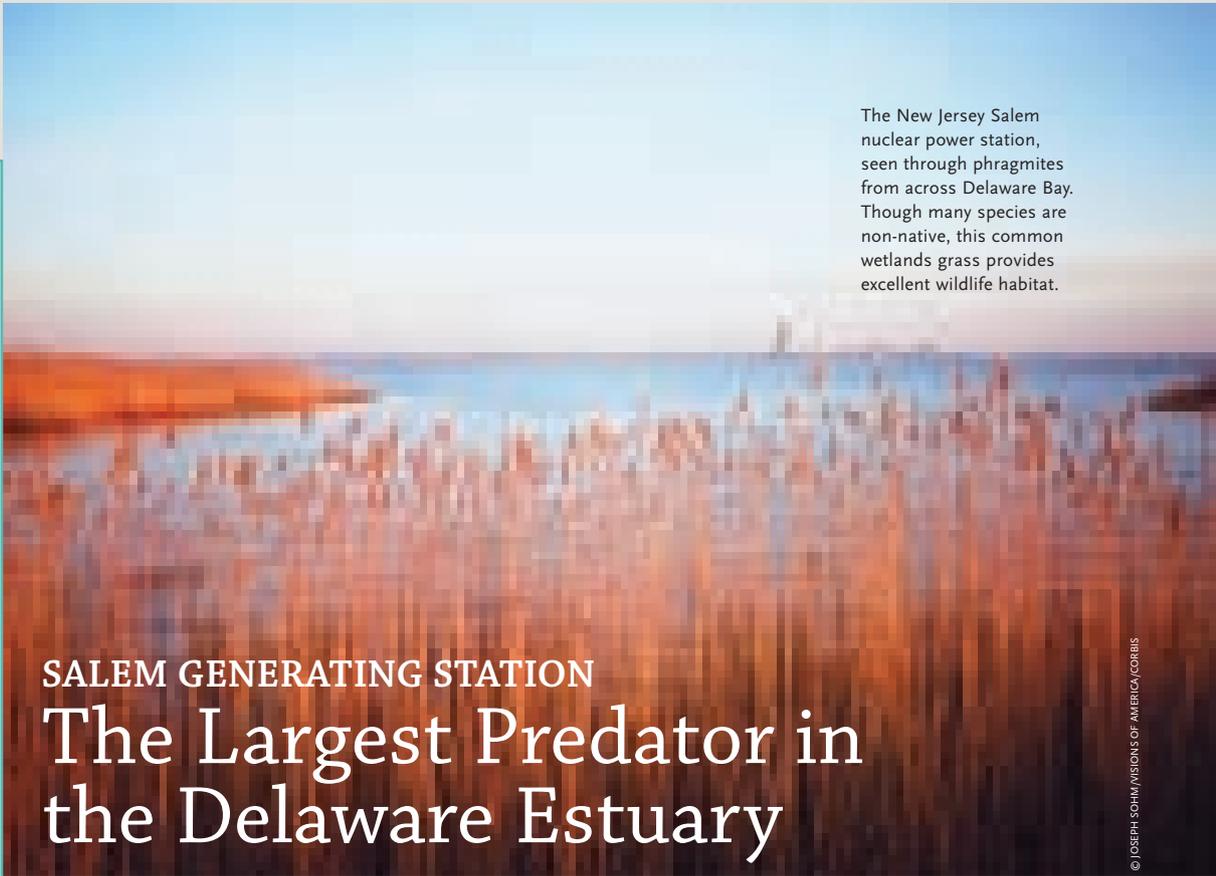
**OVER 412 MILLION**  
White Perch



**OVER 448 MILLION**  
Striped Bass



**OVER 2 BILLION**  
Bay Anchovy



The New Jersey Salem nuclear power station, seen through phragmites from across Delaware Bay. Though many species are non-native, this common wetlands grass provides excellent wildlife habitat.

# SALEM GENERATING STATION The Largest Predator in the Delaware Estuary

By Maya van Rossum, Delaware Riverkeeper

»THE SALEM Nuclear Generating Station, located on an artificial island on the Delaware River in New Jersey, consists of two nuclear-powered units operated with once-through cooling. The Salem facility withdraws up to three billion gallons of Delaware River water each day — needlessly. That means that each year, a startling three billion fish are sucked in and killed by the station.

In both 1994 and 2001, the New Jersey Department of Environmental Protection issued a permit to Salem allowing it to continue to operate its once-through cooling system. Rather than require that the plant's owner, PSE&G, install technology proven to reduce fish kills by upwards of 95 percent, the agency settled for relatively minor modifications to the plant. These included a slight reduction in daily water intake (from 3.2 to 3 billion gallons), minor changes to its intake screen and a study to determine the feasibility of using underwater sound machines to keep fish away from the plant's intakes. In addition, Salem was required to implement the so-called wetland enhancement program in the Delaware Estuary.

The reduction of water intake would have no sizeable impact on the numbers of fish chewed, swallowed and spit from the Salem facility, and small changes to the intake screens would barely skim

the surface of the problem. PSE&G saw the wetland enhancement as the crucial back door, industry's way out of its cooling water conundrum. EPA (under White House direction) has used wetlands mitigation to relieve power pants of their legal obligation to install technologies to reduce fish kills. But just how effective are these wetlands programs in replacing the millions of fish lost to the plant each year?

### Wetlands Program a Farce and a Flop

In the past decade-plus PSE&G has claimed to have restored 12,500 acres of wetlands in New Jersey and Delaware. An impressive feat, it seems, but two fundamental flaws lay at the core of PSE&G's wetlands-based approach to reviving the fish population.

First, when PSE&G pitched the idea of mitigating wetlands in lieu of going to closed-loop cooling system, they failed to demonstrate if their wetlands restoration would increase the fish population. Specifically, PSE&G concentrated on restoring the fish's food and habitat — without determining whether these were limiting factors for the aquatic communities in the first place. But the prevailing belief by fisheries scientists was that there was no need to address food and habit because they were not limiting the fish population in the river.

Second, even if food and habitat restoration were essential to revive Delaware River fisheries, PSE&G's method of wetlands restoration was constructed on a false premise. PSE&G rid the wetlands of one type of grass — phragmites — and replaced it with another — spartina — in the hope that the new habitat would increase fish populations. But studies show that spartina has not provided more usable food, shelter and cover to the aquatic or terrestrial species of the Delaware Estuary.

In 2003, Delaware Riverkeeper conducted a study based on PSE&G data. Riverkeeper found that the new spartina-dominated sites have not increased fish utilization, and in some cases, fish are more abundant in sites that have not been “restored” by PSE&G. PSE&G's own data proves that phragmites eradication has not increased fish reproduction or utilization of those wetlands.

Even worse, to reduce the coverage of phragmites on the wetlands, PSE&G has poisoned valuable marshland. Through the program PSE&G has applied over 22,000 pounds of herbicides to 2,500 acres of sensitive marshland. Phragmites reduction on these sites requires annual herbicide treatment. So once PSE&G's permit terminates and herbicide applications cease, these areas will likely be overrun by neighboring stands of phragmites.

### The End of “Feel Good” Environmental Projects

PSE&G has been given over a decade to carry out an alternative strategy to mitigate the impacts of Salem, but has failed to demonstrate the program is of any benefit to the environment and the people of New Jersey. The Salem experience proves that allowing industries to undertake “feel good” environmental projects — designed to create a façade of action rather than use existing and proven strategies to reduce environmental injury — is pure folly. The Clean Water Act requires facilities like Salem to minimize their adverse impact on the environment, not through mitigation, pretty press pictures or education but through concrete technological action.

When PSE&G convinced then-New Jersey Governor Christy Whitman to reverse a previous decision to require closed cycle cooling it was a political coup for the power industry nationwide. The power industry has spent the past decade green-washing the decision.

The Clean Water Act permit for Salem is once again up for renewal. New Jersey has an opportunity to issue a permit that will protect the Delaware Estuary ecosystem and to finally hold PSE&G accountable for the two decades of harm they have been inflicting and to send a message to the nation that the fish belong in the river. EPA must enforce the law and Salem, the largest predator in Delaware Bay, needs to be called to account.

on the Hudson also played a central role in the founding of Hudson River Fishermen's Association, which launched Riverkeeper and, ultimately, the international Waterkeeper movement.

From the 1950s through the early 1970s, five power plants were built within a 25-mile stretch of the rugged Hudson Highlands, which serve as a principal spawning ground for striped bass and many other species. These plants all use once-through cooling and collectively withdraw up to five billion gallons per day from the river. The Danskammer coal plant withdraws up to 455 million gallons per day, and on peak days the two nuclear reactors at Indian Point withdraw about 2.5 billion gallons from the river each day — twice the drinking water supply for all nine million people in New York City and nearby Westchester County. The Lovett, Roseton and Bowline power plants can withdraw an additional two billion gallons per day. These massive withdrawals kill more than a billion adult and juvenile fish, larvae and eggs each year. Indian Point alone destroys up to 20 percent of the year-class of a number of important species; on average, the power plants together kill 40 percent of the Hudson River's young striped bass population. The plants also discharge water at temperatures up to 34°F hotter than the river. Retrofitting these plants with closed-cycle cooling would reduce the water withdrawals and fish kills by 95 percent or more and drastically reduce the heated discharge.

When, in 1963, Con Ed applied for a license to construct the Storm King project, fishermen on the Hudson were already well aware of the massive fish kills at the Indian Point plant. Indian Point thus foretold the damage Storm King would cause. A visit to the plant by Art Glowka, one of the Hudson River Fisherman's Association's founders, revealed thousands of dead fish on the intake screens. Others had seen pictures of dead stripers piled twelve feet high at a Con Ed dump. Although state officials tried to conceal the photographs, Bob Boyle, Riverkeeper's first chairman, tracked down



IGER ARCHIVE COLLECTION

## Thermal Pollution

This 1988 thermal image of the Hudson River highlights temperature changes caused by discharge of 2.5 billion gallons of water each day from the Indian Point power plant. The plant sits in the upper right of the photo — hot water in the discharge canal is visible in yellow and red, spreading and cooling across the entire width of the river. Two additional outflows from the Lovett coal-fired power plant are also clearly visible against the natural temperature of the water, in green and blue.



WILLIAM ABRANOWICZ

## Storm King

A 20-year struggle to save Storm King Mountain (rising from the left bank of the Hudson River in this photo) is a cornerstone of the environmental movement, setting the stage for the long battle to stop the industrial intake of water and associated fish kills and ecological damage.



# Willing to Pay for Fish Alive

By Sharon Khan, Waterkeeper Alliance

▶ **SOME INDUSTRY** executives and White House officials argue that the vast majority of aquatic life destroyed in once-through cooling systems is of no significant economic value. They argue that because they are not recreationally or commercially sought after species they are not worth protecting. This view, however, simply does not hold water. These organisms that the White House calls “economically insignificant” in fact support commercial and recreational economies worth hundreds of billions of dollars in the United States alone.

What they may lack in size, phytoplankton, eggs, larvae and other tiny aquatic organisms make up for in importance. The public understands this and is willing to pay to protect aquatic life from wasteful and destructive once-through cooling. Industry and government should listen to the numbers.

EPA's own environmental economists have been proving for years that the value of microscopic aquatic life is indeed very significant. In 2005, EPA began work on a survey to estimate the public's willingness to pay to reduce impingement and entrainment at cooling water intakes. Seventy-four percent of participants in nationwide focus groups said they would pay between \$12 and \$54 per year to save aquatic life from death in cooling water systems not because they depend on it for their direct economic livelihood or recreational use, but simply for the benefit of knowing that it exists now and for future generations.

In February 2006, peer reviewers approved EPA's focus group studies and willingness to pay survey design, suggesting only minor corrections. The corrections required only a short turnaround time, but EPA stretched the delay. The study's recommendations were ultimately omitted from consideration in the agency's final Phase III regulations. The final rule from June 2006 reads, “EPA was unable to assign a monetary value that fully captured the value of avoiding the environmental impacts... because the necessary information was not available.” In fact, the information was readily available. EPA had delayed the results, sweeping the science that did not support their approach under the rug.

The focus groups had showed that Americans are willing to pay to correct this problem. Economic benefit, measured by “willingness to pay,” far exceeds the cost of implementing closed-loop technology for the 146 existing facilities that are covered under the Phase III regulations. EPA estimates the cost of the necessary upgrades to these plants at \$39 million dollars per year. So while Americans are willing to pay to protect our aquatic ecosystems, it would require less than 50 cents per household per year to move all the existing Phase III facilities to closed-loop systems. Once again the White House's fuzzy economics just don't add up.

the photographs and published them in an April 26, 1965 *Sports Illustrated* article entitled “A Stink of Dead Stripers.”

As Cronin and Kennedy explain, the carnage at Indian Point helped the Hudson River Fishermen and their allies make a compelling case against Storm King, which would have been a fish slaughterhouse twice as large. The 1980 Hudson River Settlement Agreement, hailed by *The New York Times* as a “peace treaty for the Hudson,” resolved the Storm King matter and was supposed to have set in motion a process to address the other power plants' impact on the river's fisheries. But to get Con Ed to permanently pull the plug on its Storm King proposal, the environmentalists and agencies agreed, at least temporarily, to relieve Con Ed and the other utilities from the obligation to build closed-cycle cooling towers at the five existing plants.

## Congress Mandates the “Best Technology Available,” EPA and States Balk

Prompted by the massive fish kills at Indian Point and other plants, Congress included a special provision in the 1972 Clean Water Act to address cooling water intakes. While most of the act focuses on discharges of pollutants into U.S. waters, section 316(b) covers withdrawals from those same waters. Under the law, EPA must require power plants to minimize adverse environmental impact from cooling water withdrawals. Congress placed mandatory time limits on EPA to develop and implement standards for cooling water intakes: 1974 for new facilities and 1977 for existing facilities.

In 1977, in a lawsuit filed by the utilities, a federal appeals court struck down EPA's first attempt at section 316(b) regulations due to procedural defects. EPA withdrew the regulation, and for more than two decades failed to propose any new cooling water intake regulations.

In the absence of national regulations, cooling water standards have been relegated to ad hoc determination by individual permit writers, typically state agencies, exercising their “best professional judgment.” This site-specific approach, which requires a complex assessment of the local marine ecosystem and fishery population dynamics to determine technology requirements, often takes many years — in some cases, more than a decade. Industry, which profits directly from stretching out these proceedings as long as possible, has taken advantage of biological uncertainty and used delay tactics to avoid technology upgrades. Further, in the absence of federal standards, states are under economic and political pressure not to raise environmental standards further or faster than surrounding states. Thus, for cooling water intake structures, unlike discharges of many pollutants,

an ineffectual site-specific approach has persisted for decades — on the Hudson and on waterways around the country.

Solving the problem would require strong citizen leadership and tireless capacity for litigation to force the federal government, states and, ultimately, power plants to abide by the law. Enter the Waterkeepers.

### **LITIGATION — Riverkeeper, Inc., et al. v. EPA: An Epic Tale in Three Acts**

In 1990, frustrated with EPA's and states' inaction and the long-standing regulatory vacuum, a coalition of Waterkeeper programs led by Hudson Riverkeeper notified EPA of its intent to sue the agency to compel it to issue cooling water intake regulations. In 1993, they filed suit in federal district court and, in 1995, EPA agreed to a court order requiring final action on regulations by August 2001. Later, after EPA reported that it could not complete the entire regulation by the deadline, the court order was modified to allow EPA to issue the federal regulations in three phases: Phase I would cover all new facilities proposing to use an intake structure; Phase II would cover existing power plants; and Phase III would cover existing factories. These regulations, if sufficiently stringent, would provide mandatory national minimums that all states would have to follow.

#### **Phase I: NEW PLANTS — Finally (after 27 years), a Federal Regulation... and More Litigation**

On December 18, 2001, more than 27 years after Congress's deadline, EPA finally published its Phase I Rule. At their core, the regulations established national intake capacity and velocity requirements for all new facilities based on closed-cycle cooling technology. However, the rule also included an enormous loophole: it allowed new facilities to install fish-killing once-through cooling systems, so long as they agreed to take other measures intended to "restore" the fish they killed. These so-called "restoration measures" were obviously a ruse, and a singular boon to industry, because habitat restoration is prone to failure and is rarely if ever intended to replace the number or variety of aquatic and marine animals killed by the plants.

Riverkeeper, other Waterkeepers and their allies filed a second lawsuit, this time in the U.S. Court of Appeals for the Second Circuit in Manhattan, to challenge the final Phase I rule. In February 2004, in a stunning rebuke to the Bush administration, a three-judge panel agreed that EPA had exceeded its authority from Congress by allowing power plants to choose the "restoration measures" option in lieu of installing technology to prevent fish kills.

As a result, all newly-constructed facilities must now install the best technology available to mini-

mize fish kills, and may not continue to slaughter fish on the quixotic hope that they can later "restore" those fish. But existing facilities continue to churn their fish-killing machines.

#### **Phase II: EXISTING PLANTS — OMB Sabotages Rule... and More Litigation Ensues**

On December 28, 2001, EPA submitted its draft Phase II proposal to the White House's Office of Management and Budget (OMB) for review. After many years of research, EPA's biologists and engineers — most of whom are career environmental professionals, not political appointees — proposed to require modern closed-cycle cooling technology for 60 of the country's largest power plants located on the most biologically productive estuarine and marine waters. But when the proposed rule emerged 60 days later, it included 58 major changes. Most significantly, the White House had removed the closed-cycle cooling requirement altogether and added a provision allowing a site-specific determination of permit requirements based on a cost-benefit analysis.

Few people know that in the Executive Office Buildings next to the White House, a small department of OMB known as the Office of Information and Regulatory Affairs or "OIRA" wields enormous power over every regulation issued by the federal government. With the authority to review major regulatory proposals of over 100 federal agencies, OIRA does the hatchet work for the administration. Bush's first head of OIRA was Dr. John Graham, an anti-regulatory zealot whose nomination barely squeaked through Senate confirmation. Once Dr. Graham and OIRA got hold of EPA's Phase II Rule, they gutted even the minimum protections EPA's staff had included. Instead, OIRA replaced it with a requirement to use technologies that are far less effective, such as fish return systems and fine mesh screens.

OIRA's stated purpose is to assess the costs and benefits of proposed regulations. But Congress charged EPA with minimizing environmental impact; cost-benefit analysis is not supposed to affect EPA's decision-making. Astonishingly, OIRA eviscerated EPA's proposal even after admitting that the benefits of protecting the aquatic bounty of our nation's fisheries outweighed the technology costs by at least several hundred million dollars.

The Phase II Rule requires existing power plants to reduce impingement by 80 to 95 percent and entrainment by 60 to 90 percent, clearly a major improvement over the status quo. But these wide and indeterminate ranges and the assorted loopholes and escape hatches EPA (under OMB's strict control) included in the rule undermine these requirements. For example, the rule again allows "restoration measures" to be used in place of pro-

Congress charged EPA with minimizing environmental impact; cost-benefit analysis is not supposed to affect EPA's decision-making.

# No Coincidence?

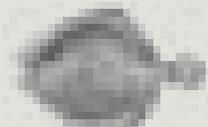
## Switch to Open-Cycle Cooling Causes Fish Population Crash

### The Death Toll

Average annual losses of fish eggs and larvae due to existing cooling water withdrawals at Brayton Point Station include:



**251 MILLION**  
Winter Flounder



**375 MILLION**  
Windowpane Flounder



**3.5 BILLION**  
Tautog

### Stealing the Bounty

Each year a million fishermen visit Narragansett Bay, helping generate \$2 billion for Rhode Island's economy from tourism and recreation. EPA estimates that the long-term increase to New England electric rates for switching the Brayton Point plant to closed-cycle cooling would range from \$0.03 to 0.13 per month to the average household.

By John Torgan, Narragansett Baykeeper

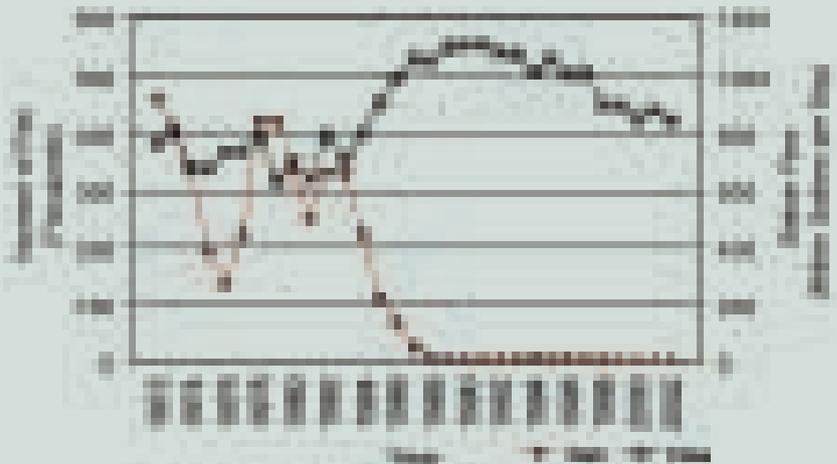
► IN 1985, the Brayton Point Station, in Somerset, Massachusetts, converted one of its generating units from closed- to open-cycle cooling, increasing water intake by 45 percent. Immediately, fishermen began to report troubling declines in the local fish stocks, calling the once productive Mount Hope Bay “a dead zone.” Studies later demonstrated that Mt. Hope Bay experienced an unprecedented fisheries decline resulting in a staggering 87 percent reduction in overall fish abundance and diversity.

Today, Brayton Point Station remains New England's largest and dirtiest power plant. Each day, the station withdraws nearly one billion gallons of water from the bay to cool its generators, then discharges it at temperatures of up to 95°F. Not only does this process warm the shallow waters of Mount Hope Bay,

Narragansett Bay's northeastern arm, it sucks in and destroys trillions of fish eggs and larvae each year.

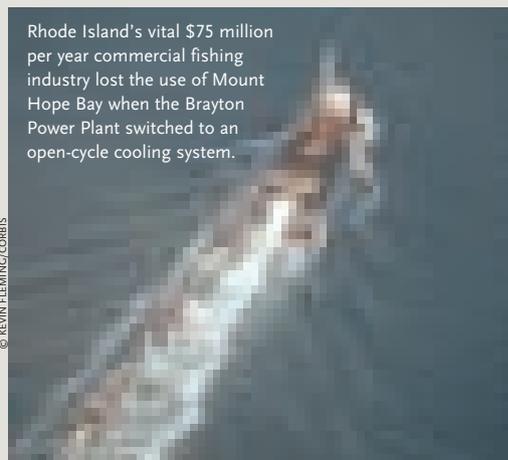
Ending Brayton Point's destructive cooling practices has been Narragansett Baykeeper's top priority for 15 years. Working with local partners, Baykeeper has fought Brayton through litigation, education and science — pushing EPA to issue a protective permit to end once-through cooling once and for all. In 2003, EPA finally issued a strong permit, requiring Brayton to install cooling towers and to reduce use of bay water by 94 percent. Brayton's owners unsuccessfully appealed this permit to EPA. Now the appeal is expected to continue in federal court. In the mean time, Baykeeper is working in partnership with Rhode Island's Attorney General, Conservation Law Foundation and other partners to force Brayton Point into compliance with the new permit as soon as possible.

Mount Hope Bay Winter Flounder Abundance and Flow versus Year



An 87% decline in fish populations was associated with the open-cycle cooling operation of the Brayton Point power plant.

Source: Rhode Island Division of Fish and Wildlife



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BROWN UNIVERSITY AND NASA

Mount Hope Bay, the northeastern arm of Narragansett Bay, is about seven miles long and two to three miles wide. This satellite image of surface water temperatures shows the signature of Brayton Point's discharge warmer purples and reds.

Rhode Island's vital \$75 million per year commercial fishing industry lost the use of Mount Hope Bay when the Brayton Power Plant switched to an open-cycle cooling system.

tective technologies — even though the court had invalidated that facet of the Phase I Rule.

Not surprisingly, the Riverkeeper-led coalition again filed suit — this time with New York Attorney General Eliot Spitzer, Rhode Island Attorney General Patrick Lynch and four other state Attorneys General joining them — and challenged the Phase II rule. The attorneys filed over 1,000 pages of briefing and argued the case for three hours to a three-judge panel on June 8, 2006. A decision is expected in the coming months.

### Phase III: EXISTING FACTORIES — Stillborn... and Still More Litigation

On November 24, 2004, EPA proposed a Phase III Rule covering existing manufacturing facilities, including those in the pulp and paper, chemicals, petroleum and coal products, and primary metals industries. The proposal was nearly identical to the Phase II Rule. It required impingement and entrainment reductions of 80-95 and 60-90 percent, respectively, and it was likewise riddled with loopholes.

Worse yet, when EPA published its final decision on Phase III regulations on June 16, 2006, the agency revealed that it had decided not to promulgate regulations for Phase III facilities after all. EPA's notice said that it had based the decision on its judgment that the "monetized" costs would be wholly disproportionate to the "monetized" environmental benefits. Once again, OIRA's economic voodoo and anti-regulatory agenda threaten to trump sound environmental policy. But this appeared to be the first time EPA had ever used a formal, monetized cost-benefit rationale to justify its failure to regulate.

EPA estimated that the Phase III regulations it proposed but failed to adopt would have prevented the loss of 98 million "age-1 equivalent" fish and more than four million pounds of fishery yields, annually. Because EPA lacks the statutory authority to base these regulations on monetized cost-benefit analysis and was unable to put dollar figures on the environmental benefits, its decision appears plainly unlawful. As a result, Riverkeeper's coalition again filed suit, this time seeking an order setting aside EPA's decision and compelling the agency to issue regulations for Phase III facilities, as required by section 316(b).

### Hopeful Signs East and West

The battle to protect fish from mass eradication in power plants and factories goes on, and while the federal government continues to obstruct progress, in a few quarters there may be light at the other end of the intake pipe.

In October 2003, EPA's Region 1, in close coordination with the states of Rhode Island and

Massachusetts, issued a Clean Water Act permit for the Brayton Point power plant in Narragansett Bay. The permit — as Narragansett Baykeeper John Torgan had long sought — requires the plant to reduce its water withdrawal by approximately 94 percent, from nearly 1 billion gallons a day to 56 million gallons a day. The company unsuccessfully appealed the permit, and the next stop will likely be federal court. If the permit is upheld, and Brayton Point upgrades four generating units with modern, closed-cycle technology as the permit requires, the Mt. Hope Bay fishery is expected to substantially recover.

Several years ago, Riverkeeper petitioned New York State to evaluate the long-dormant permit for the Danskammer and Indian Point plants and then filed suit, ultimately obtaining a court order requiring the state to issue new permits. In November 2003, the state issued a draft permit for Indian Point, which declared that the power plants switch to closed-cycle cooling as the best technology available. However, the permit failed to require actual cooling tower construction during its five-year term and indicated that construction of the towers would not be required until (and unless) the plant receives an extension of its Nuclear Regulatory Commission license in 2013. Riverkeeper is challenging this determination as well as the proposed new permits for the Danskammer, Roseton and Bowline plants, in each case seeking closed-cycle cooling retrofits.

Leading the charge towards eliminating the scourge of once-through cooling is, not surprisingly, California. In April 2006, with support of a coalition led by California Coastkeeper Alliance, two state agencies unanimously passed resolutions strongly discouraging the continued use of once-through cooling. In June 2006, the State Water Resources Control Board proposed a policy that would require California power plants using once-through cooling systems to either reduce intake flow to that commensurate with a closed-cycle recirculating system or reduce entrainment of all life stages of fish and shellfish by 90 percent by any combination of operational or structural controls. California Coastkeeper Alliance is working with the Water Board to improve and finalize its draft policy.

The fight to realize Congress's and the nation's goal of controlling industrial cooling water intakes is far from won. But in battle after battle Waterkeepers and our partners are taking on the government and the all-powerful industries who for 30 years have worked diligently to avoid obeying the law. And we simply will not stop until these lawbreakers take the necessary steps to ensure that fish are no longer killed by the billions. **W**

While the federal government continues to obstruct progress, in a few quarters there may be light at the other end of the intake pipe.

Reed Super is a Lecturer-in-Law at Columbia Law School and a Senior Clinical Staff Attorney in the law school's Environmental Law Clinic — he has led the Waterkeeper's legal team on cooling water for more than 6 years.

# Taking On “Once-Through Killing” In California

By Linda Sheehan and Angela Haren, California Coastkeeper Alliance

A 1995 study showed that biomass of macrozooplankton in waters off Southern California has decreased by 80 percent since 1951.



SANTA MONICA BAYKEEPER

## Appetite for Destruction

The nine power plants in Los Angeles suck in the equivalent of the volume of the entire Santa Monica Bay every 3.3 years.

Linda Sheehan is Executive Director and Angela Haren is Programs Manager for California Coastkeeper Alliance

▶▶TWENTY-ONE COASTAL power plants in California use environmentally devastating once-through cooling technology. Combined, these plants can withdraw up to 17 billion gallons of seawater — and the life it contains — every day.

But this summer, California's State Water Resources Control Board (State Water Board) proposed cooling regulations for existing facilities that offer new, stronger protections for aquatic life. California Coastkeeper Alliance spearheaded a broad coalition of groups to speak with a unified voice against the continued use of antiquated technology, including California Waterkeepers, national environmental groups like the Sierra Club and Surfrider Foundation, and environmental justice and fishing groups.

A major hurdle to responding to California's once-through cooling problems is that no single agency regulates the issue — various government agencies have authority over portions of the problem, but they rarely coordinate. The State Water Board implements federal Clean Water Act regulations, the State Lands Commission leases the land to most power plants and the Energy Commission licenses the plants. California Coastkeeper and its coalition worked closely with these and other agencies to educate them about the devastating impacts of once-through cooling, and provide extensive support for reasonable alternatives that protect both the environment and the reliability of our electricity supply.

California Coastkeeper also worked for a coordinated response by urging the newly formed California Ocean Protection Council and the State Lands Commission to actively address the harmful effects of once-through cooling. In April 2006, both the Commission and the Council adopted separate, unanimous resolutions to phase out once-through cooling, and implement stronger regulations in the interim. Through the resolutions, the top elected and appointed officials in the State — both Republican and Democrat — agreed that once-through cooling causes significant, ongoing, devastating impacts to California's coastal and estuarine ecosystems, and therefore should be phased out.



APPHOTO/PHIL KLEIN

The Diablo Canyon Nuclear Power Plant near San Luis Obispo, CA, pumps 2.5 billion gallons of water for cooling each day, returning warm foamy water into Diablo Cove.

These resolutions set the stage for the State Water Board's proposed policy on once-through cooling, introduced in July 2006. Once again, California Coastkeeper led the way to draft and present comprehensive comments on the proposed regulations. While State Water Board's proposed regulations fall short of phasing-out once-through cooling altogether, they are a significant step in the right direction — calling for the reduction of the entrainment and impingement of marine life by 90 and 95 percent, respectively. The State Board will consider adopting the policy in early 2007.

California has both the right and responsibility to move beyond the minimum standards outline in the federal Clean Water Act. California Coastkeeper and its coalition will continue to work to ensure that the outdated technology is phased out on a schedule that reflects the state's strong commitment to a healthy coast and ocean.

Power plant worker guiding the installation of a traveling fish screen at a seawater intake.



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# » the way FORWARD

» **TECHNOLOGICAL FIX?** Yes, actually. In the case of cooling water, resolve and engineering are all we need to solve the problem.

Since 1972, the Federal Clean Water Act has required that all plants relying on water for industrial cooling use the “best available technology” to minimize their environmental impact. Yet more than 1,000 existing power plants and factories nationwide still use antiquated and destructive once-through cooling systems.

Each time EPA has developed regulations to implement the law they have been stymied by the energy industry and, more recently, the White House. Meanwhile, more fish pile up in power plants and more aquatic life is boiled out of existence.

There is no reason that any industrial facility needs to draw huge quantities of water for cooling. Closed-cycle cooling has been standard technology on new power plants for decades.

Retrofitting existing plants to use this technology presents no major technical challenges. In fact, many older plants have already been retrofitted, slashing water use and ecological impacts by 95 percent or more. And some more innovative plants have stopped relying on nature altogether, using the effluent from wastewater treatment plants to virtually eliminate the fish kills or dependence on drinking water supplies. New plants can be designed to draw no water at all from rivers, lakes or oceans.

Americans in arid regions do not notice any difference in the electricity they are supplied using water efficient technologies. The cost of eliminating the impacts from cooling water is nominal, and economists have proven that Americans’ value their fisheries and are willing to pay.

This year a trillion fish will perish again in U.S. power plants. It’s time to stop the slaughter. **W**



# Modern Cooling Technologies Protect Fish



The Kendall coal-fired power plant in the arid north of South Africa consumes no water from surrounding waterways or groundwater.



A closed-cycle dry cooling system can be retrofitted onto any power plant or industrial facility — where space is a problem they can be designed to sit on the roof.

»»**POWER GENERATION** is a simple matter of spinning an inverted electric motor to generate electricity. Most power plants do this by boiling water. Water is heated in a boiler creating extreme pressure. Steam shooting from the boiler at very high speed turns a turbine that is attached to a generator. At the back end, the steam (now at low pressure) is sent to a condenser to cool back into water and recollect. The water must be very pure because any dirt or contamination in the steam could damage fast spinning turbine blades. So, the same water cycles continuously through this closed loop system. The colder the plant can make this water before returning it to the boiler, the more efficient the plant runs.

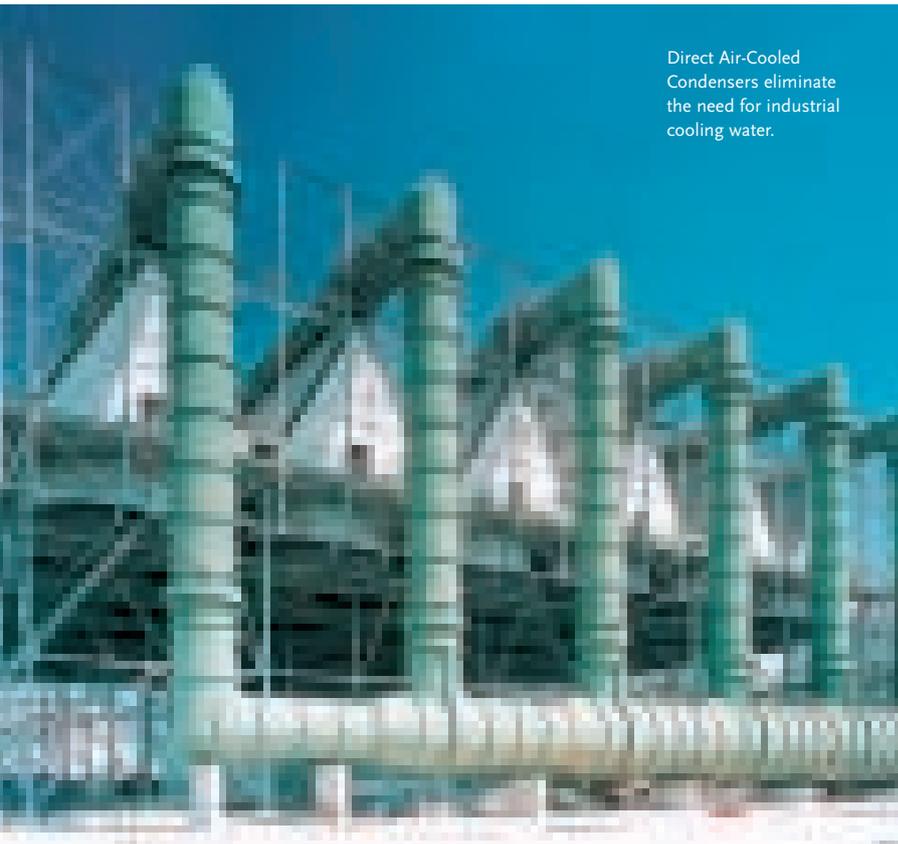
Cooling the steam without destroying the environment is the problem. But solving this problem is not much of an engineering challenge, in fact, the solutions are surprisingly low-tech. Fish kills can be drastically reduced or entirely eliminated with modern cooling technology. In this case, by ‘modern’ we mean technologies that have been in common use for the past 40 years or longer:

**Open-Cycle/Once Through Cooling.** The problem. Cold water is drawn from nature, used to cool the condenser and discharged as waste back into the waterway 15 to 34 degrees warmer.

**Closed-Cycle Wet Cooling.** Closed-cycle wet technologies are a vast improvement over once-through cooling. Cooling water is circulated through the plant to absorb heat from the steam in the condenser. But instead of being dumped into the environment it is piped to cooling towers where it is mixed with air. Evaporation cools the water and it is recirculated.

These systems are better, but they do still require water to replace evaporative loss and cause some thermal and chemical discharges to waterways. In all these systems cut water usage from open-cycle plants by 95 percent or better. If closed-cycle wet cooling isn’t the “best available technology” for cooling it is only because dry systems are even better.

**Closed-Cycle Dry Cooling.** Air cool systems work like car radiators, piping water through thin coils and blowing air over the coils to cool it. This system can be retrofitted onto any existing power or



Direct Air-Cooled Condensers eliminate the need for industrial cooling water.

SPX

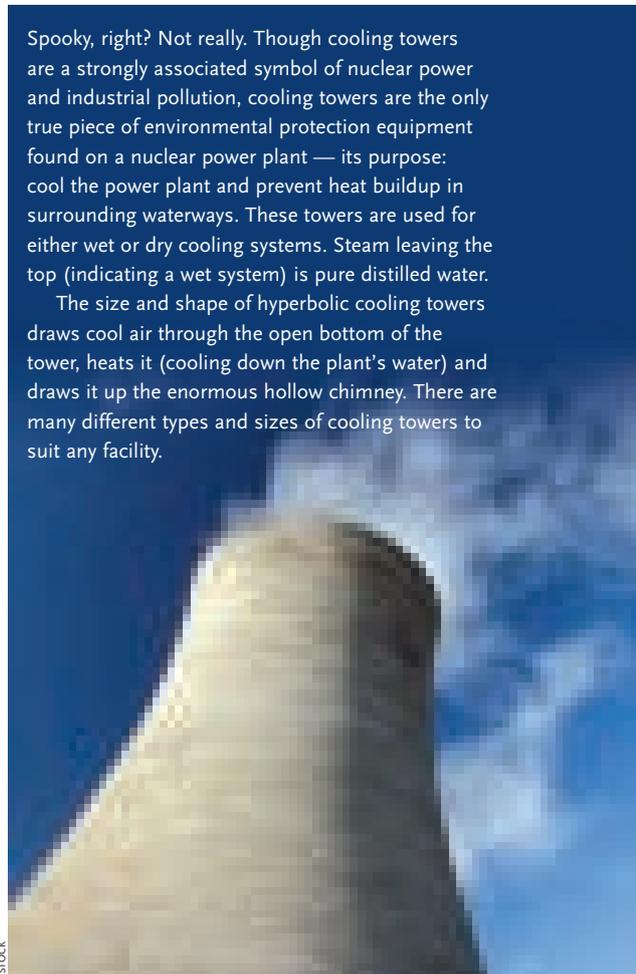


The impact of changing cooling technologies is huge: For every 10,000 fish killed by a once-through plant, 9,996 would be saved by dry cooling.

industrial plant, virtually eliminating the need for water and decoupling power plants from natural waterbodies.

**Direct Air-Cooled Condenser.** This is the most water efficient cooling system. It eliminates the need for cooling water entirely — circulating steam directly from the turbine into an air cooling system, then returning cooled water directly to the boiler. This system cannot be retrofitted onto existing plants because of the large pipes required. But this technology is being applied to new plants all around the world.

Dry-cooling technology was developed for sites without access to water. But new power plants are using the technology all over the country, not just for the many environmental benefits but because it reduces permitting time. Air-cooled technology is effective, reliable, affordable and available: More than 60 dry-cooled plants are currently operating in the U.S., 600 worldwide. **w**



Spooky, right? Not really. Though cooling towers are a strongly associated symbol of nuclear power and industrial pollution, cooling towers are the only true piece of environmental protection equipment found on a nuclear power plant — its purpose: cool the power plant and prevent heat buildup in surrounding waterways. These towers are used for either wet or dry cooling systems. Steam leaving the top (indicating a wet system) is pure distilled water.

The size and shape of hyperbolic cooling towers draws cool air through the open bottom of the tower, heats it (cooling down the plant's water) and draws it up the enormous hollow chimney. There are many different types and sizes of cooling towers to suit any facility.

WILLIAM BOYCE/CORBIS  
ISTOCK



# Keeping the Lights on Without River Water

By Captain Bill Sheehan, Hackensack Riverkeeper

## New Jersey and Reuse: Perfect Together

PSE&G's Bergen County power plant started life as a coal plant, later converted to oil and eventually to a high efficiency combined cycle natural gas plant. Natural gas is burned in jet engines to spin a turbine and generate power. These engines do not require water for cooling. However, waste heat from the motor is used to boil water, which is put through a separate steam turbine creating a second source of power. At the Bergen plant water in this secondary steam system comes directly from the wastewater treatment plant located across the Hackensack River.

»IN THE 1980s Public Service Electric and Gas Co. (PSE&G) operated an antiquated coal-fired power plant at the confluence of the Hackensack River and Overpeck Creek in Ridgefield, New Jersey. The plant was a notorious polluter.

In addition to the constant black plume of smoke, the plant also impacted the Hackensack River with its once-through cooling process. In those days, the plant pumped 500 million gallons of water daily from Overpeck Creek and discharged the heated water into the Hackensack.

Across the river sat the Bergen County sewage treatment works, treating the sewage from 45 municipalities in one of the most heavily populated regions in the U.S. The treatment plant discharged treated wastewater into the Hackensack directly across the river from the power plant.

In 1988, a fish swimming up the Hackensack River, when it got to the section of the river between Ridgefield and Little Ferry, NJ, would have

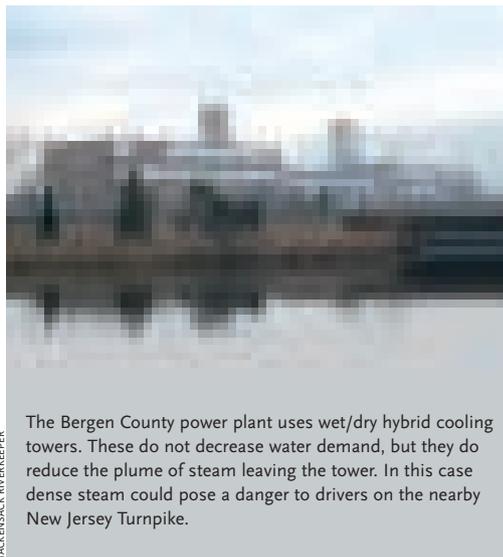
to swim through a curtain of superheated heated sewage. Oxygen levels hit the basement and fish kills were an annual event. American shad, striped bass, bluefish and menhaden, fish that live part of their lives in the ocean, had disappeared from the river. Today, they are back.

In the early 1990s, when the operating permits for the plant came up for renewal PSE&G decided to convert the facility to natural gas. The company also decided to install cooling towers and eliminate once-through cooling. PSE&G took the idea even a step farther, running a pipeline under the river to the sewage treatment plant and drawing treated wastewater to replenish water lost due to evaporation in the cooling towers.

The result has been a profound improvement in the Hackensack River. PSE&G's decision, however, was controversial among their peers. Many in the industry take the hard line that they must pollute to provide cheap energy. Energy production is a dirty business, but PSE&G has made an effort to do things right at the Bergen plant. They brag a lot about it, and they deserve to. This industry will never be white glove clean, but in this case PSE&G has been very responsible.

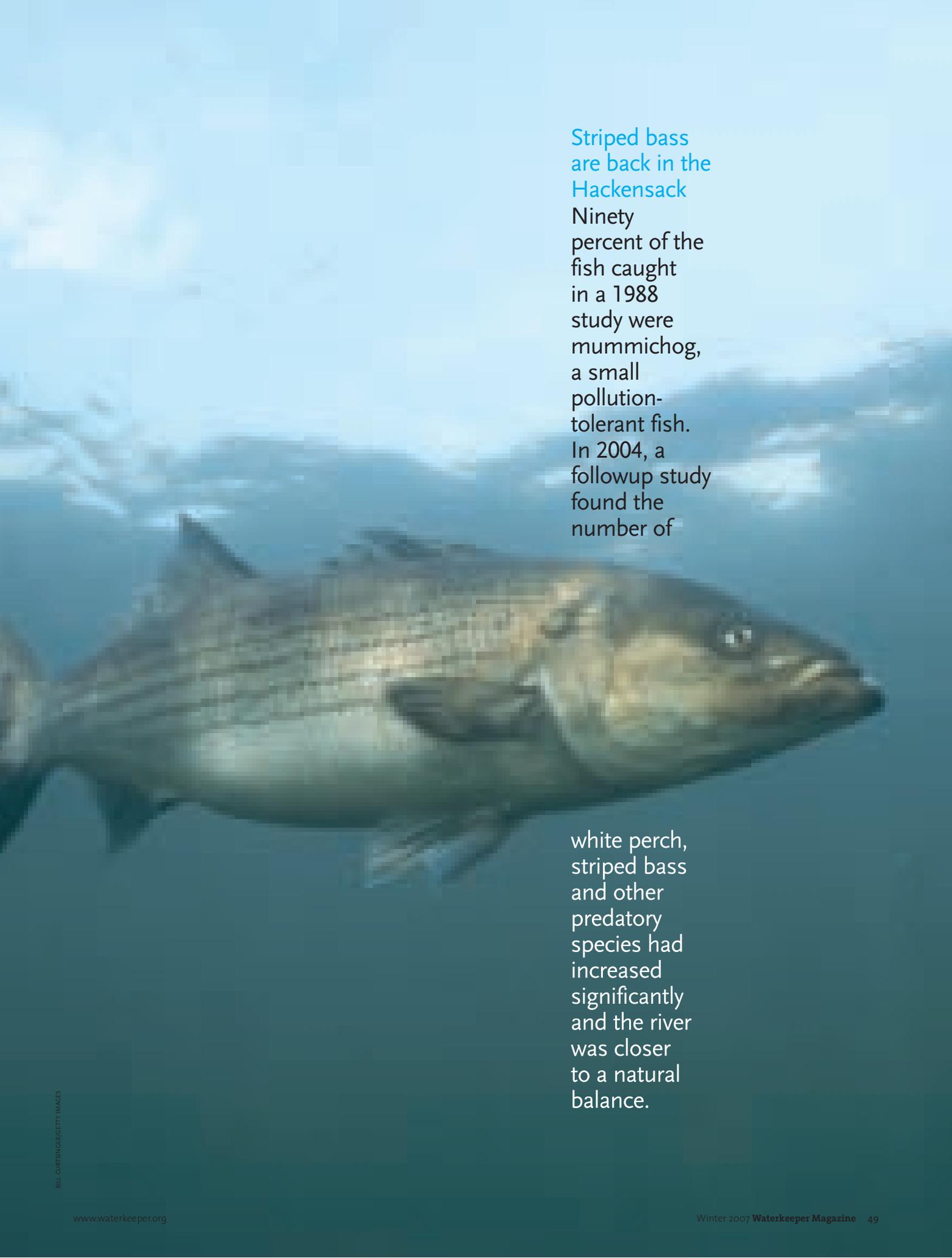
Let's be clear that PSE&G is far from perfect (see the story on page 38 on their Salem nuclear power plant.) However, as we move into the 21st Century, we should consider the forward-thinking approach taken by PSE&G at the Bergen Generating Facility and give credit where credit is due. When we can do that, then everyone should realize that we do not have to settle for outdated and outmoded technology. No waterway anywhere on this planet should be forced to bear the burden of pollution just to keep our lights lit.

If they can do it in Bergen County, New Jersey, then they can do it anywhere. And if their business model doesn't allow them to do it, they need to get a new business model. **W**



HACKENSACK RIVERKEEPER

The Bergen County power plant uses wet/dry hybrid cooling towers. These do not decrease water demand, but they do reduce the plume of steam leaving the tower. In this case dense steam could pose a danger to drivers on the nearby New Jersey Turnpike.

A large striped bass is shown swimming in clear blue water. The fish is positioned in the lower half of the frame, facing right. Its body is dark with prominent light-colored stripes. The background is a bright, clear blue sky with some light clouds. The overall scene is a natural, outdoor setting.

## Striped bass are back in the Hackensack

Ninety percent of the fish caught in a 1988 study were mummichog, a small pollution-tolerant fish. In 2004, a followup study found the number of

white perch, striped bass and other predatory species had increased significantly and the river was closer to a natural balance.

# New York Harbor School

EDUCATION BY LAND, MOSTLY BY SEA

By Evantheia Schibsted | Photos by Giles Ashford



Looking at an oversize New York City subway map and a list of science vocabulary posted at the front of the classroom, a few dozen freshmen at Brooklyn's New York Harbor School prepare for a day on nearby Newtown Creek, one of the nation's most polluted waterways. The students plot out which subway lines will get them there (take the L to the G). They jot down definitions to new vocabulary words (tributary, remediation, plume). They call out answers as their teachers, Ann Fraioli and Shane Riordan, pepper them with questions: What boroughs does Newtown Creek border? What large river does it flow into? Who still needs lunch tickets?

**G**arbed in the school's casual uniform of dark blue T-shirts, polo shirts or sweat-shirts printed with the school's name, the students watch intently as Principal Nate Dudley enters the room. With a no-nonsense confidence, he reminds them how important the harbor-science course — which takes a group of ninth graders out for a daylong 'classroom' on a local body of water once every two weeks — is to their school.

"Remember, this class is the heart and soul of the Harbor School," he says. "This is how we make our theme come alive." Then he reiterates a mantra voiced by all the school's educators: "I expect great things of you."

That two-pronged message — unfaltering belief in students and in water as a powerful learning environment — permeates every aspect of this public high school located in Brooklyn's working-class neighborhood of Bushwick.

That message appears to have gotten through.

### Setting Sail

"At my old school, teachers didn't care or expect anything from you," says Lianna Alvarez, a soft-spoken sophomore. "Here, teachers are on you. They make you believe that in the future, you can be somebody." Alvarez says she's considering becoming a lawyer so she can "help people in rough times."

Edny Munoz says he finds his on-the-water classroom a more relevant means of discovery than merely sitting at a desk in school. "Before, I didn't know what an estuary is or that you can eat fish from the Hudson," he says.

It's this sort of testimony Murray Fisher

hoped for when he cofounded the New York Harbor School three years ago. A graduate of Vanderbilt University, he worked for a year at Hudson Riverkeeper.

"I learned more in that year than in all four years of college," recalls Fisher. "I learned about the history of the river, about every fish and their life cycles, hydroengineering, power plants and nearby cultures and their communities."

### Swimming Upstream

Fisher then worked for Waterkeeper Alliance. There, he saw lives transformed around the country through hands-on water-related work. He remembers receiving a life-changing letter from a 12-year-old expressing the desire to be a Riverkeeper for a stream near his home in Austin, Texas.

"That letter will always stick with me," says Fisher. "He wrote, 'What drives me crazy is that all these people who are making decisions about this water won't have to live with it as long as me. Why can't we kids be involved with making these decisions?'"

That letter helped fuel Fisher's idea of starting a school that would give kids, especially those from urban communities, access to water. He ran his idea by Richard Kahan of the Urban Assembly, a nonprofit organization committed to creating small public schools in under-served areas of New York City. Kahan told Fisher about New Visions for Public Schools, an education-reform group that helps fund small, theme-based schools in New York City. That group helped secure funding from the Bill & Melinda Gates Foundation, George Soros' Open Society Institute and the Carnegie Corporation of New York to make his dream a reality.



## New Tenant for Governors Island

Governors Island, at the southern tip of Manhattan in the New York Harbor, has been home to Lenape Native Americans and Dutch Settlers, who in 1620 spent their first winter in the New World there. From 1776 to 1996 the island served as a military outpost. This spring, after accepting title to the island from the Coast Guard, the Governors Island Preservation and Education Corporation reached an agreement to give the 172-acre island its first civilian tenant in two centuries — The New York Harbor School.

The Harbor School's 400 students grapple with mathematics, English, social studies and science through the prism of ships and the sea. Some of this learning takes place in the classroom. But much of it takes place on the water. Students will be actively involved in the design and restoration of the historic buildings that will house the school starting in 2008.

“The youth of New York City have a right to use and learn from the biggest and richest thing around them, New York Harbor.”

*Murray Fisher*

Since opening with a freshman class in fall 2003, the Harbor School has added a grade each year. Today it has 310 students; by spring 2007, when its first senior class graduates, it anticipates a student body of 400.

**On the Water**

“The youth of New York City have a right to use and learn from the biggest and richest thing around them, New York Harbor,” says Fisher. “We’re trying to assert that right and to really give ownership over the harbor to these kids. A lot of responsibility and learning comes with that ownership.”

The school immerses students in hands-on nautical courses such as the harbor-science class. Math, history and English classes also revolve around a maritime theme whenever possible.

Integrating this theme poses a challenge for Melissa Jones, who is head of Harbor’s English Department and the school’s literacy coach. “It’s been difficult,” Jones says. “Our population is not necessarily drawn to the school because of the maritime theme. Lots of them come because it’s the school in their neighborhood. And they come from failing schools.”

Though her students’ reading skills limit the water-themed books Jones can teach (*Moby-Dick* isn’t possible yet), she manages to create relevant lesson plans. For instance, her tenth graders chose a Waterkeeper program as part of a pen pal program. Eventually, the correspondence became part of a website that the kids created. For her ninth-grade class she divided students into two teams to debate who should clean up PCBs in the Hudson River, General Electric versus Riverkeeper.

**South Street Seaport, Urban Assembly and Waterkeeper Alliance are founders of the New York Harbor School.**

Built in 1893 at Essex, MA, the *Lettie G. Howard* is a type of fishing schooner once widely used along the Atlantic seaboard from Maine to Texas. After an active life in the fisheries of the Atlantic and Gulf Coasts, the Lettie, was sold to the South Street Seaport Museum in 1968 and designated a National Historic Landmark in 1988. Today, she is restored to her original 19th century appearance and fitted out to accommodate trainees on educational cruises.





By emphasizing a water-oriented curriculum, the Harbor School isn't necessarily trying to produce environmentalists, boat builders or shrimpers per se. Instead, the school's educators aim to instill in their students the confidence and skills to navigate and achieve life goals, beginning with a college education.

Such an aspiration is a challenge at the school, where up to 90 percent of students in the inaugural class entered with reading and math skills below grade level. But so far, they have met their goals. On the New York State Regents Exams, 79 percent passed math, and nearly that many aced living-environment science, global history and geography. With this passage rate, Fisher anticipates that up to four-fifths of Harbor's first senior class will graduate in 2007 and, hopefully, go on to college.

"We're going to have an awesome day today," says Ann Fraioli as the students pack up for their Newtown Creek adventure. Fraioli, 29 years old, typifies many Harbor School teachers. Most of the 30 teachers are in their twenties and thirties and hail from universities such as Yale, Michigan and Barnard. They also boast maritime expertise, from a captain out of Vancouver to a Cape Cod lobsterman.

During the subway ride, student Alex Jones shares the course he's charting for his life with a clarity, maturity and discipline far beyond his 15 years. He explains that he saw an ad in the news-

paper about the shortage of recruits for the New York Police Department's Harbor Unit and decided that is where he wants to work. For him, the Harbor School seems perfect. "I didn't have access to the harbor like this before," he says. "Lots of kids don't." On Saturday morning, Jones says, he'll get up around 5:30 so he can feed his cat before joining his Harbor School sail-certification class on a 34-foot sloop.

At the water's edge in the Brooklyn neighborhood of Greenpoint, groups of students rotate through three stations. One tests the quality of water, another writes entries in their field journals about Newtown Creek, and the third group boards the motorized scientific-research vessel the Big G. During the ride, Fraioli points out significant sites, including the large, egg-shaped domes of a sewage-treatment plant, and an array of ExxonMobil oil tanks, the site 50 years ago of the largest underground oil spill in any North American city. Students, meanwhile, point to sewer overflow pipes, demonstrating the same zeal with which other teens might gawk at UFOs.

The attitude of excitement and level of engagement are impressive. Perhaps Fisher sums it up best: "Public education in New York is still not out of crisis mode. Combine that with environmental issues and it seems like we're right in the middle of the most important stuff going on. I wouldn't want to be anywhere else." **W**

Above left: This day's crew prepares for class on board the *Lettie G. Howard* with New Jersey to port, Manhattan aft.

Above right: Plotting a course up the Hudson River.

Evantheia Schibsted is a writer whose articles have appeared in *Business 2.0*, *The New York Times*, and *Wired*.

## Local Government Takes Environmental Law

# Into Their Own Hands

An unprecedented county ordinance gives a local sheriff the right to enforce state and federal environmental laws.

By Stephen Henshaw

Lake County, Indiana has a long history of heavy industry. Located 30 minutes from downtown Chicago on the Lake Michigan shoreline, the cities of Gary, East Chicago and Hammond struggle to restore brownfield sites and protect unique dune and swale wetlands, marshes and miles of sandy beaches. Unfortunately, companies have relocated, packed up and shipped out, with everything but the pollutants and hazardous wastes left behind. While effective environmental laws exist in the books, they are not strongly enforced. But since the passage of the Lake County Ordinance, authorities that traditionally fight crime and violence are now also enforcing state and federal environmental laws.

“If businesses or individuals pollute the environment, we’re going to prosecute them,” says Lake County Sheriff Roy Dominguez, who created the nation’s first local Environmental Crime Task Force. The Task Force, staffed by detectives, technical experts and environmental attorneys, is armed with a county ordinance that gives the sheriff the authority to enforce state and federal environmental laws. Fines and settlements go into the Lake County Environmental Enforcement Fund, which pays for environmental investigations, cleanups and prosecution costs. Since May 2006, Dominguez’s Task Force has investigated and prosecuted operators of auto salvage yards, defunct refineries, abandoned landfills and companies illegally dump-

ing hazardous wastes, filling the gap between state and federal laws that have allowed polluters to flee without penalty.

### Automobile Salvage Yards Targeted

Lake County has over 100 licensed automobile salvage yards. This is not incidental; the county is also home to two of North America's largest integrated steel mills, which use large quantities of scrap metal. While these salvage yards prosper, most of them are not inspected regularly, and are spattered with piles of old tires and illegal containers of waste oil that contaminate soil and groundwater. Before the ordinance, the only way to remediate the sites was to wait for priority status from state and federal authorities alongside 96 other Indiana counties. But the Environmental Crime Task Force has made the investigation, prosecution and cleanup of these sites a priority, and is transforming Lake County through cleaner waterways, reduced toxic pollution and environmentally responsible businesses.

### Former Hazardous Waste Plant Must Settle

For years, in Gary, Illinois, Berry Oil Refinery left behind a river of floating petroleum only to be inherited by Conservation Chemical Co. to process hazardous wastes. The defunct site is now slated to be part of the main runway at Gary-Chicago International Airport. EPA investigated the site in the early 1990s and forced a partial cleanup of the site. But federal Superfund laws contain loopholes for petroleum companies. For years, floating oil continued to migrate into surface waterbodies – until this May when the Task Force required former owners to provide information on their history, waste management practices and capacity to fund environmental cleanups. Today, the Task Force is in settlement discussions with the parties responsible and expects to recover all costs associated with cleaning up the site.

### EPA Steps Up to Assist County Task Force

The 40-acre Feddeler Landfill reportedly disposed of hundreds of drums of hazardous waste and has

long since been abandoned. The site poses a threat to community drinking water supplies. In September 2006, the Task Force, in conjunction with the Lake County Solid Waste Management District, conducted interviews, demanded information from companies believed to have disposed of hazardous waste and collected samples of contaminated sediments and water. EPA recently joined with the Task Force to initiate a comprehensive site investigation parallel to Sheriff Dominguez's enforcement actions. The County Commissioners have worked with the Task Force to fund the installation of a fence around the landfill to protect unsuspecting hikers and hunters. The Task Force expects to either recover all costs associated with the investigation and site closure, or to compel responsible parties to undertake the closure.

### How the County Ordinance Works

The Lake County Ordinance, passed unanimously by the Lake County Council, is a cornerstone in efforts to revitalize blighted industrial sites. The ordinance gives the Sheriff's Department the authority to inspect abandoned and operating sites to determine if hazardous substances have been released, to collect environmental samples from any property, to send out information demand notices to parties, to issue violations on behalf of the county and to prosecute and compel payment of costs incurred.

Now Lake County can effectively enforce state and federal environmental laws and hold liable those parties that pollute. Local governments throughout the U.S. have the same ability as Lake County to pass an environmental protection ordinance that enables them to take control of their natural resources and to create a fund that will keep monies local. As Sheriff Roy Dominguez notes, "This ordinance not only protects public health and preserves our environment, it gives local government the ability to target those parties that caused contamination, but left their mess behind in the form of brownfields, blight and polluted waterways." **W**



**"If businesses or individuals pollute the environment, we're going to prosecute them."**

*Lake County Sheriff  
Roy Dominguez*



People seem to respond more promptly to the sheriff than to regulatory agencies – it helps the public understand pollution as a law enforcement problem, and polluters as law breakers.

Author Stephen Henshaw is Program Manager for the Lake County Environmental Crime Task Force, and is also CEO of EnviroForensics and PolicyFind, an insurance firm that helps fund environmental cleanups.

WATERKEEPER PROGRAMS

Cook Inletkeeper, AK  
Prince William Soundkeeper, AK

Columbia Riverkeeper, WA  
North Sound Baykeeper, WA  
Puget Soundkeeper, WA

Tualatin Riverkeepers, OR  
Willamette Riverkeeper, OR

California Coastkeeper Alliance, CA  
Humboldt Baykeeper, CA  
Inland Empire Waterkeeper, CA  
Klamath Riverkeeper, CA  
Orange County Coastkeeper, CA  
Russian Riverkeeper, CA  
Sacramento-San Joaquin Deltakeeper, CA  
San Diego Coastkeeper, CA  
San Francisco Baykeeper, CA  
San Luis Obispo Coastkeeper, CA  
Santa Barbara Channelkeeper, CA  
Santa Monica Baykeeper, CA  
Ventura Coastkeeper, CA

Colorado Riverkeeper, UT  
Great Salt Lakekeeper, UT

Black Mesa Waterkeeper, AZ

Alamosa Riverkeeper, CO  
Animas Riverkeeper, CO

Kansas Riverkeeper, KS

Grand Riverkeeper, Oklahoma, OK

Galveston Baykeeper, TX

# Waterkeeper Programs United States

On 156 waterways around the world local Waterkeepers are on patrol, standing up to polluters and enforcing our right to clean water.





Canadian Detroit Riverkeeper, ON

Georgian Baykeeper, ON

Lake Ontario Waterkeeper, ON

Ottawa Riverkeeper, ON

Thunder Baykeeper, ON

Fraser Riverkeeper, BC

Bow Riverkeeper, AB

Fundy Baykeeper, NB

Petitcodiac Riverkeeper, NB

Grand Riverkeeper, Labrador, NFL

La Paz Coastkeeper, Baja California Sur, Mexico

Magdalena Baykeeper, Baja California Sur, Mexico

Punta Abrejos Coastkeeper, Baja California Sur, Mexico

Rio Hondo Riverkeeper, Quintana Roo, Mexico

Puerto Rico Coastkeeper, Puerto Rico

Vieques Waterkeeper, Puerto Rico

Hann Baykeeper, Senegal

Cartagena Baykeeper, Cartagena de Indias, Colombia

Colombian Amazonia Waterkeeper, Bogota, Colombia

Meta Riverkeeper, Casanare, Colombia

Choqueyapu Riverkeeper, La Paz, Bolivia

# Waterkeeper Programs Around the Globe



London Canalkeeper, London, England

Morava Riverkeeper, Brno, Czech Republic

- Acheron Riverkeeper, Alexandra, VIC, Australia
- Avon Riverkeeper, Sale, VIC, Australia
- Barwon Riverkeeper, Geelong, VIC, Australia
- Benalla Lakekeeper, Benalla, VIC, Australia
- Derwent Riverkeeper, Bagdad, TAS, Australia
- Lang Lang Riverkeeper, Yannathan, VIC, Australia
- Mimosa Rocks Coastkeeper, Tanja Lagoon, NSW, Australia
- Moreton Baykeeper, Brisbane, QLD, Australia
- Safety Beach Coastkeeper, VIC, Australia
- Snowy Estuarykeeper, Marlo, VIC, Australia
- South Beach Wetlandskeeper, Port Fairy, VIC, Australia
- Upper Lang Lang Creekkeeper, Poowong East, VIC, Australia
- Upper Hunter Waterkeeper, Scone, NSW, Australia
- Waterkeepers Australia, Carlton, VIC, Australia
- Werribee Riverkeeper, Melbourne, VIC, Australia
- Yarra Riverkeeper, Fairfield, VIC, Australia
- Yarriamback Creekkeeper, Warracknabeal, VIC, Australia

- Upper Betwa Riverkeeper, India
- Lower Betwa Riverkeeper, India
- Ganga Riverkeeper, Upper Basin, India
- Ganga Riverkeeper, Mid-Upper Basin, India
- Ganga Riverkeeper, Mid-Lower Basin, India
- Ganga Riverkeeper, Lower Basin, India
- Upper Ken Riverkeeper, India
- Lower Ken Riverkeeper, India
- Yamuna Riverkeeper, Upstream Basin, India
- Yamuna Riverkeeper, Mid-Upstream Basin, India
- Yamuna Riverkeeper, Mid-Downstream Basin, India
- Yamuna Riverkeeper, Downstream Basin, India





## CHAPTER FIVE Sirena

By Rebecca Northan



Startled, Kai jumped back from the water's edge and stared in disbelief as the head of a girl emerged from the spot where he'd been about to drink! The girl had long green hair that fell in tangles around her face. Her skin was as pale as moonlight, and she was staring at him with large, brown eyes. Kai was speechless.

"Who sent you," the girl demanded. "What do you want?"

Her suspicious tone snapped Kai out of his stunned silence. "No one sent me," Kai stammered. "I just wanted a drink of water. Someone stole my water-skin and... Um, my name's Kai," he said and held out his hand.

The strange girl was not impressed. "You're lying, Kai. Someone sent you — or you'd never have found this cave on your own. Where is my family?!"

Kai was completely baffled, not only by the appearance of this green-haired girl in the water, but also by her mysterious accusations. How should he know where her family might be? All he wanted was a drink of clean, cool water to quench his thirst... Water that this girl seemed to have no trouble moving around in even though her arms were clearly not involved in the process — they were crossed angrily over her chest while she darted back and forth in the water in front of Kai. Suddenly, a stone whizzed past Kai's ear!

"Hey! I asked you a question," the girl yelled as she scooped up another stone from the water's edge and took aim at Kai's head.

"Wait!" Kai exclaimed, "I'll tell you everything — just don't throw that rock! I already have one goose egg, I don't need another." Kai sat down on

a small boulder and told the strange girl everything that had happened in the last three days — the mysterious poisoning of the Great River, his quest for the Waterkeeper, the woman he had tried to help in the forest only to have been hit over the head and robbed, and how finally his dragonfly necklace seemed to have come to life and led him to this cave in search of clean water to drink. By the time Kai had finished his tale the girl's hostile attitude seemed to have brightened considerably.

"Why didn't you tell me you were Nixe?" the girl squealed.

"I'm not," Kai blurted, "I don't even know what that is."

"Like me!" The girl giggled as she dove sideways into the water revealing a long, shimmering TAIL! Kai caught his breath — a MERMAID! His Noni had told him stories, but Kai had never thought them true, only fairy tales. And yet, here was a real, live mermaid right in front of him!

"I'm Sirena," she said holding out her hand at the water's edge. "Don't look so surprised. You wouldn't have an Odonata around your neck if you didn't have some Nixe in you somewhere," she said brushing back her hair and revealing a similar dragonfly hanging around her own neck!

"Where did you get that?" Kai asked. "Mine was a gift from my grandmother."

"Well then, your grandmother is a mermaid," Sirena surmised. "We all have them. The Odonata have always helped the Nixe to find freshwater in times of trouble. With the state of the Great River, I was glad to have mine with me," she said rubbing her dragonfly between her thumb and forefinger.

"I'm quite certain my Noni is NOT a mermaid," Kai stated firmly. "I think I would know something like that. She didn't tell me where she got the... O-dan-ata from when she gave it to me, maybe she found it along the river."

"Doubtful that she found it," Sirena frowned. "But, then, who knows?! All sorts of strange things have been happening lately." Her face clouded over.

"You said something about your family being missing?" Kai prodded gently.

Sirena bobbed in the water. "Yes. We live in the Great River, not far from here. My mother, my father, and my older brother went to catch fish...and they never came back. A few days later the blackness came down the river and was making me sick, so I had my Odonata help me find this freshwater cave."

"You think someone was involved in their disappearance?" Kai asked.

"When I went to check our fishing nets, all I found were these." Sirena held out her hand, and in it — a set of silver hand-shackles! "Will you help me Kai?" **W**

*Stay tuned for the next chapter in Spring 2007.  
Ideas for the story? Contact editor@waterkeeper.org*



Author Rebecca Northan is an actor and director. Read previous installments of *Waterkeeper's Wake* online at [www.WATERKEEPER.org/Wake](http://www.WATERKEEPER.org/Wake)

# In the Navy Part 1

By John Farr



BILL ABRAMOWICZ

The film's other star roves through the sub fluidly, never allowing the viewer a breath of escape or boredom.

This continuing series on films relating to our most precious resource, the earth's water, has to include the rich sub-genre of navy movies. Throughout history, sea power has shaped the power of nations in wartime and in peace.

Over the years, a slew of outstanding navy-themed films have furnished us with a variety of salty celluloid adventures worth catching. My first installment follows:

**Mutiny On The Bounty** (1935): In late 18th century Great Britain, sadistic Captain Bligh (Charles Laughton) commands the HMS Bounty on a long voyage to Tahiti. When Bligh's cruelty to his crew goes beyond reasonable limits, second-in-command Fletcher Christian (Gable) faces the fateful decision of whether to seize control of the ship. MGM's adaptation of the famous Nordhoff/Hall book is given top shelf treatment here, with a sneering Laughton the definitive Bligh, and the studio's biggest star, Gable, playing Christian with gusto (and, notably, without either a British accent or his trademark mustache). But never mind — this is still grand, sweeping entertainment, suitable for the whole family. And Laughton is truly brilliant.

**They Were Expendable** (1945): This is the story of the PT boats in the tough, early days of World War II in the Pacific. Skipper John Brickley (Montgomery) and his right hand man, Rusty Ryan (Wayne), have difficulty convincing the navy brass of the PTs' value to the war effort. They must work to prove it, and do. Eventually, these nimble craft will play a vital role in turning the tide in the Pacific, allowing General MacArthur to fulfill his famous promise to return there in glory. Director John Ford delivers a powerful human tale of faith and hope sustained during the darkest days of the war for the Allies. Montgomery (father of Elizabeth from TV's "Bewitched," and an actual decorated PT boat captain) is superb as the embattled but stoic Brickley, and the Duke is also in fine form as Ryan. Donna Reed makes for a bewitching love interest as the nurse who falls for Rusty. One of Ford's more under-exposed gems.

**The Caine Mutiny** (1954): Based on Herman Wouk's sprawling novel, this film centers on the neurotic, inflexible Captain Queeg (Humphrey Bogart), a career naval officer whose men relieve him of command when Queeg supposedly falters in guiding his ship through a perilous typhoon. Once on terra firma, Queeg ensures the men get court-martialed for mutiny, and as the trial progresses, the sad truth is gradually revealed. But is justice really done? Edward Dmytryk's stunning

production remains one of our best war films and (incidentally) courtroom dramas. A trio of outstanding performances distinguish it: an Oscar-nominated Bogart in one of his best turns as the embattled Queeg; Jose Ferrer, who almost steals the picture as whip-smart defense lawyer Barney Greenwald; and finally, Fred MacMurray, poignant in the unsympathetic part of a cowardly Lieutenant. All hands on deck for this one.

**Mister Roberts** (1955): Adapted from Joshua Logan's Broadway hit, this service drama tells of Lt. Doug Roberts (Henry Fonda), an officer on a WWII cargo ship, desperate to see action, who instead has to cope with irascible, by-the-book Captain Morton (Cagney). Roberts is frustrated by life aboard the SS "Reluctant," but thankfully Ensign Pulver (Jack Lemmon) — "in charge of laundry and morale" — is on board to provide him and the crew with much-needed laughs and sympathy. Returning to the big screen after an eight-year absence, Fonda successfully recreated his indelible stage role in "Mister Roberts" under the initial direction of John Ford, replaced by Mervyn LeRoy when Ford and Fonda literally came to blows just weeks into shooting! Young Lemmon must have been humbled by the cast line-up for this film: Fonda, Cagney, and the legendary William Powell (as a philosophical ship doctor) all on the same boat! Yet his manic energy was ideal for Pulver, winning Lemmon that year's Best Supporting Actor Oscar. Also notable as Powell's last screen appearance.

**Das Boot** (1981): Chronicling one German U-Boat's perilous search-and-destroy mission as the tide has turned toward the Allied cause in the Second War, Wolfgang Peterson's brilliant "Das Boot" has a claustrophobic immediacy. We observe the tense faces of young, inexperienced men doing their duty, most of whom realize that even if they cheat death, Germany's defeat is inevitable. Originally a 210-minute German mini-series edited down to feature length, "Boot" is haunting and works as an anti-war piece precisely because it is seen from the losing side. German actor Jurgen Prochnow turns in an intense portrayal of the boat's desperate captain. The film's other star—director Peterson's camera—roves through the sub fluidly, never allowing the viewer a breath of escape or boredom.

Check in next time for my second batch of high-ranking Navy films on DVD, and till then, smooth sailing. [W](#)

For more ideas on great movies on DVD visit [www.bestmoviesbyfarr.com](http://www.bestmoviesbyfarr.com)

# On The Water

William Buck

William Buck is a resident of Hawaii and an active underwater photographer. He photographs marine life in its natural environment and scenic images of the Hawaiian Islands. His photography can be viewed at [www.pacificpinnacles.com](http://www.pacificpinnacles.com)





# (((((( Beating Around the Bush )))))))

## Welcome to Beating Around the Bush where firing ranges are safety zones, wetlands are bulldozed to speed flood recovery and, sometimes, pesticides are no longer pollutants

### 1. Live Fire Safety Zones

The Bush administration proposed 34 permanent “safety zones” throughout the Great Lakes where the Coast Guard would conduct live fire training, putting the public and the environment at serious risk. The administration named the firing areas “safety zones” to sidestep legal requirements to review the human safety and environmental impacts of the plan.

Coast Guard vessels are increasingly being outfitted with 50- and 60-caliber machine guns and shoulder-fired rifles. Crews would fire thousands of rounds of ammunition that would end up in the Great Lakes. Spent bullets contain lead and other toxins that contaminate water and sediment and make its way into the food chain. The plan also posed a major public safety concern as unsuspecting boaters might stray into firing zones. Public notification on where and when firing exercises would occur was grossly inadequate under the proposal.

Waterkeeper Alliance submitted strong comments in opposition and on December 17 the Coast Guard bit the bullet and pulled its irresponsible plan.



### 2. Permission to Destroy Wetlands in Mississippi

In the wake of Hurricanes Katrina and Rita, the Army Corps of Engineers has announced a new policy to allow developers to bypass long-standing permit requirements to destroy wetlands. This proposal is misguided and the Corps should be focusing on restoring the Gulf Coast’s wetlands for protection against future storms. The Corps’ proposal would allow property owners and developers to skirt the conventional permit process for projects that fill up to five acres of certain wetlands in the Mississippi’s six southernmost counties. Worse, the proposed policy eliminates the requirement for public notification and involvement in such projects.

Wetlands are vital for capturing storm-water and slowly releasing it back into streams and aquifers. Wetlands are a hot topic all along the hurricane-ravaged Gulf Coast. Not only was the flooding exacerbated by the extensive loss of marshes and bogs to centuries of development in the region, the storm claimed thousands of acres of remaining wetlands. Rubberstamping permits to allow speedy development in wetlands will increase downstream flooding, leaving even more of coastal Mississippi communities vulnerable to future storms. Waterkeeper Alliance has filed opposition comments and will fight to stop this proposal.

### 3. EPA Finalizes “Pesticides in Your Water” Rule

Pesticides are toxic by design. Yet the Bush administration has declared that pesticides are no longer considered pollutants and can be applied directly to, over or near waterways without a Clean Water Act permit. Under current federal law, a permit is required whenever a pollutant is discharged from a point source into a U.S. waterway. Under this new rule, pesticides can be applied directly into waters, onto shorelines or onto foliage over water without a permit as long as it is done in accordance with the pesticide’s label and as long as the pesticide is intended to target the pests and getting the pesticides into the water is “unavoidable.”

EPA claims that pesticide labels are sufficient to guarantee protection of water, but most of these chemicals are not designed for use in water and their impacts to aquatic ecosystems have not been studied. What we do know is that many of the chemicals are toxic to aquatic plants and animals — they were designed to kill. These chemicals are not removed by common water treatment processes, meaning they can end up in drinking water. Waterkeeper Alliance has already filed our legal challenge. We will have our day in court. **W**

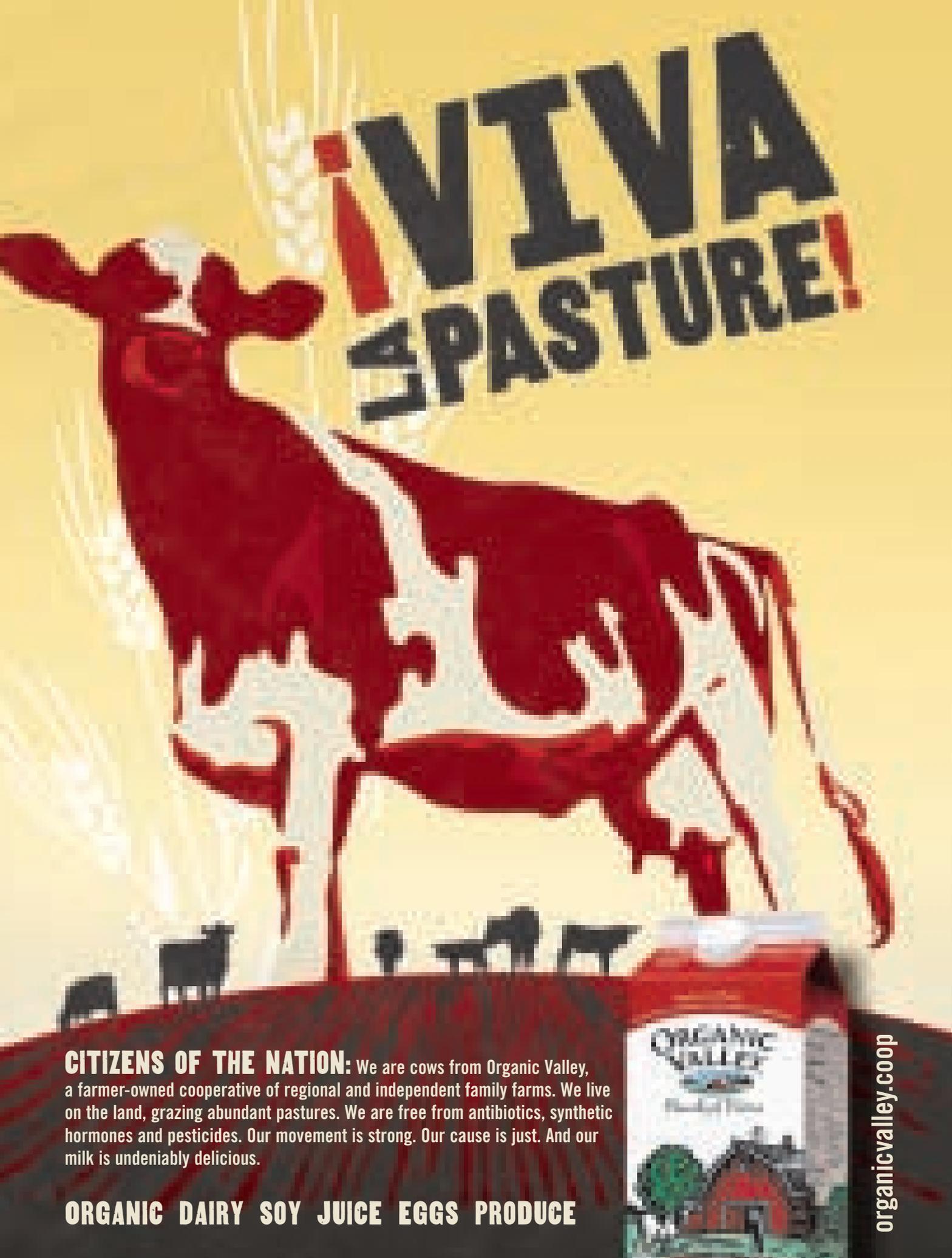
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