

The terminus of Sausal Creek isn't the first place you'd think to look for oysters. The stream's "mouth" is a huge round concrete culvert just a few yards from the Fruitvale Avenue drawbridge, which connects East Oakland and Alameda. The area nearby is covered by industrial and commercial buildings in varying degrees of disrepair, not the life-giving wetlands of yore.

But Save the Bay and the Friends of Sausal Creek have just begun a monitoring project to see if the channel is home to a remnant population of *Ostrea lurida*, native California oysters. Dangling inconspicuously from the substructure of the drawbridge are what look like strands of clothesline trailing into the water. Just below the surface, and threaded like beads along each one, are about a dozen oyster shell halves. Save the Bay's Marilyn Latta pulls one of the strings from the water, and examines the underside of each shell for spat, or immature oysters, which may have drifted by and managed to attach themselves to this artificial "reef."

It's only been a week since they were hung, so she's not surprised that the shells are still quite clean. But for the next few months, volunteers from the creek group will regularly check in at the Fruitvale Bridge, noting the presence of any new oysters, measuring the temperature, salinity and dissolved oxygen, and checking for nitrates and phosphates as well. If conditions prove favorable, volunteers may later try seeding the dangling shells with larval oysters.

Ultimately, says Latta, such efforts could help to rebuild decimated oyster colonies throughout the Bay. She stresses, however, that this is not an attempt to revive a commercial oyster industry. Instead, it's aimed at restoring a formerly abundant species that also helps keep the Bay clean by filter feeding.

Save the Bay wants to work with creek and wetland groups throughout the Bay Area in similar projects. The project is being funded by a NOAA Community Based Restoration Grant. Other partners include San Francisco State, U.C. Davis and Cal Fish & Game.

The benefits extend beyond the collection of scientific data, says Stuart Richardson of the Friends of Sausal Creek. His volunteers have focused on restoring an area three miles upstream of the creek mouth, and he acknowledges that it can be difficult for them to see that their work also affects conditions at the mouth of the creek. "We need to help make the creek to Bay connection," he says.

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## Sturgeon Outlive T-Rex, But Not Us?

A little-known fish that has swum the darkest depths of our rivers since dinosaurs tramped the Earth surfaced in the spotlight this June when three environmental groups petitioned National Marine Fisheries Service to list it under the Endangered Species Act. According to Cynthia Elkins with the Environmental Protection Information Center (which filed the suit along with WaterKeeper and the Center for Biological Diversity), the fact that the green sturgeon outlived the dinosaurs—but now faces extinction—is cause for alarm.

This deep green fish, with its armored back, shovel-shaped snout, vacuum-like suction device (beneath its chin), and two sets of feelers that help it find food, is in serious trouble. Dams, diversion structures, and sediment pollution have altered the habitat and hydrology of the freshwater rivers in which the fish once spawned, leaving only a few fish in the Klamath, Trinity and Sacramento Rivers. They once spawned in the Eel and San Joaquin Rivers, too, but no longer. A recent study by the American Fisheries Society concluded that the sturgeon has declined by more than 88 percent in most of its historical range, which once stretched along the West Coast from Mexico to Alaska.

But some experts are not yet convinced the fish needs to be listed. Green sturgeon have always been more scarce than the commercially preferred white sturgeon (tagging studies result in an average catch of one green to every 100 white sturgeon), but it is not obvious that the population in the Estuary is declining, says Cal Fish & Game biologist Dave Kolhorst. "They may even be doing better than in the past because of the raising of the Red Bluff diversion dam gates

from the winter months through May 15, which leaves more water in the river for fish," he says.

If green sturgeon are anything like white sturgeon, he adds, they have benefited from the recent wet winters. Kolhorst says that in sampling for young salmon, he also finds young sturgeon.

But environmentalists say that finding young sturgeon does not lessen the need for immediate action on the species' behalf. "We've seen the decline of large adults in our rivers," says Jeff Miller with the Center for Biological Diversity. According to Miller, the size of the fish being caught has decreased, which may mean that the prime breeding fish have been lost. The sturgeon is long-lived (up to 70 years) but doesn't spawn until it is sometimes as old as 20, and even then not



Green Sturgeon

always very successfully. Delayed reproduction, combined with habitat destruction and pressure from fishing, makes it difficult for the sturgeon to replenish their populations quickly. "Fish-catch numbers have plummeted," says Miller. "And more spawning populations have been lost than still exist."

One thing that enviros and agency folks agree on is that this odd primeval fish needs to be better studied. To that end, the U.S. Fish & Wildlife will soon launch a study. National Marine Fisheries Service has until early September to make a preliminary recommendation on the petition for listing, and a year to make a final determination. Contact: Jeff Miller: (510) 841-0812, ext.3; Dave Kolhorst: (209) 948-7080 **LOV**

# BULLETIN BOARD

## THE WETTABLE POWDER FORM OF TWO PESTICIDES

used in ship holds, on manhole covers, over lawns and around building foundations is especially likely to get into surface waters, according to a new report. This "screening" report on diazinon and chlorpyrifos, two common pesticides identified as a significant cause of toxicity in California waterways by the U.S. Geological Survey, was compiled by TDC Environmental for the S.F. Estuary Project and released this May (see *Now in Print*). According to state pesticide regulators, Californians used a total of 920,800 pounds per year of diazinon in 1999, 366,400 pounds of it in urban areas (primarily for landscape maintenance and structural pest control). The report concluded, among other things, that the greatest potential for water quality impacts comes from application of these pesticides to impervious surfaces and in the form of wettable powders (pesticides can come in liquids, granules, powders etc.). "Two things stand out to me about our findings," says researcher Kelly Moran. "First, there's a pretty significant relationship between where a pesticide is applied and whether it ends up in the water. Everyone's talking about gardens and focusing on household gardening habits, but we found that gardens are much less important — in terms of water quality impacts — than spraying around buildings where the pavement is. Second, we found that how the pesticide is physically and chemically designed can also make a huge difference." Contact: kmoran@tdcenvironmental.com

## RESEARCHERS UNVEILED A SALT-TOLERANT TOMATO

this July, a genetically engineered tomato endowed with some of the sodium management skills of the thale cress garden-weed. The gene borrowed from the weed enables the tomato to sequester the salt in its leaves, rather than its fruit, and to be irrigated with water 50 times saltier than normal.



## POTENTIAL FOR PESTICIDE RELEASES TO SURFACE WATER

High	Direct release to surface water; Storm drain	Sewer release	Outdoor impervious surface release
	Indoor release (chlorpyrifos, areas washed with water)	Indoor release (diazinon, areas washed with water)	Plant or soil release
Low	Underground release (diazinon); Indoor release (chlorpyrifos, areas not washed with water)	Indoor release (diazinon, areas not washed with water)	Underground release (chlorpyrifos)
	Low	Medium	High

Vertical axis: Percent of amount applied released to surface water.  
Horizontal axis: Pesticide amount applied.

U.C. Davis researchers are saying what they did with the tomato could be done with other fruits or even nuts, offering California farmers plagued with salty fields (due to a combination of soils and irrigation) new hope for a productive future. Contact: eblumwald@ucdavis.edu

## A PHALANX OF WATER DISTRICTS SUED

EBMUD this summer, opposing the East Bay Municipal Utility District's Freeport Project to enhance its water supply reliability in dry years by tapping the Sacramento River. The project, endorsed by the city and county of Sacramento and enviros, replaces EBMUD's prior efforts to tap American River water — efforts that spawned decades of litigation. EBMUD and BurRec signed a contract to begin the Freeport project this July. EBMUD'S Charles Hardy says that though the contract allows them to divert up to 133,000 feet of water in dry years, the district only plans to draw about 21,000 acre feet of this per year. He says that all the issues raised in the suit — among them water quality, supply and use fee impacts on others drawing water from the Delta and federal Central Valley Project — will be carefully addressed in the environmental impact review process. Contact: (510)835-3000

## THE WATER WARS CROSSED THE CONTINENT THIS SUMMER

as three different CALFED authorization bills (Feinstein S976, Calvert HR1984 & Miller HR2404) and two appropriations bills (HR2311& S1171) made their way through Washington DC's hallowed halls. CALFED is the cooperative state and federal program that has spent seven years working with farming, urban and environmental interests trying to balance competing demands for California's scarce water supply. Some of the bills are supported by farmers and water districts and others by environmentalists. Two 'lightning rod' issues, according to CALFED's Daniel McCarroll, are first, provisions for surface water storage (such as offstream reservoirs) in the Feinstein and Calvert bills that enviros are concerned predispose decisionmaking in favor of such facilities, and second, provisions echoing language in the CALFED 2000 record of decision concerning water deliveries to CVP contractors in the South Delta. Water users and enviros are both "fretting about where the water for these deliveries will come from," says McCarroll, and think the duplication of the language in the bill gives it a weight that may result in further conflicts. The bills will be taken up again after the August recess. Contact: Feinstein (202)224-3841; Calvert (202)225-1986 or Miller (202)225-2095.

## AN EXPERIMENT IN COMMERCIAL FISHING FOR BAY SALMON

has been put on hold by state officials for another year. This August, the California Fish & Game Commission voted not to approve a proposed one month Chinook season in San Francisco Bay and San Pablo Bays this year, in which five boats would be permitted to catch a total of no more than 4,000 fish between August 15 and September 15. The proposed fall-centered season targets the healthiest of the Estuary's four annual Sacramento River salmon runs — the fall run, whose population has recently surpassed target management levels. While commercial fishers support the new season, especially as a payback for ocean limits imposed on them to protect other more endangered runs, recreational anglers want to keep the Bay salmon to themselves. These and other concerns will be explored in further public meetings this year, say officials. Contact: (415)561-5080

## POLLUTION

### SOUTHLAND STORMWATER LESSONS

In the Southland they're called SUSMPs — standardized urban stormwater mitigation plans — and their adoption in Los Angeles and San Diego caused quite a stir among local officials, developers and environmentalists. Bay Area proponents favor a less succinct moniker, like "new and redevelopment requirements," but the issue is causing a big fuss around here as well.

The S.F. Regional Water Quality Control Board is in the process of bringing the gist of SUSMP to the Bay Area, as part of the reissuance of Santa Clara County's five year stormwater discharge permit (NPDES). Enhanced permit requirements will mean cities throughout the county will have to follow the same rules for managing runoff flows.

Previous requirements were more generic, "do what you can where you can," according to Geoff Brosseau of the Bay Area Stormwater Management Agencies Association. The new requirements get more specific about how much runoff must be captured, filtered (through soils, vegetation or actual fabric filters) or treated on a project site — the "start at the source approach" — before it can flow into creeks, bays and ultimately the ocean. This way, says the S.F. Board's Dale Bowyer, "You get the benefits for the life of the project."

The new requirements also define for the first time what kinds of projects must comply. They don't, however, mandate specific technology, leaving that to a developer's architects and engineers. Some designers incorporate more permeable surface area, such as grassy swales, into their projects: at other times catch basin filters are more appropriate.

Bowyer says this isn't a "shocking new evolution" in regulation, but it does provide more backbone to existing 1990s regulatory guidance. "Rather than use that guidance, some Bay Area cities have pretty much let developers do things that were easy and inexpensive, just enough so they say could say 'we checked off that box'," he says.

"This raises the bar for performance and compliance with stormwater permits," says Brosseau. "It forces municipalities to get more serious about stormwater, and to integrate stormwater management more fully into city infrastructure and procedures."

The new Santa Clara requirements build on previous performance standards established

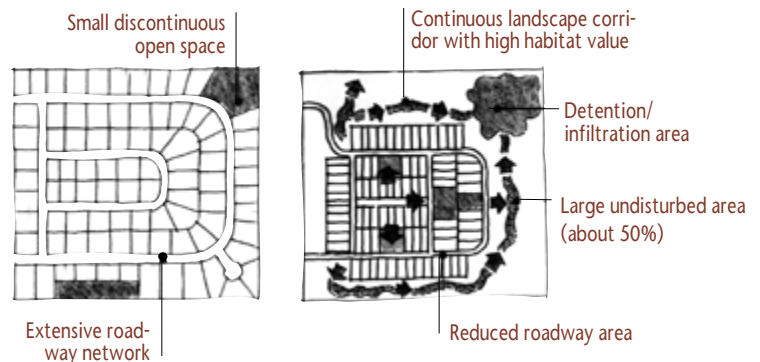
in the city's 1997 permit, but also embrace some lessons from Los Angeles County — where the L.A. Regional Board adopted the state's first SUSMP in March 2000. Though 30 of 85 L.A. county cities appealed the new SUSMP regs, the State Board recently upheld most of the L.A. rules.

As a result, some Southland developers are now going all out on stormwater control, according to Jeff Okamoto with the Orange County office of RBF Consulting, a regional engineering firm laying out major subdivisions. Before the local SUSMP came along, everyone just let all the runoff head straight down the storm drain, he says. Now, RBF's projects include dozens of runoff pollution reduction measures, among them streetsweeping; catch

basins equipped with special "trash baskets" and filters to clean up the first flush of urban runoff and something Okamoto calls "summer slobber" — soaps, brake dust and fertilizer from car washing, driving and lawn watering; and other stormwater collection units with holding tanks cleaned out by trucks similar to the "honey wagons" serving portable toilets.

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### CLUSTERED INFILL DEVELOPMENT IMPROVEMENT



## SCIENCE SPOT

### SELENIUM BUSTERS

Dr. Norman Terry's U.C. Berkeley lab is well known for research into plants that can tackle selenium, that bane of agricultural drainage, by absorbing and volatilizing it—transforming and releasing it as a harmless gas. Over the past several years, Terry has been experimenting with everything from broccoli to cattails, with the goal of finding the ultimate selenium buster. Last summer, pickleweed, that tiny, salt marsh plant beloved by rails and mice, astonished lab researchers by taking up and volatilizing selenium faster than any other plant studied before.

As part of a BurRec-sponsored demonstration project for on-farm drainage management at Red Rock Ranch in Fresno County, one of Terry's post-docs, Dr. Zhiqing Lin, filtered selenium-laden ag drainage through a one-hectare plot of pickleweed and compared the rates at which the pickleweed volatilized selenium to those of 11 different species of plants. Pickleweed, says Lin, volatilized over 500 micrograms of selenium per square meter per day. "That's 10 to 160 times greater than any other species tested," says Lin.

The secret lies in pickleweed's unique physiology, explains Terry. Unlike other plants, pickleweed can take up selenate and easily convert

it to the forms of selenium that can be volatilized rapidly. When Terry and Lin compared the pickleweed field to several other plant species growing at Corcoran and Chevron marshes in Richmond, nothing else came close.

An alternative approach is to use plants to suck the selenium from the soil into their aboveground parts, which can then be harvested and removed. "You need to have really good site management," says Lin, referring to the necessity of preventing mice or other animals from consuming or making their homes in the treatment pickleweed. "It's not something you can just create and walk away from."

Terry is also looking for ways to enhance selenium uptake in a variety of plants, including pickleweed, through genetic manipulation. Though he's succeeded in increasing rates of selenium uptake in Indian mustard by three-fold, for example, he's still not satisfied. "In phytoremediation, we're striving for 10-fold or 100-fold increases," he explains, placing plants firmly on the front lines of humanity's battle with contaminants. Contact: nterry@nature.berkeley.edu; zlin@nature.berkeley.edu. **LOV**

## RESOURCE REVIEW

## BAY RESTORATION SIGN OFF

The San Francisco Bay Joint Venture's long awaited *Restoring the Estuary* plan is now available, and the group is looking forward to its next steps in helping to protect and repair over 100,000 acres of wetlands and creeks (see *Now on Line*).

Earlier this summer the last of the 27 Joint Venture members — public agencies, environmental groups, private companies, and agricultural interests — signed off on the 111 page document, which is based on the 1999 *S.F. Baylands Ecosystem Habitat Goals* report. It outlines a 20-year implementation strategy, and sets specific acreage goals for each subregion around the Bay as well as for the entire Estuary. "This creates a framework for restoration of wetlands and creeks in the middle of a burgeoning urban area," says executive director John Steere. *Restoring the Estuary* gives planners, developers and environmentalists alike a "blueprint" for future restoration. "They can point to this and say, we have agreed to restore this amount of acreage," says Steere.

With publication completed, the Joint Venture is now seeking support for its goals from municipalities and special districts throughout the Bay Area. San Francisco supervisors have given the document their endorsement, and Steere expects Sonoma County to consider the issue soon.

The group has also reached another important milestone: recognition by U.S. Fish & Wildlife as the eleventh member of the U.S. Habitat Joint Ventures. "This means we've become a federally sanctioned program," says Steere.

It's more than just a formality he adds — recognition makes the Joint Venture eligible for \$300,000 worth of operating funds from the feds for the next fiscal year, and gives the Bay Area a better chance in sharing some of the \$41 million in grants under the North American Wetlands Conservation Act. Contact: John Steere (510) 286-6767 **O'B**

## PLANNING

## SKETCHING OUT PROTECTION FOR MARIN'S BAYLANDS

If advocates for wetland critters and their habitat have their way, Marin County's baylands could soon be home to a new national wildlife refuge.

At the urging Marin Audubon, the Coastal Conservancy and others, U.S. Fish & Wildlife has identified a 17,600-acre study area stretching from the Petaluma River to Corte Madera and encompassing tidal marsh, diked baylands and some uplands.

In May, the Service held a second series of public meetings to familiarize local landowners and other stakeholders with the idea and with the process for establishing a refuge.

Of all the baylands on the North Bay shore, Marin's are the most at risk from development, say environmentalists. Novato recently built a new golf course in the Marin baylands, and residential and transportation projects are proposed all along the Highway 101 corridor, which parallels the bayshore. Rather than hosting new homes, putting greens, highways and marinas, the proposed refuge would offer protected habitat to several federally listed endangered species, including the salt marsh harvest mouse, as well to curlews, dunlins, sandpipers, mallard, teal, pintail and scaup.

Although environmentalists are clearly enthusiastic about the notion of a new refuge, the proposal is encountering predictable resistance from developers with an interest in bayside property, as well as anxiety on the part of local landowners. With regard to the latter, Ellen Johnck of the Bay Planning Coalition — on record as supporting the concept of a new refuge — says the Service made a fundamental error by presenting the study area boundary as a fait accompli. "Fish & Wildlife goes in and draws a line around the parcels it thinks should be included without telling anyone, then notifies property owners that their property is within the line," says Johnck. "Most owners are very upset that didn't they know this was under consideration."

"Some folks have interpreted the study area as meaning that 'this is going to be the refuge,'" says the Service's Cathy Osugi. "We really want

MARIN BAYLANDS STUDY AREA



to make it clear — it's just a study area." She notes that the Service initially used incomplete mailing lists when it notified property owners about the first series of public meetings last November. "We should have done a better job with that," she admits, adding that the problem has since been corrected.

Osugi says the next step will be for the Service to develop several preliminary refuge boundary alternatives within the study area. These will be presented to the public for comment before being incorporated into federally required environmental documents. The Service will then select a preferred alternative.

Marin Audubon's Barbara Salzman says she expects the preferred alternative to include wetlands at the former Hamilton Air Force Base and Bel Marin Keys, which the Coastal Conservancy already owns.

"Then we can add to it north and south," she says.

Osugi emphasizes that property for the refuge will be acquired from willing sellers only, and adds that the Service is required by law to pay fair market value based on an independent appraisal. She adds that until the boundary is established, estimating cost is impossible.

And she cautions that the new refuge is by no means a done deal. "The alternatives always include a 'no action' alternative, she says. "For now we are just working our way through the process and we'll see where that takes us. I'm hopeful, but I can't predict what will happen." Contact Cathy Osugi (503) 231-6838 **CH**



# REGULATION

## VALLEY CITIES SQUAWK OVER PERMITS

One oft-cited reason for the swelling of Central Valley cities is the comparatively low cost of living. But while the price of homes may continue to lure newcomers, the water that comes out of their taps and garden hoses may soon be a very different story, not because of what it costs to provide but what it costs to treat.

Over the past year, the Central Valley Regional Water Quality Control Board has renewed the wastewater discharge permits for a couple of dozen cities up and down the Valley, including Sacramento, Vacaville, Stockton, Modesto, Merced, Tracy and Turlock. Many of the new permits include stringent new limits on the pollutants that the cities can discharge to the regions waterways — limits that may require the cities to spend tens of millions of dollars upgrading their sewage plants with newer, more advanced treatment technologies. The upgrade costs could double the price residents pay for water and perhaps triple the cost of sewage connections, say those involved.

"It would cost us about \$117 million to go to tertiary treatment," says David Tompkins of Vacaville, where the new permit includes strict limits on the levels of trihalomethanes in effluent. Like many of the affected cities, Vacaville has appealed, with a hearing before the State Board scheduled for September. "We have a question about the attainability of these standards," says Tompkins. "We have not found a wastewater plant in the state that can meet them." Tompkins also questions the need to make wastewater as clean as tap water. "This permit would require us to meet the standards for drinking water at the end of the pipe, which doesn't make any sense," he says.

The Board's Ken Landau explains that the tightened pollutant limits are the result of the confluence of several factors. "The U.S. issued the California Toxics Rule in May 2000, which set receiving water standards for a long list of pollutants and greatly increased the number of constituents we are looking at. During the same period, the State Board adopted an implementation plan for handling toxics in wastewater, which includes directives on how to set effluent limits and establish timelines for compliance." The Board has also begun enforcing its Basin Plan for the

Sacramento and San Joaquin Rivers more vigorously and looking more closely at how permits for impaired waters on the "303d list" are written. The upshot, says Landau, is "more stringent limits, and limits on many more components of effluent."

The new permit requirements are not only pinching cities, they're also putting a strain on the already understaffed Central Valley Board. "There are 128 priority pollutants and we have to develop levels for each one," says the Board's Greg Vaughn. "Each staffer used to be able to do four or five a year, but now can only handle about one."

Enviros say the costs of meeting stricter pollution limits should simply be considered part of the price of growth in an environmentally compromised system. "The Central Valley is looking at doubling its population over the next two decades, we haven't invested in infrastructure for many years, and most of the region's water bodies are already impaired," says Deltakeeper's Bill Jennings. "These costs simply reflect costs that are usually exter-

nalized from the ledger sheets."

Ironically, many pollutants in the rivers have sources other than municipal and industrial wastewater plants, such as agricultural runoff. "There is very little capacity left in these waters," says Landau. "So as the population grows, and creates ever more wastewater, the concentrations of pollutants in that wastewater are going to have to decline."

Many of those involved say they expect most of the permit disputes to wind up in the courts. "This continuing appeals process delays the implementation of what's required by the permits and allows cities to put off building new facilities," says Vaughn. "But at some point you've just got to ask, do you hire engineers or lawyers? At some point you just need to build instead of continuing to appeal." Contact: Ken Landau [landaukr@rb5s.swrcb.ca.gov](mailto:landaukr@rb5s.swrcb.ca.gov) CH

## CITYBEAT

### GREENER LIBRARIES FOR SAN JOSE

The biggest city in the Bay Area — and one of the fastest growing — is following the path blazed by its famously green cousins to the North, Seattle and Portland, with potentially important consequences for the Bay and its watersheds.

On June 19, the San Jose City Council unanimously adopted a series of Green Building policies, including a goal that all new construction and major retrofit projects of city facilities and buildings over 10,000 gross square feet of occupied space meet specific *Green Building Guidelines* within the next two years.

"We have a lot of building planned for the next 20 years," says San Jose's Darren Bouton, "so from the standpoint of potential impact, we really have an opportunity to make a huge difference in a lot of structures." Bouton points to the city's plans to build 20 new libraries and 10-12 new community centers by 2010.

San Jose's green building goals focus on five major categories: site selection, energy and atmosphere, water use efficiency, materials and resources, and indoor environmental quality. The water use efficiency goal calls for water use reduction within buildings and water efficient landscaping, as well as for

innovative wastewater technologies that reduce the generation of wastewater and potable water demand while increasing local aquifer recharge. The site selection goal includes a stormwater management component. The goals are based on the Leadership in Energy and Environmental Design (LEEDTM) rating system, a voluntary, consensus-based, market-driven green building rating system developed by the U.S. Green Building Council.

Although the building guidelines apply only to city structures, Bouton says a key part of the city's strategy is to encourage private developers to adhere to the guidelines. He notes that a number of commercial developers are already receptive to green building principles. "It will benefit the private sector to be ahead of the curve on this," he says, "we want to help them get there."

Although the new policies do not include any financial incentives for sustainable building, Bouton says the city is exploring other ways to promote it. "We might develop ways to expedite the permitting process for buildings that meet these guidelines, for example," he says. Contact: Darren Bouton (408) 277-4670 CH



## NEXT GENERATION

## This Place

The creek runs past  
a fallen grandmother  
bay tree

Over stones  
smoothed  
by the centuries

The ripples  
seem to be  
everlasting

A buckeye leaf  
floats down  
the creek

While the wren tit sings  
and the sword fern  
stands guard

Five-finger ferns  
peek  
over the edge

The love of this place  
is like  
a child's heart.

Tobi Earnheart-Gold, Age 10  
Bolinas, California

1997 Shasta Bioregion Winner  
Teacher: Cathy Nichelini

© River of Words

## PEOPLE

## RIVER OF ART: PAMELA MICHAEL

Pam Michael woke one morning with the phrase "river of words" running through her head. "I knew that it was somehow the name of the rest of my life," says the co-founder of the now-famous "River of Words" national poetry contest and environmental education program. The magic of the phrase and the lyricism and learning that have come out of it have inspired thousands of children and teachers to think beyond physical and economic boundaries and academic disciplines, and to understand that wherever they live—urban, suburban, rural—they are in a watershed. When Michael first started the program, that wasn't the case. "I got a call from a teacher once who claimed she didn't have a watershed," Michael remembers. "She'd called the local water department, and no one knew what watershed they were in. People had this idea that a watershed was something in a rural or a wilderness area."

"Watershed" was not the commonly used environmental management and restoration concept it is today when Michael woke up that morning with the magical phrase in her head. At the time, six years ago, she was working for International Rivers Network in Berkeley. It was then Poet Laureate Robert Hass, whom she met soon afterwards, who suggested a watershed theme for the new "River of Words" contest and program because it "got at the idea of place in a unique and specific way," says Michael.

In creating an arts-oriented contest, Michael tried to break away from the strict water quality focus of many existing outreach efforts. "I felt environmental ed was stuck in the sciences," she explains. "I believe that education is our best bet for saving the planet, and that if you help children fall in love with the Earth, they will protect it—we protect what we love. Our current educational system, however, compartmentalizes knowledge in a way that prevents children from recognizing the wonder and beauty of how everything fits together."

River of Words does exactly the opposite. Children learn what a watershed is and the basics of the water cycle, but they also learn about the wildlife native to the area (even in urban areas), the cultural history of the area, and how people have transformed the landscape. The program and contest also allow children to understand their watershed on their own terms, first

by making careful observations of their neighborhood and their local creek or river and where it flows, then writing about and illustrating their impressions, and describing their own relationship to the landscape.

"The essential design of River of Words is brilliant in its clarity," says Zenobia Barlow with the Center for Ecoliteracy, a frequent partner in the program. "Rather than focusing children's attention on distant ecosystems, it encourages each child to stand in her own ecological address using her own unique imagination to make meaning."

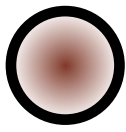
Michael, Hass and International Rivers Network held the first River of Words contest in April 1996 at The Library of Congress in Washington, D.C., in conjunction with the first National Poetry Month. Since then, the annual contest and its companion environmental education curriculum and program have been so successful that River of Words spun off from the International Rivers Network in January 2001, becoming its own non-profit with coordinators in 24 states.

River of Words' success, according to Barlow, comes from Michael's indefatigable nature, quiet enthusiasm, and calm, focused attention to each poem, each piece of art. "Pam is one of those rare individuals who seems to have found her true calling," she says. Michael, who grew up moving from place to place (which made her more determined than ever to teach children to learn to appreciate "place"), says she has a unique position in the nonprofit environmental world. "Burnout is a constant threat to people doing this kind of work," says Michael, referring to the daily challenge of dealing with humanity's lack of concern for our air, water and natural world. "But I have the advantage of being comforted and inspired by the endless stream of children's art and poetry that comes into the office."

Michael's river of words — the phrase, the poetry, the art — has helped change public understanding of where and how rivers flow, and where and how we live within their divides. "It used to be that you couldn't address a group about River of Words without first defining a watershed," says Michael. "But that's not true anymore. Now it's a given."

Contact: River of Words:  
(510) 548-POEM; [www.riverofwords.org](http://www.riverofwords.org)  
LOV

# PLACES TO GO & THINGS TO DO



## WORKSHOPS & SEMINARS

AUG  
21  
THRU  
OCT  
30

### EROSION AND SEDIMENT CONTROL WORKSHOPS

**Topic:** Construction Site Planning and Management for Water Quality Protection

**Sponsors:** S.F. Estuary Project, S.F. Bay RWQCB and Friends of the Estuary  
**Locations:** Various  
(510) 622-2419 or ct@rb2.swrcb.ca.gov

SEPT  
27  
THURS-FRI  
28

### COUNTY WATER DISTRICTS MINI CONFERENCE

**Sponsor:** ACWA  
**Location:** San Marcos  
(916)332-4111

OCT  
19  
FRI

### SURFACE MINING AND RECLAMATION ACT UPDATE

**Topic:** current provisions of the act and how to prepare for and evaluate reclamation plans to assure compliance.

**Sponsor:** U.C. Davis Extension  
**Location:** Sacramento  
**Cost:** \$250  
(800)752-0881  
www.universityextension.ucdavis.edu

OCT  
29  
MON

### S.F. BAY DECISIONMAKERS CONFERENCE

**Topics:** Bay Infrastructure — Transportation, Water & Housing; Expanding the Bay ferry system; SFO and improving system capability in balance with the environment; rapid transit, bridge retrofits, navigation channel dredging, a new Bay crossing, more.

**Sponsor:** Bay Planning Coalition  
**Location:** Oakland  
(415)397-2293  
conference@bayplanningcoalition.org

NOV  
14  
15  
WED-THURS

### SALMON AND STEELHEAD SYMPOSIUM

**Topic:** Restoration and Management of Anadromous Fish in Bay Area Watersheds. Progress of restoration activities in Bay Area watersheds; regulatory agency perspectives on local fish populations; restoration funding opportunities; resource agency recovery plans; restoration programs in local watersheds; successful strategies for restoring anadromous fish in urbanized regions.

**Sponsor:** Center for Ecosystem Management and Restoration  
**Location:** Oakland Museum  
www.cemar.org/symposium/symposium.html  
or (510) 420-1570



## MEETINGS & HEARINGS

OCT  
17  
WED

### NEW STORMWATER AMENDMENT VOTE

**Topic:** Board approval of Santa Clara stormwater NPDES permit, including new provisions on stormwater treatment and control (see page 3).

**Sponsor:** S.F. Bay RWQCB  
**Location:** Oakland  
(510)622-5681



## HANDS ON

SEPT  
1  
SAT

### WET WORKSHOPS

**Topic:** Hands on workshop for K-12 teachers on water education.

**Sponsor:** Water Education Today  
**Location:** Tilden Nature Center, Berkeley.  
(510)525-2233

SEPT  
29  
THRU  
NOV  
10  
SATURDAYS

### EDUCATORS' WORKSHOP

**Topic:** Watching Our Watersheds; Reducing Pollution in Our Homes and Schools.

**Sponsor:** Aquatic Outreach Institute  
**Location:** Contra Costa, Alameda counties  
(510) 231-5784

OCT  
3  
THRU  
5  
WED-FRI

### WATER TOUR

**Topic:** Northern California Water Facilities and Fisheries. This three-day, two-night tour travels the length of the Sacramento Valley and includes visits to Oroville Dam, the beginning of the State Water Project, and Shasta Dam, keystone of the federal Central Valley Project. Other highlights are visits to the Feather River Fish Hatchery, Red Bluff Diversion Dam, Spring Creek Debris Dam and ecosystem restoration projects.

**Sponsor:** Water Education Foundation  
(916) 444-6240 or  
www.water-ed.org/tours.asp#northern

## NOW IN PRINT & ON LINE

### 2000 Annual Report

S.F.Environment (Department of the Environment, City and County of San Francisco)  
Copies from (415) 554-6390

### Diazinon & Chlorpyrifos Screening for Water Quality Implications

TDC Environmental and S.F. Estuary Project (510) 622-2321

### Facing California's Energy Challenge: A Guide for Water and Wastewater Utilities

www.acwanet.com/co-op/

### Guide to San Francisco Environmental Services

S.F. Environment (Department of the Environment, City and County of San Francisco)  
Copies from (415) 554-6390

### National Water Information System

(a new website integrating real-time and historical stream flow data with other types of water data, including water quality, precipitation and ground-water levels).

U.S. Geological Survey  
http://water.usgs.gov/nwis

### Napa Sustainable Winegrowing Group

http://nswg.org

### Program Performance Indicators for the CALFED Bay-Delta Ecosystem

Restoration Program  
The Bay Institute & CALFED Science Program  
Copies from (415) 721-7680 or www.bay.org

### Restoring the Estuary: A Strategic Plan for the Restoration of Wetlands and Wildlife in the San Francisco Bay Area

S.F. Bay Joint Venture  
Copies from (510) 286-6767 or www.sfbayjv.org

### Watershed Assessment, Tracking and Environmental Results

U.S. EPA  
www.epa.gov/waters

### Delta Information for Recreational Users

www.californiadelta.org

## STATE OF THE ESTUARY CONFERENCE:

Achievements, Trends and the Future

Oct 9 -11, Palace of Fine Arts, San Francisco

Three days jam-packed with the latest Bay-Delta Estuary environmental information on everything from alien fishes and river restoration to the saga of Central Valley insecticides and the fate of mercury in the watershed. Leading scientists, innovative engineers and seasoned resource managers will answer such questions as: How clean is the Estuary? Is there enough sediment? And is shallow water habitat any good for fish? Daily themes are: Urban Challenges; Can We Restore the Ecosystem? and Where Could We be in the Future? More specific topics include: bird populations, status of zooplankton, lessons learned from eight years of contaminant monitoring, principles and strategies for restoration, long term changes in salinity and inflow, x2 update, Suisun Marsh management challenges, and the debate over expansion of SFO airport. Whatever you don't learn from the over 50 presentations you will learn from the 150 posters.

TO REGISTER ON LINE: [www.abag.ca.gov/events/estuary\\_state](http://www.abag.ca.gov/events/estuary_state)  
Or call (510) 622-2465 for a brochure.

Sponsors: S.F. Estuary Project, CALFED, Friends of the S.F. Estuary, S.F. Regional Water Quality Control Board,

**POLLUTION CONTINUED**

Okamoto says several of his firm's clients have directed him to go beyond the minimum requirements and do better on recent projects. "In the current political atmosphere, some of our builders wanted to show the city and interest groups they're willing to do what's right," he says. (Full disclosure: Jeff Okamoto is the editor's brother in law).

Of course doing all these things can cost more. Adding bioswales or detention basins can take up significant amounts of land, which can be a precious commodity, and some treatment measures are expensive to build and maintain, say developers. City officials worry that the new requirements will make it more difficult to do infill projects and build low income housing. They also argue that the proposed performance standards, which call for catching 85% of peak storm runoff, are too confusing, even for engineers, and they want the board to delay implementation, particularly for smaller projects. Board chief Loretta Barsamian says she "got an earful" from city managers when she met with them earlier this summer, and over thirty speakers lined up at a July public hearing,

objecting to various aspects of the permit changes.

BayKeeper's Jonathan Kaplan says he's disappointed with the city officials lobbying. "What's being proposed is in a lot of respects weaker than what was approved in Los Angeles and San Diego." He wants to see a strong regional approach.

Amy Glad of the Home Builders Association of Northern California says that a one size fits all approach won't work because of localized variations in terrain and rainfall. "Some standardization is useful, but you need to recognize regional differences." That issue will loom large in the near future. The NPDES permits of several other Bay Area counties, including Alameda, will likely be amended to include similar new stormwater provisions soon, says Bowyer.

At press time, the staff was putting the final touches on a revised version of the requirements, aiming for an August 15 release. That will begin a five week comment period, during which the Board will hold multiple meetings with stakeholders and tweak the permit details one more time. The full Board is scheduled to vote on the issue at its

October meeting (see calendar). "I'm sure we'll be going through a painful and protracted process of denial about SUSMP," says Brosseau, "But the reward is getting credit for good front end site design, and then not having to treat so much stormwater." Contact: Jan O'Hara (510)622-5681 **OB & ARO**

**BULLETIN BOARD CONTINUED**

Latta says her groups focus has been just the opposite — "We're always down in the Bay" — and encouraging upstream restoration work will have a long term positive effect on water quality in wetland areas and beyond.

Besides, asks Richardson, "How many times in your life do you get to climb out onto a bridge?" Contact: Marilyn Latta (510)452-9261 **O'B**



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