

ESTUARY



Y O U R B A Y - D E L T A N E W S C L E A R I N G H O U S E

FATE OF THE SWP

A list of 20 ways to restructure or even sell off the State Water Project was presented to the Senate Agriculture and Water Resources Committee on August 1. The 20 options include eliminating agriculture as the first user to face water cuts; creating a "fee-bate" system that would allow a water district to buy cheaper water if it agrees to take less water on a permanent basis; establishing a surcharge to promote water conservation; allowing project contractors to buy and sell entitlements; giving water to the environment but at a price; extending the project to the year 2050 to lower long-term costs; even selling off the whole shebang. These and other proposals for settling the fate of the project will be the focus of intense study after the current legislative session ends, according to the office of committee chair Senator Dan McCorquodale.

Back in 1960, Governor Edmund Brown envisioned the State Water Project as a way to quench the thirst of farms and cities well into the 21st century. Public bonds financed the project, on the promise that it would eventually deliver 4.2 million acre feet of annual water. But that was before environmental concerns derailed the Eel River Dam, the San Joaquin Drain and the peripheral canal. With new problems threatening all delivery of Lake Oroville water through the Delta, new ideas are needed.

"The urban folks are still very optimistic they can solve problems and don't see the need for outside help from the Legislature," says options analyst Dennis O'Connor of the state's California Research Bureau. "That is not the case with the Kern County growers."

The Department of Water Resources' Bob Potter says some of the ideas may be impossible or even illegal. He says selling the project could jeopardize its AA bond rating. O'Connor concedes that worries about losing the ratings are a prime concern but says, "The clients of this study are the Legislature, and their thinking is that we make the law, we can change it." Contact: Dennis O'Connor (916)653-7843 *FH*

Greening the Golf Green

From their faultless fairways to their trim putting greens, golf courses evoke human perception of the ultimate in natural perfection. Over 100 courses entertain golfers in the Bay-Delta region. Maintaining these emerald islands in the midst of the region's naturally golden landscape can mean heavy use of pesticides, herbicides, fertilizers and water. But golf course superintendents claim that a variety of new management methods may now be reducing the game's toll on the Bay-Delta environment.

Critics say badly managed golf courses can cause ground and surface water contamination, nitrogen leaching or runoff, chemical drift from pesticide use, and other detrimental effects. In response, the golf industry recently published guidelines for course managers on how to reduce chemical fertilizer use, dispose of clippings and other wastes, and protect and conserve water. It also launched a \$3 million-a-year research effort aimed at developing new turf grasses that thrive on half as much water and require fewer doses of pesticide. An upcoming trade conference will emphasize techniques for environmentally sensitive turfgrass management.

"Golf course superintendents have refocused to ensure they're doing their share of environmental management," says Dr. Ali Harivandi, a turfgrass researcher at the University of California Cooperative Extension.

Manager Tom Thatcher has put some of this theory into practice at the Stanford Golf Course, where two holes play across San Francisquito Creek. "We're using integrated pest management," he says. "We go out and determine what's necessary instead of applying pesticides on a programmatic schedule. As a result, there's no leaching. We've never

detected any nitrates going into the water supply. We use water sparingly. There's a computerized irrigation system on the course that's sensitive to weather, so we're only replacing the water that's evaporating."

"Golf courses don't necessarily have to be a bad neighbor to a river or stream," says the Coyote Creek Riparian Station's Mike Rigney, who is helping to develop a watershed management plan for San Francisquito Creek. "As long as there's no contamination from herbicides, I'd rather have a golf course next door than a housing development or industry," he says. Rigney points to other "green" Stanford course management efforts, such as landscaping with native vegetation, leaving tree snags in place, creating protective berms around small drainage areas, and composting with grass clippings, techniques he says benefit the creek's riparian habitat. Indeed, one prominent New York state wildlife protection group has such faith in the habitat potential of golf courses that it has developed a sanctuary program to help course managers enhance habitat, conserve natural resources and protect environmental quality.

Beyond its possible value to wildlife, Harivandi says golf course vegetation, particularly in urban areas, can reduce pollution, glare, noise, dust and heat build-up. Golf courses can also serve as wastewater disposal sites. Harivandi says 15 to 20 Bay Area golf courses currently irrigate with reclaimed water, and that number continues to grow. "Besides reducing the need for fresh water, reclaimed water also has quite a bit of nutrient value, so superintendents can reduce the amount of fertilizer they use," he says.

Many dispute the claim that golf courses can provide a net benefit to the environment. "I think you'll always have some problems because in effect, you're creating an exotic landscape over many acres to achieve what people think of as a golf course," says the S.F. Regional Board's Dale Bowyer.

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NEWS ROUND-UP

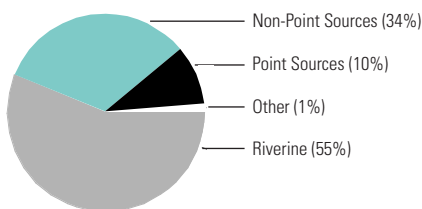
PCB LEVELS IN THE BAY EXCEED THE EPA STANDARD according to results from a new \$1 million-a-year regional monitoring program measuring various pollutants at 16 sites around the Bay. EPA's standard is 70 parts per quadrillion (ppq); Bay levels ranged from 369 to 1,300 ppq. The S.F. Regional Board is now undertaking tests on PCB build up in fish. (510)286-0702

A TWO-CENTURY-LONG DROUGHT occurred before the year 1112 according to research examining drowned tree stumps by Cal State Hayward geographer Scott Stine. Stine also turned up evidence of a more than 140-year drought before the year 1350. Another study, this one measuring historic Bay salinity levels via long-buried mussel shells, showed droughts lasting 80 years or more. Researcher Lynn Ingram of U.C. Berkeley says Bay salinity is at its highest level in 2,400 years. Stine (510)881-3159; Ingram (510)642-2575

A TRUCE IN THE STATE/FED WATER WARS was signed this August, when the last of 12 agencies put its John Hancock on a 13-point promise to cooperate on the technical and procedural aspects of setting water quality standards, the process of improving water operations coordination to meet endangered species needs, and the development of long-term solutions to Bay-Delta water conflicts. Copies of the final agreement will be mailed to diverse interests soon. (415)744-1993

TREE ROOTS CAN BE REMOVED FROM SEWER PIPES without using crystal-form, water-soluble, copper-based root killers — killers that contain too much copper for local sewage treatment systems to entirely remove. Copper can be toxic to aquatic life. For less hazardous alternatives, consult a new S.F. Regional Board how-to brochure and white paper produced in cooperation with local POTWs. (510)286-4239

BAY COPPER SOURCES



COURTS UPHELD BCDC'S LIVE-ABOARD BOAT POLICY in two decisions handed down this June. Both decisions, one involving the San Mateo County Harbor District and the other the Mariners of Richardson Bay, conclude that the mooring of a houseboat or live-aboard within the Bay Commission's jurisdiction constitutes a substantial change of use of the land, water or structures under this jurisdiction, and thus requires a Commission permit. One decision also concluded that the long-term mooring of a live-aboard boat constitutes the placement of fill. (415)557-3686

CORTESE'S WATER SUPPLY BILL PASSED THE STATE ASSEMBLY in early July. AB2673, scheduled for Senate committee review this August, would make water supply a more important factor in land use planning and would require cities and counties to identify a water source before approving development. (916)445-8243

EPA'S BIENNIAL NATIONAL WATER QUALITY INVENTORY says one third of all waters assessed have water quality problems. Though the inventory covered 74% of the nation's 37,000 estuary square miles, it only collected data on 18% of the nation's 3.5 million river miles — a data shortfall that turns up clearly in the Bay-Delta section of the state water quality assessment used to inform the federal inventory. Environmental activist Trish Mulvey suggests these glaring data blanks on local creek and river pollution could be filled by volunteer citizen monitors. (916)657-0642

ONE ESTUARY GOBY IS REALLY TWO according to a recent re-examination of the introduced chameleon goby by U.C. Davis' Scott Matern. Matern identified the two separate species as the salt-to-brackish water *Tridentiger trigonocephalus* and fresh-to-brackish water *Tridentiger bifasciatus* — a species distinction first described in a 1989 Japanese journal by that nation's very own emperor — himself an accomplished ichthyologist. Matern asks researchers with Bay-Delta specimens of the fresh water goby to contact him via E-mail at samatern@ucdavis.ucdavis.edu

A STATE REVIEW OF NONPOINT OPTIONS has experts and stakeholders on nine new technical advisory committees evaluating existing and potential measures to reduce runoff from diverse land uses so they can provide recommendations to the State Water Resources Control Board by October 3. After board and public review,

committee recommendations will be folded into a revised state plan for nonpoint pollution control required under 1990 amendments to the Coastal Zone Management Act. (916)657-0432

TOUGH CHOICES

WATER WEED

Delta boaters have been tangling with a bumper summer crop of *egeria densa* — an exotic aquatic weed from South America whose shoots can grow up to eight feet long and whose spread has been exacerbated by the drought. While programs to unclog waterways of its weedy cousin — the water hyacinth — have been fairly successful, *egeria* presents more complex management problems. The hyacinth floats on the surface, so herbicides can be sprayed directly onto it. But *egeria* is entirely submerged, so Komeen — the herbicide being considered for its control — must be injected into the water. Komeen contains copper.

"You're creating a plume of copper that could kill other aquatic organisms and build up in the sediments," says Rudy Schnagl of the Central Valley Regional Board, which has a mandate to control copper loadings to the Delta. Schnagl is now working with California's Departments of Boating and Waterways and Pesticide Regulation on the problem, but he says it will be a difficult issue to get agreement on.

When the Board monitored spraying of the herbicide 2,4-D on the water hyacinths, it found no concentrations of concern in the water. Results from pilot tests on the *egeria* with Komeen — tests conducted this July by Dr. Lars Anderson of the U.S. Department of Agriculture — will soon be available. "We're looking at how long the copper lasts in the water column, how much gets into the weed, and whether it controls the *egeria*," says Anderson. He adds that while there are effective herbicides that aren't copper-based, none are currently registered for use in California. Contact: Rudy Schnagl (916)255-3101 ARO

INSIDE THE AGENCIES

CREEK CRMP COALESCE

Citizen monitoring has spawned agency action along the Peninsula's San Francisquito Creek, where a Coordinated Resource Management and Planning (CRMP) process is gathering steam. "This is a direct outgrowth of the stream inventories sponsored by the Estuary Project," says the Coyote Creek Riparian Station's Mike Rigney. Information gathered during creek surveys — part of an S.F. Estuary Project watershed demonstration project — helped convince agency representatives to develop a watershed management plan for the creek.

To date, close to 90 government agencies and community interests have been involved in this locally based consensus-building CRMP process coordinated by the nonprofit Peninsula Conservation Center Foundation. According to the Foundation's Debbie Mytels, planning for the 40-square-mile watershed involves more local agencies and raises more issues than CRMP processes usually tackle. "San Francisquito Creek divides two counties and several cities," she says. "It starts in the foothills, where range management is a concern, then flows through suburban and urban areas, where social issues like homelessness need to be addressed, then ends at the Bay, where we need to look at flood control. Of course, all along the way, we have pollution going into the creek."

CRMP participants have organized task forces around six critical issues and "StreamKeepers," trained by the Riparian Station, will soon be patrolling the watershed's gutters (see calendar). "This marks the first time that all these agencies have come together over one issue — to make sure the San Francisquito watershed and its resources are protected and enhanced. And it shows how demonstration projects evolve into coordinated programs for resource planning," says Rigney. Contact: Debbie Mytels (415)962- 9876 KA

WETLAND OR WETLAND?

Will a pintail or a harvest mouse know the difference between a pristine wetland and a stormwater treatment marsh? Will the building industry fork over for the treatment marsh management and monitoring plans required under a new S.F. Regional Board policy? These were some of the questions discussed at a recent multi-interest roundtable meeting in preparation for a Board vote on the new policy August 17. The policy separates out wetlands constructed for urban runoff treatment from wetlands constructed to treat municipal wastewater. A policy for the latter has been in effect since 1977. "We realized there were too many differences between stormwater and wastewater regulation to deal with them in the same

policy," says the Board's Kristina Hufford. As part of its long-term regional wetlands planning effort, the Board revised and adopted a new policy for wastewater wetlands this July and created the separate policy for marshes used to remove pollutants from urban runoff this August. The latter policy contains provisions to prevent hazards to wildlife, requires a management and monitoring plan, and recognizes marshes made solely for urban runoff treatment rather than for wetland mitigation, habitat or net environmental benefit. "It offers an avenue by which project sponsors can propose a treatment system without risking 404 regulation under the Clean Water Act," says Hufford. Contact: Kristina Hufford (510)286-4212 ARO

DREDGE SCOOP

ONE-STOP PERMITTING

"The Office" — a one-stop spot to get all your dredging business done — is the centerpiece of a new proposal for simplifying the burdensome regulatory process ports, marinas and dockowners must go through to get their dredging projects approved.

"All the agencies agree that the Office is something they need," says the Bay Planning Coalition's Ellen Johnck, who helped draft the proposal and whose group represents industry. "There's no agency resistance, thanks to LTMS." LTMS is a four-year cooperative effort involving over 60 government agencies and diverse interests in drafting a regional long term management strategy (LTMS) for dredged material disposal.

According to Johnck, the Office would be the fulcrum of LTMS efforts to simplify today's multi-agency, multi-permit, multi-office system. The Office would have a single permit application, standardized sediment evaluation procedures, and new decisionmaking protocols that bring all the agencies together in an effort to come to a consensus position on each permit.

Johnck says the big remaining issues are how much responsibility the Office will have for LTMS implementation and how to resolve interagency disputes. "It all has no meaning if resource agencies choose to

invoke the Endangered Species Act over a permit," she says. "If that happens, you can just throw LTMS into the Bay."

But Cal Fish & Game's Bob Tasto is optimistic about what he sees as improved opportunities for environmental protection via the Office. "As a resource agency, we'll have a more timely and direct impact on dredging applications every step of the way and be able to evaluate them before and during rather than after a considerable investment has been made," he says.

Agency and industry enthusiasm for the proposal isn't shared by LTMS' environmental members, who point out that it was developed without their participation. "The proposal deals only with issues of import to the dredging community and ignores a major concern of the fishing and environmental communities — the development of alternative disposal sites," says the Natural Heritage Institute's Cynthia Koehler. "Any new permit process must take into account the development of these alternatives. Leaving them out of the proposal means they are not part of the basic LTMS implementation mechanism."

The Office proposal is now making its way through the formal LTMS consensus-building and review process. Contact: Ellen Johnck (415)397-2293 ARO

NATURAL VENTURES

DITCHBANKS GO NATIVE

What's the world's most noxious weed? According to Larry Burkam of the non-profit Bio-Integral Resource Center (BIRC), it's called yellow nut sedge and it's been driving Central Valley farmers crazy.

Burkam is coordinating a new project with local water and soil management agencies in Dixon, CA which will give farmers an alternative to using herbicides to wipe out yellow nut sedge and other weeds from their drainage ditches. Many of these exotic species produce a lot of seeds and can all too easily overwhelm ditches and spread into surrounding farmland; clearing them with herbicides or dredging creates disturbed soils — ideal conditions for new weeds to colonize. It also enhances habitat for ground squirrels, who may munch on crops and weaken banks and levees with their burrows. In addition, herbicides can run off into waterways and promote soil erosion.

In the Dixon project, BIRC is testing alternative weed control methods. It's encouraging salt grass and creeping wild rye, two native grasses, to colonize ditchbanks and outcompete yellow nut sedge, wild oats and other unwanted species. They also plan to test the ability of dwarf spikerush and meadow barley to suppress the swamp smartweed and pepperwood that favor ditch bottoms. Use of the natives will not only stabilize the ditchbanks, but also enhance water absorption into farmers' fields. And because native perennial grasses grow through rhizomes rather than seeds, they won't migrate via wind and irrigation water into farm fields.

BIRC's Sheila Daar says the approach is nothing new. "Using one kind of vegetation to outcompete another is what nature does," she says. Daar believes native species restoration can also increase wildlife diversity. Similar projects in Solano and Yolo counties could link revegetated drainage ditches as wildlife corridors. "With the simplification of systems, or monoculture, they're losing both the game birds and raptors that are part of the rural lifestyle," says Daar. "There's a growing interest on the part of growers in getting some of that diversity back." Contact: BIRC fax (510)524-1758 SZ

RE-HAB

BIRD FAKE-OUT

A pink plastic lawn ornament caught Charles Moore's eye when he set off in search of decoys to attract egrets and herons back to Bair Island. But Moore found that the pink flamingo, for all its long legs, couldn't be transformed into a heron look-alike.

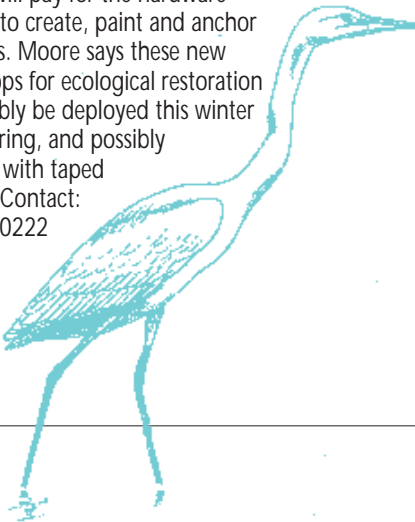
"It was virtually unpaintable," says Moore, a volunteer with a S.F. Bay National Wildlife Refuge project that will deploy several dozen decoys at the Bair Island site of the Bay's oldest heron and egret rookery. Red foxes decimated this nesting site in 1991.

"Hérons and egrets are social birds," says the Refuge's Jean Takekawa. "They depend on sheer numbers to protect their nests from predators. The bigger the colony, the more successful they may be. If a fox came in, they'd mob it."

Takekawa hopes the live birds will come back to socialize with the plastic decoys. Since the colony was decimated, refuge staff have been working to remove the foxes. And Moore has been looking for better raw material for his heron and egret look-alikes than the flamingo. He lucked out recently when he discovered a high quality European import of a great blue heron at a Bay Area hunt shop. And he's already transformed several would-be seagull decoys into Caspian terns — local nesters also suffering from red fox predation.

"You can't just go into a hunting store and ask for a Caspian tern," says Takekawa. "It's kind of an unusual item."

Dollars from U.S. Fish & Wildlife's S.F. Bay Program will pay for the hardware necessary to create, paint and anchor the decoys. Moore says these new plastic props for ecological restoration will probably be deployed this winter or next spring, and possibly enhanced with taped bird calls. Contact: (510)792-0222 ARO



RIVERSIDE RESTORATION

The Bay will grow by about 46 acres on August 24 when a crane breaks through a levee to allow the tides to reclaim hayfields along the Petaluma River.

"This is the turning of the tide in terms of giving back to the Bay," says Richard Charter of the Sonoma Land Trust, which is involved in several North Bay efforts to restore wetlands long lost to agricultural and urban development.

Indeed, it was a South Bay developer's mitigation payment to the U.S. Army Corps that provided \$100,000 of the approximately \$250,000 allocated to reclaiming the Petaluma marsh. The Corps had planned to spend the money on South Bay restoration but high prices drove it north to Petaluma.

The Petaluma marsh, a project spearheaded by Cal Fish & Game, will be reclaimed passively. Because the river has a high sedimentation rate, officials expect the tidal marsh to be completely restored in five to seven years. By then, they hope the salt marsh harvest mouse, California clapper rail, salt marsh song sparrow and salt marsh yellow throat will return.

The prospect of attracting these dwindling species provided a strong argument for marsh restoration. During the planning stages, there was debate over whether the existing hayfields along the river should be preserved. The hayfields provide shorebird and waterfowl habitat during periods of normal or high rainfall, when seasonal ponds may occur.

Fish & Game's Carl Wilcox says that while seasonal wetlands such as hayfields should be part of the mix in long-term planning for the Bay ecosystem, the arguments for restoring tidal wetlands were much more compelling. "By returning them to tidal influence, they're functioning as wetlands 365 days a year and providing habitat for a broader array of fish and wildlife," says Wilcox.

Charter agrees. "Had the environmental community been active in the 1950s, when this parcel was drained, it would most certainly have prevented it. But now, we have to go back to the underlying concept of restoration. We're putting things back as closely as possible to the way nature made them." Contact: Carl Wilcox (707)944-5525

SZ

RE-HAB

MICE, MEN AND MARSHES

Workers at the controls of big backhoes, bulldozers and dredges raced to finish a new slough channel this June before a small white bird brought its young to the mouth of San Lorenzo Creek for fishing lessons. They succeeded. During the short weeks while the least terns, an endangered species, teach their offspring to dive and forage just offshore, the heavy equipment being used to restore 172 acres of salt marsh on the San Leandro shoreline is moving on to tasks farther inland.

This major South Bay wetland restoration project has been quietly steaming ahead while Al Gore visited Sonoma Baylands and Governor Wilson accepted the deed to 10,000 acres of North Bay salt ponds amid media fanfare. Despite all the press attention to the latter two wetland restoration projects, the former is equally significant. The San Leandro project's primary purpose is to restore habitat for existing populations of endangered salt marsh harvest mice. But it started more than a decade ago as a small mitigation project for wetlands used for upland disposal of material dredged from the San Leandro Marina.

"Back in the 70s, the city never imagined wetland restoration as extensive as this," says Greg Mailho of the City of San Leandro, the project sponsor. "It just kind of mushroomed."

The restoration has several major components. They're cutting a new channel to bring Bay water and tides back into several diked-off marshes. The new channel follows the old Roberts Landing Slough — where turn-of-the-century barges laden with local fruits and vegetables once travelled — except for at its mouth. "The delta and sandy beach that have built up at the mouth of San Lorenzo Creek have blocked off the mouth of the old channel," says hydrologist Bob Coats of Philip Williams & Associates. "Since we can't reopen the old route, we're following the new natural tendency." That tendency brings the slough into the creek rather than straight out to the Bay (see map).

Making sure there was enough scouring action in the slough bed to keep the new mouth open was one of the design challenges before Coats. To address it, he used a mathematical model called ESTFLO, which calculates energy, momentum and continuity in estuarine tidal flows. He used another model to estimate how many tide gates in the Bay shoreline levee he'd need to achieve what engineers call "muted" tidal action in the North Marsh — another component of the project.

"The land is subsided," explains Gary Oates of Environmental Science Associates. "If we just punched a hole in the levee, we'd have water inside all the time, and we'd drown the mice. But we designed it with Bob Coats to have multiple culverts, only one of which lets Bay water in, but all four of which let Bay water out."

The introduction of muted tidal action will help restore areas of pickleweed — prime salt marsh harvest mouse habitat — and Oates says workers are stockpiling pickleweed from excavations so they can spread it on five new islands. The islands will offer upland mouse refuge during high tides. "They're built like a sandwich," says Oates, with material from the main slough channel excavation at the base, from the city's dredged material disposal site in the middle, and from the smaller excavations — the pickleweed stockpile — on the top.

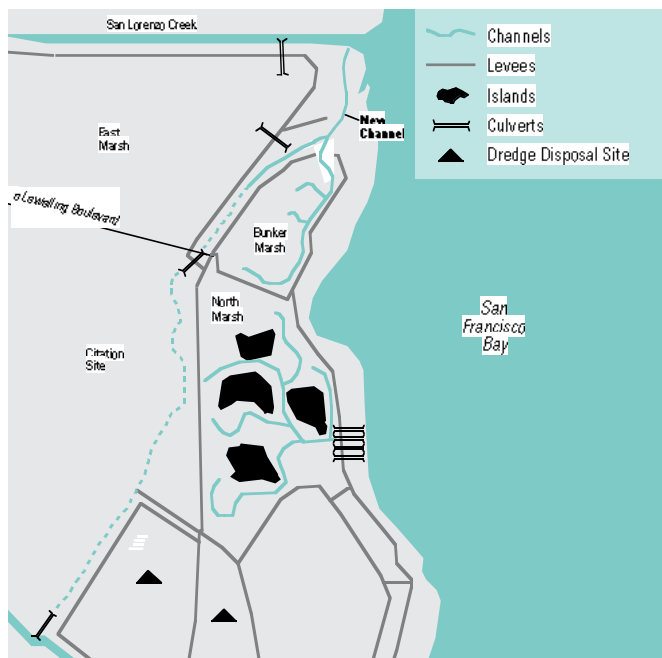
Beyond the North Marsh, the project will also restore tidal action to the East Marsh and the Bunker marsh — named after the ruins of ammunition bunkers from Trojan Powderworks. All in all, Coats says the restoration will create a good habitat mosaic, especially if a 106-acre complementary wetland re-hab project on its northeast border is added. This second project, planned mitigation for an environmentally controversial Citation Homes Central development, still hasn't received its final permit.

Gary Oates points out how well the City of Leandro's project showcases new tools for wetland restoration. The project was one of the first uses of the S.F. Regional Board's new guidelines for assessing suitability of dredged sediments for wetland construction. Oates found the criteria "useful." Before the criteria, he says, making the call on sediment suitability was pretty much left up to individual interpretation.

Oates says the project also demonstrates multiple beneficial reuse options for as much as 10,000 cubic yards of dredged material. The material — dredged up every 4-5 years from the marina and placed at a site adjacent to restoration area — is not only being used to build the islands but also being sold for sanitary landfill cover elsewhere. And in between dredgings, engineers plan to let 3-6 inches of bay water onto the disposal site to enhance the kind of seasonal ponding favored by shorebirds.

Contact: Gary Oates (415)896-5900;
Bob Coats (415)981-8363; Greg Mailho
(510)577-3481 ARO

SAN LEANDRO SHORELINE MARSHLAND ENHANCEMENT PROJECT



THE MONITOR

SMELT SLIP UP

Biologists are calling a recent Delta smelt monitoring project everything from "a waste of money" to "the O.J. Simpson of water."

The monitoring operation, conducted by Hanson Environmental, was conceived as a way to determine the timing and path of fish caught in the state and federal water projects. Pumping levels were increased systematically over a ten-day period — drawing on American River water — while Kodiak trawlers tracked the density of smelt in the Old and Middle Rivers. The plan was to correlate the density of the smelt found in the rivers with fish found in the salvage operations at the two water facilities. Unfortunately, by the time the experiment took place this July, most of the smelt had moved out of range of the pumps. Researchers collected only six smelt — a meager catch for \$100,000.

Critics abound. "They're just using this as an excuse to pump more water," says Felix Smith, a retired U.S. Fish & Wildlife official. "This is the O.J. Simpson of water." Cal Fish & Game's Perry Herrgesell says, "The science could be questioned." And John Williams, who is charged with administering a court order allocating the American River's resources, says, "You'd want to do that experiment when the fish were in a position in the central Delta where they would be susceptible to the pumps."

"The test quite frankly was a little too late," says the Department of Water Resources' Leo Winternitz, who asked Hanson to conduct the study. Winternitz stressed that the monitoring showed only that smelt are not at risk from pumping in July. He hopes to conduct better studies next spring.

If additional studies do come on-line, Williams would like to get a chance to comment. "In this instance, I don't think the effect on the American River is that significant," he says. "But it does get into the range of activities that have environmental effects. I hate to be bureaucratic about it, but there ought to have been some opportunity for public input." Contact: Leo Winternitz (916)495-7203 SZ

HARD SCIENCE

GRAZING FEEDBACK

Mention "continuous grazing" and most environmentalists imagine bare land, fat cattle and polluted runoff. But the precise relationships between grass, cows and rain are much more complex. Two new studies being conducted by U.C. Berkeley scientists Barbara Allen-Diaz and Jim Bartholome promise to better pinpoint these relationships.

In the studies, pasturelands at two sites — one on East Bay Municipal Utility District (EBMUD) lands near San Pablo Dam and the other in East Bay Regional Park District lands surrounding Wildcat Creek — are being subjected to four different grazing and fire treatments. The goal is to measure impacts on native grasses, botanical composition, herbage productivity, and water infiltration and chemistry, and to assess whether limiting grazing to one season or eliminating it all together improves water quality and native grass growth.

"There's been very little quantification of the interaction of grazing animals, grass residue, nonpoint source pollution and watershed protection," says Allen-Diaz. "We want to look at the feedback loops between these factors."

The EBMUD experiment involves 13 hundred-foot-square paddocks, a few cows and a rainfall simulator; the Wildcat experiment involves four 70-80 acre pastures, a herd of cattle, a rancher and the whims of the weather and passersby.

"From an experimental point of view, the EBMUD paddocks are small and easily controlled," says Allen-Diaz. "The Wildcat pastures are much larger, more diverse and more realistic in terms of real life ranching conditions. The next experimental step will be a whole watershed."

Allen-Diaz and Bartholome have already applied for funding for that next step. But in the meantime, Allen-Diaz is busy writing up the first year's results from the EBMUD project. In this project, her research team allowed cows to graze different paddocks in different seasons. Some paddocks were grazed during the winter and spring, some in the summer and fall, some all year and some not at all. Half of each paddock was then burned. The timing of grazing and

burning affects the growth of different plant species. Summer and fall grazing may be the best for promoting native species, for example, because by then the perennial natives have gone dormant and the annual exotic grasses have started to grow. Likewise, fall burning is best after the first rains, because it kills newly germinated annuals.

In the experiment, Allen-Diaz found a statistically significant relationship (95 out of 100 times) between grazing, burning and the standing biomass. There was little change in biomass on the continuously grazed plot (see table below).

PASTURE PRODUCTIVITY IN KG/HA

	Ungrazed	Spring Graze	Summer Graze	Cont. Graze
Burned	5660	5380	5720	6880
Unburned	3580	4380	4220	6720

KG/HA: Kilograms per hectare

Allen-Diaz says weather played a major role in the results. But her efforts to simulate weather — with the help of a collection of hoses and nozzles called a rainfall simulator — failed. "Even at the highest setting, which was 8-9 times the amount of rain we get in a winter storm, there was no runoff," she says. To address this in next year's experiments, Allen-Diaz is "redesigning our approach to raining."

Allen-Diaz also found that the native species purple needlegrass increased from 4.5% to 6.2% of cover on burned plots between 1993 and 1994, but decreased on unburned plots. However, this change only occurred in plant size, not in density. "I'd hoped to see more response to the different treatments in the native perennials, but it's only been one year," she says.

Though the two three-year projects were both begun in 1993, results have been slower to come in from Wildcat — a S.F. Estuary Project watershed management demonstration project — because passersby kept leaving the pasture gates open. With self-closing gates now in place, results should be forthcoming.

Contact: Barbara Allen-Diaz
(510)642-7125

ARO

PLACES TO GO & THINGS TO DO



WORKSHOPS & SEMINARS

Urban Stream Restoration Training

THUR•8/17•All day

Topic: Innovative urban stream restoration techniques.

Sponsor: Golden State Wildlife Federation and Urban Creeks Council

Various East Bay field locations

Cost: \$110 (510)550-6669

Developing a Vision:

A Comparison of Problems & Solutions

TUES-WED•9/13-14•All day

Topic: Comparison of environmental issues in the S.F. Estuary, the Netherlands and Chesapeake Bay.

Sponsors: Bay-Delta Oversight Council, DWR, Resources Agency, Water Education Foundation and others

Radisson Hotel, Sacramento

Cost: \$199 (916)444-6240

San Francisco Estuary Institute Creation

FRI•9/23•9 AM-4 PM

Topic: A celebration to mark the creation of SFEI, an institute dedicated to providing the scientific understanding necessary to manage the S.F. Estuary.

Sponsor: Aquatic Habitat Institute

Nimitz Conference Center, Treasure Island
(510)231-9539

Discovering the Bay Area's Endangered Species – Teacher Workshop

SAT•9/24•10 AM-3 PM

Topic: How to teach about endangered plants and animals and the Adopt-an-Endangered Species program.

Sponsor: Hayward Shoreline Interpretive Center
Hayward Shoreline Interpretive Center, Hayward

Cost: \$20 (510)881-6751

Bay Planning Coalition's Eighth Annual S.F. Bay Decisionmakers Conference

THURS•9/29•9 AM-2:30 PM

Topics: Case studies on military base reuse, harbor dredging, home building and levee reinforcement; regulatory reform.

Sponsor: Bay Planning Coalition

Nimitz Conference Center, Treasure Island

Cost: \$125-\$175 (415)397-2293

StreamKeeper Training

Various dates in September

Topic: How to report and resolve creek pollution incidents.

Sponsor: Coyote Creek Riparian Station

Call for locations (408)262-9204

Kids in Creeks

Various dates and times in September and October

Topic: Prepares educators to teach about creek ecology and restoration (registration limited to teachers in Alameda and Contra Costa Counties).

Sponsor: Aquatic Habitat Institute

Cost: \$20 (510)231-9539

Avocet Festival '94

SAT•10/8•All day

Activity: California Native Plant Sale, Environmental Fair and 14th Annual Wildlife and Nature Arts and Crafts Show

Sponsors: S.F. Bay Wildlife Refuge, Citizens Committee to Complete the Refuge, Audubon Societies and others

S.F. Bay National Wildlife Refuge, Hayward

(510)792-4275



HANDS ON

California Coastal Cleanup Day

SAT•9/17•All day

Activity: Join other Californians in protecting Bay-Delta beaches, bays, rivers, parks and roads from pollution.

Sponsor: California Coastal Commission

Various locations (800)COAST-4U



MEETINGS & HEARINGS

S.F. Regional Board

WED•8/17•9:30 AM

Topics: Revised groundwater amendment to the Water Quality Control Plan; policy on use of constructed wetlands for urban runoff pollution control; and other topics.

Board Room—BART Headquarters Building
800 Madison Street, Oakland

(510)286-0533

State Water Resources Control Board

THUR•8/18 (Tentative)

Hearing Room—901 "P" Street, Sacramento
(916)657-0990

Bay Delta Oversight Council

FRI•8/26•Time to be determined.

Beverly Garland Hotel, Sacramento (916)657-2666

Bay Commission

THUR•9/1•1 PM

Topics: Consideration of regionwide permit for seismic safety retrofitting for Caltrans; public hearings on Alameda Gateway Drydock and on consistency determination on Army Corps' Oakland 42' deepening project; consideration of proposed B.D.N. for revised Bay Plan Seaport Policies.

Room 455—State Building, San Francisco

(415)557-3686

Bay Delta Oversight Council

THUR-FRI•9/15-16•Time to be determined.
Doubletree Inn, Burlingame (916)657-2666

Central Valley Regional Board

FRI•9/16•9 AM

Fresno (916)255-3039

S.F. Regional Board

WED•9/21•9:30 AM

Board Room—BART Headquarters Building, 800 Madison Street, Oakland
(510)286-0533

Bay Commission

THUR•10/6•1 PM

Topics: Public hearings on Caltrans I-580 Albany portion and on Army Corps' Oakland 42' deepening project.

Room 455—State Building, San Francisco

(415)557-3686

NOW IN PRINT

An Analysis of the Beneficial Uses of Dredged Material at Upland Sites in the San Francisco Estuary (summary document previously announced; complete 83-page document now available)

Bay Commission

Copies from Steve Goldbeck (415)557-3686

Companion Planting

(An illustrated guide for gardeners)

City of Sunnyvale

Copies from (408)730-7717

The Comprehensive Conservation and Management Plan (bound edition of June 1993 version)

San Francisco Estuary Project

Copies from (510)286-0460

National Water Quality Inventory Report to Congress (EPA 841-R-94-001); 1993 National Nutrient Management Conference Proceedings (EPA 841-J-94-900); and 1992 Technical Workshop on Sediments Proceedings (EPA 841-R-93-007)

Copies from: U.S. EPA, NCEPI, 11029 Kenwood Rd., Bldg. 5, Cincinnati, OH 45242

Pilot Regional Monitoring Sediment Report

S.F. Regional Board

Copies from (510)286-1346

GOT A QUESTION ABOUT WETLANDS PROTECTION?

Call EPA's Wetlands Information Hotline at **1-800-832-7828** for information about the values and functions of wetlands and options for their protection. The Hotline operates Monday through Friday, 9-5:30pm, Eastern Standard Time. Information specialists are standing by.

FROM THE COVER

Barbara Salzman of the Marin Audubon Society agrees. "Golf courses are especially problematic for species like Canada geese. They're grazers, and they've overproduced because there's all this phony food [turf] around. They leave their droppings, so people complain," she says, adding, "Course managers extol the virtues of wildlife until they become pests. You have to realize that a lot of this natural golf courses information comes from the golf course builders themselves."

The lack of independent data hinders regulators' ability to assess success or failure of new management practices. "We haven't done any intensive monitoring of golf courses," says Bowyer. "It's probably a good idea." Adds Rigney, "There are so many proposals for new golf courses. I'd like more good strong evidence of how they impact the environment."

This evidence will surely be needed given the 2,000 new golf courses now in various stages of planning or construction across the U.S. Locally, a combined golf and luxury housing development proposed for the site of the Renaissance Pleasure Faire in Novato has sparked controversy. Although project sponsors say the golf course is being designed to incorporate conservation practices from the ground up, its construction still raises questions about the best use of the Bay Area's remaining open space, not to mention erosion, loss of riparian habitat, streambed alteration and wetland fill. "After all," says Salzman, "they're developing on diked baylands."

"We're getting into regional planning issues here too," says Bowyer. "At some point, we may have to decide that we have enough golf courses." Or that golf courses, no matter how environmentally sound, aren't Nature. KA

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ESTUARY

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