C R E E K S

Alameda Work Trickles On

Driving down 680 from San Ramon to Pleasanton — with its prettily paved and groomed burbs — you wouldn't guess that this was once a shallow lake and willow marsh. Indeed little trace is left of the vast freshwater swamp called Tulare Lake, just over the East Bay ridges, which once collected all the runoff from Livermore and San Ramon. This marshy ecosystem filtered the rush of water from winter storms so that by the time it exited into the narrows of Arroyo de la Laguna, mingled with Alameda Creek, and spilled into Niles Canyon, it wasn't an unmanageable torrent. But the development of farms and towns on top of this wet spot dramatically changed the hydrology of the northern reach of a vast watershed draining into San Francisco Bay. "When it rains, Niles Canyon gets crazy, there's so much water, so fast," says Tim Ramirez, natural resources manager for the San Francisco Public Utilities Commission, which owns large areas in the watershed.

Of course the loss of the lake happened more than a century ago, and since then throughout Alameda Creek's 700-square-mile watershed dozens of other wet spots have been drained, dams built, creeks buried, and channels reshaped. "The watershed is huge and complex, and all these changes, compounded over time, have left us with a long and arduous path to getting it to function more naturally again. We're going to need the full cooperation of every partner to reach our goals," says Carol Mahoney, a planner for Zone 7 Water Agency out in Livermore.

The creek is the biggest tributary to San Francisco Bay that isn't fed by snowmelt. Its northern sub-watershed is more urbanized while the southern portion is more ranch and recreational open space– but it all comes together in Niles Canyon. Downstream of the canyon, creek waters speed through 12 miles of federal flood control channel– designed to protect Fremont and Newark from high waters caused by rains and tides. In this lower reach there are drinking water intakes, inflatable barriers, steps in the stream called grade control structures, and areas where sediment collects on the bottom. "It's a big tricky creek that has every kind of problem we face in watershed management statewide somewhere along it. The hopeful thing is that there are only a handful of public agencies responsible for it," says Ramirez.

Over the last couple of decades, many of these agencies, as well as steelhead fans, have sought to tweak the creek's plumbing so it's better able to support fish, absorb floods, and supply water to local communities.

In tributaries upstream of Niles Canyon, the San Francisco PUC recently began a more fish friendly upgrade to Calaveras Dam and is working with the Alameda County Resource Conservation District, Zone 7, and other federal and county partners to address significant bank erosion in places like Arroyo De La Laguna. "It's become this very flashy stream with deep incision during storms – the bank sometimes retreats as much as two feet in one year," says Leslie Koenig, an RCD biologist. With little chance to reconnect with the floodplain, partners have been strategically placing rock weirs in the Arroyo de la Laguna. The weirs divert flows away from banks, slow water velocity, and create back pools for fish. They've also employed some soft bioengineering fixes. "We're doing the best we can to control erosion but if we can't control the hydrology, it's just a band-aid," says Ramirez. Beyond erosion control, slowing down the floods from upstream will also require softening the pavements in Livermore, Pleasanton, Dublin and San Ramon, where remedies such as greener streets and infrastructure are slowly gaining ground.

Downstream there are projects to help steelhead over barriers and around dams, and to slow flows and cool water temperatures. The creek comes out of Niles Canyon into the service area of the Alameda County Water District. Here the district impounds water using inflatable barriers, and then uses it to replenish a groundwater basin where they have local water supply wells. The infusion from the creek helps repel seawater intrusion from the nearby Bay, but the barriers and other in-channel structures are a problem for threatened steelhead migrating through the system. To help juvenile fish on their way back out to the Bay, the district designed a fish screen system for its off-stream diversions. The screens can be rolled in and out of the water on tracks depending on flow levels (see online story for video).

In 2006 the San Francisco PUC removed Sunol and Niles (pictured) dams from Alameda Creek, alleviating public safety concerns and providing steelhead and other fishes' access to upstream waters. The flood control channel downstream (BART photo) still presents various obstacles to fish. Photos by Brian Sak.

The district is also partnering with public works on a fish ladder so steelhead can get over their middle dam and through flood control structures. "We've made progress but we're not there yet," says the district's Eric Cartwright. "It's complex because it's not a natural channel, it's a flood control channel, with a whole extra layer of permitting."

Along the 12 miles of the flood control channel, the County is also trying to be strategic about improvements. The channel, originally designed by the Army Corps, has to have a very high flood capacity in order to drain such a large watershed. But large channels with wide, flat, sandy bottoms aren't very good for fish. Also sediment keeps collecting in the channel, requiring expensive dredging. The Alameda County Flood Control District found a way around the problem by designing a sustainable low flow channel, and sizing it based on nature and hydrology and sediment transport modeling. "We're helping a naturally formed low flow channel by widening it in some places and making it deeper and steeper in others," says Rohin Saleh, chief hydraulic engineer for the District. The plans he's crafting are designed to flush sediment out faster and reduce water levels during high flood events, as well

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end up with situations where people in Seattle pay more for water than people in Las Vegas," Videmsky says.

The atlas team soon hopes to launch a groundwater map that would show where aquifers are located and how much water each contains. Once again, the information is incomplete. "The state collects it, drillers have to submit it for regulatory measures, but we are the last state in the West to continue to make that data private," Videmsky says. Making this data public could greatly improve how California manages this hidden resource. "Researchers now only have a two-dimensional perspective. They need this missing underground component to fully understand the hydrodynamics," he adds.

The new atlas is popular with journalists. And other states have contacted the institute about launching water pricing maps of their own—a practice the programmers encourage.

"Hopefully we can use the atlas as an educational tool," Videmsky says, and "as a conversation starter about why these problems exist in the first place." **KW**

ATLAS http://ca.statewater.org/

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as help fish. "We're close to finding the sweet spot," he says.

At the bottom of the flood control channel, meanwhile, the State Coastal Conservancy is eager to breach levees between the channel and its salt ponds. With more connectivity to the creek and the Bay, the restored ponds may serve as estuarine transitional habitat and nursery grounds for outmigrating steelhead smolts. Add some innovative new levees with broad backsides and the combination could also protect nearby suburbs from storm surges, high tides and sea level rise.

"Making sense of all that is going on along Alameda Creek is like trying to explain quantum physics to a kindergartener. It's a tough subject to tackle," says Mahoney. **ARO**

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recreation and local sustainability. "If it's successful, it could be a model for other parts of the Delta," says Davenport. **ARO**

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impact the free-flowing character and extraordinary values that make a river eligible for the Act's special protections." Such an exemption, she adds, would have made the Mokelumne "a Wild and Scenic River in Name Only."

"Protection for the Mokelumne River deserved a straight up and down vote in the Assembly on its merits," says Evans. "The bill's demise, at least for now, is a classic example of politics triumphing over good public policy in the California Legislature."

"I am very disappointed," Hancock commented after 1199's death by suspension. "However, I remain committed to the goals of designating portions of the river as Wild and Scenic and insuring that the East Bay continues to have a source of safe and clean water." It is unclear at this point whether Hancock will reintroduce a Mokelumne bill next year. **JE**

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THERE'S MORE TO THESE THREE STORIES! To see the extended online versions of the stories on Alameda Creek, Delta Habitat paper, and Mokelumne River click here or go to http://www.sfestuary.org/estuary-news/