

More bay, less area

Julia Scott, Bay Area News Group, 6-13-10

From Antioch to North Richmond to Redwood City, a slow rising sea level could endanger the properties of as many as 270,000 Bay Area residents and cause some \$56.5 billion in damage by the end of the century unless measures are taken to protect them, experts say.

But is anyone doing anything about it?

Cities typically aren't prepared to tackle the issue, so it has been left in the hands of developers, and some are acting: The ground on Treasure Island would be raised — at a cost of more than \$1 billion — to keep future neighborhoods high and dry under one developer's solution to possible rising sea levels. And developers of Redwood City's Saltworks property plan to build up earthen levees.

But at least 12 major developments with as many as 56,000 new homes are planned at the edge of the Bay over the next five to 20 years, and for many of them there's no strategy at all.

Melting ice sheets and glaciers, combined with the effects of warming ocean temperatures, have already caused sea levels to rise in many parts of the world, most scientists agree. The Bay rose nearly 8 inches in the past century.

Climate scientists say greenhouse gas emissions, deforestation and other activities largely account for the warming of the atmosphere in the past 100 years and some of them expect the rate of rising sea levels to accelerate going forward. However, there is no global consensus and scientists disagree on how much or how fast sea levels will rise.

Even incremental changes in sea level can affect tidal patterns and wetlands ecology, and undermine the strength of older levees, experts say. Here in the Bay Area, lower-lying areas without shoreline protection, such as Alameda and Hunters Point, would see the effects before better-protected zones or those built much higher than the Bay.

But cash-strapped cities are not inclined to spend millions of dollars on solutions to prevent future flooding problems from rising sea levels when the severity of the threat is difficult to predict. No agency has the authority to require cities to take into account rising sea levels when planning a development.

Consequently, decisions over whether to build levees and how high to build them usually fall to the developer, said Will Travis, executive director of the Bay Conservation and Development Commission.

With 2 million new residents projected to move to the Bay Area in the next 25 years, the question of rising sea levels has added fuel to a fierce regional debate over where new housing is appropriate.

A growing chorus of regulators, legislators and environmental groups say the lust for prime real estate and a wait-and-see approach to rising sea levels have taken precedence over coolheaded analysis of the pros and cons of building by the Bay and the region needs a comprehensive adaptation strategy — one that involves retreating from the Bay.

State Sen. Loni Hancock, D-Berkeley, recently joined more than 125 current and former elected officials to

urge Redwood City leaders to reject a proposal to build thousands of homes and more than 1 million square feet of office space on Redwood City's Bayside salt ponds.

"I think that, right now, Redwood City is like the canary in the coal mine," Hancock said. "For me, the major concerns are sea level rise and what is the public liability if we allow and permit development that will be affected by sea level rise."

Parts of the Saltworks site are below sea level. Developer DMB Inc. has argued that building homes close to jobs in Silicon Valley is a benefit to the environment.

Only two areas — Foster City and Hamilton Field in Novato — have FEMA-certified levees high enough to protect them from a 100-year flood event, defined as a 1 percent chance that each year will present a "perfect storm" of rains, wind and high tides.

Many of the planned developments lie partially or entirely within existing flood zones, as defined by FEMA — such as the Redwood City Saltworks site and others in Oakley and Alameda.

California's Climate Change Research Center predicts that sea level rise in the Bay could reach 16 inches by midcentury and 55 inches (4.5 feet) by century's end, which would put 270,000 Bayside residents at risk of flooding unless they're protected.

The Pacific Institute estimates it would cost San Mateo, Alameda and Santa Clara counties more than \$2 billion to build and raise all the levees and sea walls to guard against flooding associated with maximum sea level rise scenarios, but if measures are not taken, flooding could cause \$56.5 billion in property damage by the year 2100.

The Bay Conservation and Development Commission, which has jurisdiction only over development within a narrow strip along the immediate shoreline, is developing a formalized set of policy recommendations to address rising sea levels. The policies are still in draft form and were revised after they came under fire from a coalition of development interests last year.

"What we're trying to do is develop plans that accommodate that uncertainty, that incorporate resiliency and sustainability so that even if we're wrong, we'll still be OK," Travis said.

What strategies?

Some cities with major developments in play don't have a strategy to deal with rising sea levels.

Adding more Bayside development would exacerbate the problem, but tomorrow's flooding concerns must compete with today's economic realities. Cities need tax revenue from commercial development and new housing to grow.

Developers of San Francisco's Treasure Island project are betting that the income from the development will justify spending more than \$1 billion dollars to stabilize the island, which was created from Bay mud and is subject to liquefaction. The development will house as many as 18,000 people by 2030, generating net tax revenues of \$13 million for the city's general fund each year.

San Francisco's Mission Bay project will have more than 6,000 housing units when it is complete, but has no flood protection plan despite the land elevation there starting at only 4 feet above mean high tide.

Contra Costa County plans to redevelop a 250-acre neighborhood in North Richmond, which happens to sit in a flood plain at the edge of a tidal slough in San Pablo Bay. That property has no levee protection there.

Oakley, which has tripled its population since 1980, envisions a residential development of about 4,000 homes at the edge of the Delta.

The city would have to build a levee to protect future residents at a property that starts below sea level. Oakley City Manager Bryan Montgomery said he doesn't understand the controversy surrounding the project, given that many Bay Area homes are built over earthquake faults.

"The fact that we allow people to build and develop in more hazardous areas is somewhat ironic to me," Montgomery said. "Just build levees and be practical about how to proceed."

Some experts question whether armoring the Bay with higher levees and sea walls is the most sustainable strategy.

There are environmental considerations, such as the inundation of wetlands as rising waters slap against an artificial tide barrier. For every foot of dirt added on top of a levee, the base extends 3 feet — which the Bay Conservation and Development Commission considers a form of Bay fill.

"Cities that just figure they can build a higher levee may be in for a rude awakening," said Kathy Schaefer, an engineer with FEMA's western region.

Some developers aren't planning to build levees at all.

Lennar Corp., lead builder of future communities on Treasure Island and Hunters Point, has decided to raise the land elevation and the building pads in both locations to a minimum elevation of 36 inches above the 100-year tide, rather than build a levee or sea wall that residents won't be able to see over.

By contrast, the Redwood City Saltworks developer plans to construct levees that adhere to the 55-inch standard, since that's what the state recommends.

"Right now, it's really hard planning for one number. These numbers weren't here last year. And this number may not be there within six months. And so, rather than building to a number, we are building to a strategy, a mechanism in place which is going to deal with any amount of sea level rise that occurs out here," said Dilip Trivedi, coastal engineer with Moffat & Nichol, the firm that is engineering the Treasure Island development.

Enormous task

New growth is one thing, protecting existing development is another.

Off the record, city officials say there's no way they can plan for the kind of capital investment necessary to protect property from 55 inches of sea level rise 90 years in the future. Planning documents prepared by the Bay Conservation and Development Commission acknowledge that cities have little incentive to protect their most vulnerable land.

Cities that built neighborhoods, airports and highways by the Bay are already facing huge dollar signs when it comes to addressing today's flood risks.

For example, San Mateo needs to spend \$7.5 million to protect more than 8,000 residents from Bay and creekside flooding in the next few years, according to public works officials.

Redwood City has spent about \$5.5 million in the past 10 years to prevent the Redwood Shores community from having to buy flood insurance. The city hopes its levees will be certified this year.

As cities struggle to come up with the money to meet flood protection standards, there is a growing consensus among urban planners and regulators that it's past time to initiate a regional strategy that involves retreating from the Bay.

San Francisco, Silicon Valley, the airports — these are worth protecting at any cost, suggests Travis, of the Bay Conservation and Development Commission.

Other countries such as the Netherlands and Germany have something to teach us about adapting to inevitable flooding, he said.

"I think the better way of looking at it is we aren't building communities anymore, we're building long-term campgrounds. And if you think of it that way, we may decide to build in a different way. We may decide that the thing to do is have buildings that are specifically designed to only last 50 or 100 years, and then they can be moved away. Or we can design things that look like they're on solid ground now but when the water comes up underneath them, they're designed to float. Or they're designed, as they've done in Hamburg, to occasionally be flooded."

People aren't always ready to hear Travis' message about the dangers of rising sea levels.

That's why he takes them to San Francisco's Pier 1/2 — so named because it's only half a pier.

Wedged next to Pier 1, it used to receive ferries from Vallejo but was chained shut in 2008 when rising tides started breaking apart the deck's underside.

It's the first physical evidence of damage from rising sea levels Travis knows of, but it won't be the last.

"The only thing that is certain is that every time a projection comes out, it's higher than the last one. So this is one of these things where we don't know exactly how high waters will rise, we just know that they will rise," Travis said.