



Chip Scheuer

Erosion along Opal Cliffs Drive has taken its toll.

## Capitola looks for ways to save cliffs from erosion

By JENNIFER KOSS  
STAFF WRITER

When John and Peggy Bowles bought their retirement home on Capitola's exclusive Depot Hill 28 years ago, the cliff extended at least 15 feet beyond Grand Avenue, they said, before dropping 70 feet to the ocean.

Today, the cliff edge is hugging the street and the City Council is considering closing the Bowles' portion of Grand Avenue to vehicular traffic, to deter any vibrations that might be contributing to cliff erosion. In other blocks of Grand Avenue, the street has already become a mere footpath and its seaward edge is starting to crumble into the ocean, bringing the threat of disintegration ever closer to the expensive homes perched on the bluff.

Homeowners said they have been pushing for years to get the city to take steps to halt the Depot Hill cliff erosion, to no avail. But that appears likely to

change. With the distance between their homes and the ocean shrinking to a more and more dangerous level, the pressure on the city has increased, and officials are meeting with homeowners to discuss solutions.

"For the first time, I feel that something will be done," said Trude Holmes, who lives just down the street from the Bowles'.

"It is one of the treasures of Capitola," Holmes said of Depot Hill, "and they (City Council members) are just now beginning to realize it could be lost."

City Councilman Ron Graves said he did not think homeowners could afford the cost of a solution on their own, and it would benefit the entire city to save that picturesque area.

"I think that there is an obligation to everybody here," he said. "I don't think it's a private country club that nobody else

uses."

City Public Works Director Larry Perlin said he's discussed various alternatives recently with erosion experts, including soils engineers, geologists and surveyors. Any solutions are going to be costly and take a long time, he said.

"Controlling erosion on the cliffs and bluffs is not a project," he said. "It's more like a program that entails several types of projects."

Capitola's erosion problems are not confined to Depot Hill. The cliff is also crumbling away along Cliff Drive, on the other side of Capitola Village, which Perlin said he was more concerned about from a public-interest point of view because it is a main thoroughfare.

"Cliff Drive is a major street into and out of the Village area and into and out of the city," Perlin said.

If the city does not want to lose that thoroughfare, he said, it will have to start investigating ways to halt cliff erosion there. The bluffs are eroding at an average of one foot per year, he said, but can go for years unchanged until a chunk slides off and removes several feet.

Capitola's General Plan notes that erosion of the city's cliff areas will continue to be an area of specific concern and names as a policy the preservation of Cliff Drive.

"Consider alternate realignment of Cliff Drive to ease the burden of traffic along cliff edge," the policy states. "Proposals include shifting

REFERENCE

alignment to an area adjacent to railroad right-of-way and/or redirecting traffic to 47th Avenue and Capitola Road."

Perlin said city officials and at least two council members would be meeting with Depot Hill homeowners Tuesday at 7 p.m. in the conference room at City Hall, to discuss ways to halt cliff erosions and save their homes.

Erosion is a problem for everyone living along the coast, but particularly in this area, said Gary Griggs, a UC-Santa Cruz geologist and noted authority on erosion. The northern edge of the Monterey Bay is one of the fastest-eroding areas on the West Coast, he said.

The change in the coastline in any given year can range from imperceptible to 10 feet, he said. Although the change averages out to one foot per year as a general rule, some areas of the coastline are eroding at an even faster rate.

On Depot Hill, for example, the change ranges from one foot to three feet per year. The result of years of erosion is that valuable properties are now "crouched right on the bitter edge" of the cliff, Griggs said.

In the case of the Crest Apartments, in the 100 block of Grand Avenue, cliff erosion has forced the abandonment of several apartments left overhanging the cliff. Griggs is working with the investment group that owns the apartments, Crest Investors, to come up with a way to shore up the cliff and make the apartments habitable again.

The cause of the erosion is twofold, he said. Waves from the ocean batter the base of the cliff, eroding it until portions of the topside bluff slide off, while rainwater permeates the bluff and adds to its instability. In Rio del Mar, along Beach Drive, winter storms eroded the bluff and destroyed homes in an area where the waves didn't even touch the base of the cliff, he said.

Rio del Mar homeowners subsequently built seawalls at a cost to them of \$3,000 for every front foot of property, he said.

A more severe method is to simply move landward, as Griggs said was done on Depot Hill a number of years ago when homes were moved back from the cliffside. However, most people have opted for protection in the form of

seawalls, he said.

In other areas, riprap has been used to keep the ocean at bay. The riprap consists of boulders or concrete blocks placed at the base of cliffs, such as was done at Lighthouse Point in Santa Cruz, but Griggs said the riprap will only slow the erosion.

"To try to completely protect the point permanently is more expensive than rebuilding the lighthouse," he said.

One homeowner along East Cliff Drive has installed riprap on his stretch of beach 15 times in 30 years at a cost of \$180,000, he said, because "it keeps sinking into the sand."

Another method used to slow erosion is to nourish the beaches by trucking in sand. That, too, can be prohibitively expensive; in some places on the East Coast, the U.S. Army Corps of Engineers has spent \$50 million nourishing oceanfront beaches, Griggs said.

Perlin said, "The major hangup with all of this is funding; it all comes down to money."

Four alternatives to halt erosion will be discussed with homeowners Tuesday, he said, and they're all expensive.

The first alternative is to build a 20-foot-high concrete seawall along the entire base of the Depot Hill cliff, extending some 3,000 feet. It would prevent waves from hitting the cliff and the topside bluff would eventually settle back to its natural angle, which it is now prevented from doing by erosion down below.

The settling action might cause the cliff to lose another 20 feet before it stabilized. That would diminish some property owners' yards, but would probably not harm most of the structures on top of the cliff, Perlin said.

At an estimated \$100 per square-foot, total cost of the seawall would be \$6 million, he said.

The second alternative is similar to the first, but would limit the seawall to 10 feet. A seawall that height could be expected to deflect 90 percent of the waves and cost

about \$4 million, Perlin said.

The third alternative is installing riprap 20 feet high and stretching 40 feet out toward the ocean, Perlin said. It would require more maintenance, could become a nuisance as a habitat for rats, and would be hampered by a scarcity of riprap.

A fourth alternative would be to create a series of 200-foot-long groins, or jetties, spaced 400 to 600 feet apart. However, little is known about the impact of jetties on the rest of the coastline, Perlin said, and that solution would be likely to draw protest from residents downcoast of Capitola.

Perlin pointed out that after the Santa Cruz Yacht Harbor was built, the coastline along Capitola and southward changed.

"There's clear and convincing evidence to that effect," he said.

Along with Bowles and other Depot Hill homeowners, Perlin said the rate of erosion seems to have increased in Capitola in the years since the Yacht Harbor was built. Griggs said weather patterns have also had an effect, since winters in the '70s and '80s were more severe as a rule than winters in the '50s and '60s.