



Danny Miller/The Daily Astorian

Nate and Tom Alfonse of Alfonse Excavation clear away dirt on the Westport Slough habitat restoration project Tuesday in Westport.

## CREST: 'Eighty percent of the estuary has been lost since the late 1880s'

Continued from Page 1A

mountains, unloaded an estimated 3 billion board feet of timber to be rafted down the river to mills. The dike surrounding the land was a way for workers to get from the railroad to the water, he said, but has long since become obsolete.

CREST put out bids on the \$400,000 project, hiring Henderson Environmental Design-Build Professionals, an environmental construction group out of Lake Oswego, as general contractor. Henderson in turn hired Astoria's Alfonse Excavation to breach the dike in six spots around the land, and Brownsmead's Empo Bay Marine to float Alfonse's equipment across the slough on barges and onto the dikes to avoid damaging the surrounding environment.

Nate Alfonse said the company has trucked materials for several restoration projects and likes the work, as long as it is not hindering other developments such as housing. "For the area we're working in, I think it's a great thing, when there's nothing being done with it," he said.

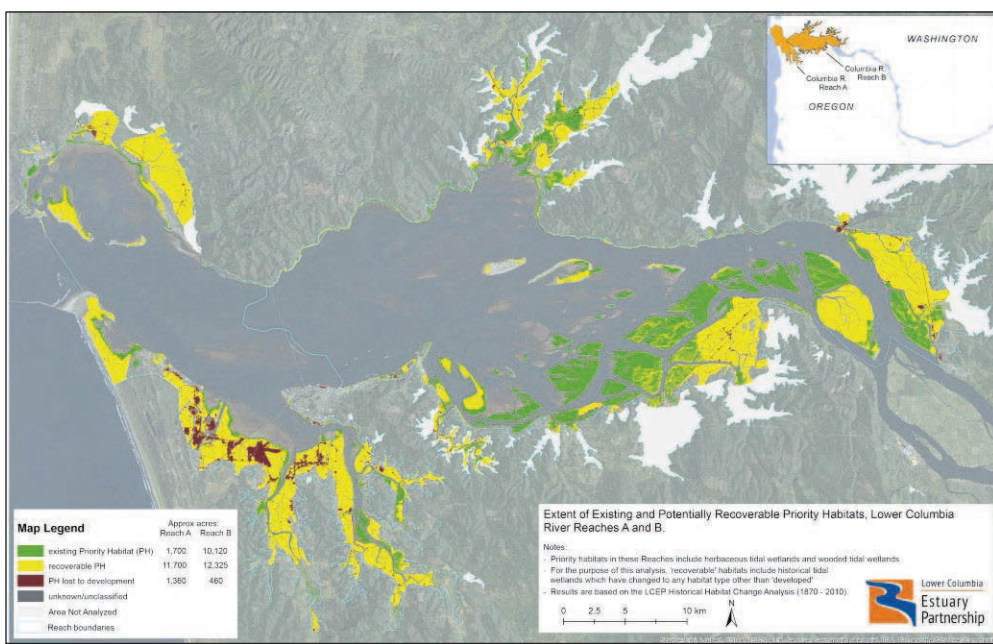
Alfonse will remove 1,500 of the more than 6,200 feet of dike surrounding the land by the end of the month, when work starts on the similar-sized Kerry Island directly to the west. The land is owned by the Columbia Land Trust and also managed as wildlife habitat.

### Recapturing wetland

"Eighty percent of the estuary has been lost since the late 1880s," said Denise Löffman, the director of CREST.

Since 1974, CREST has provided research on the estuary and environmental planning. But the large majority of the group's budget now comes from environmental restoration projects largely funded by the federal Bonneville Power Administration, which is required to restore habitat to offset the impact of hydroelectric dams it operates along the Columbia River.

Löffman said people used to see the river as a freeway



Submitted Map

Since the late 1880s, about 80 percent of the existing Columbia River Estuary has been lost to development and diking. Green indicates habitat, yellow recoverable habitat and red habitat lost to development.

through which fish left to sea, but that by the 2000s, research had shined a spotlight on the importance of the estuary in helping outgoing salmon bulk up and acclimate to a brackish environment.

"The science is what's moved BPA money into the estuary," she said. "It's no longer seen as a freeway."

Löffman said her group tries to find willing landowners who want to improve fish habitat, while getting funding from and helping Bonneville meet its environmental obligations. Since 2010, CREST has helped restore more than 1,000 acres of wetlands in the Columbia estuary.

### Creating jobs

The group has worked with Bonneville as the primary funding source on 18 projects since 2010, Löffman said, putting more than \$8 million in construction projects on the ground, along with \$1.5 million in design and engineering work, and \$3.5 million in salaries for CREST staff permitting, managing and monitoring projects. Löffman noted a report by researchers at the University of Oregon that every \$1 million spent on ecological res-

toration can create 14 to 16 jobs. Bruce Henderson, owner of the general contractor hired by CREST for the Westport Slough project, said there are nine to 10 people he has employed in the \$400,000 project.

"CREST is a superb client," he said. "As an organization they put more dollars to work on the ground than a lot of the other organizations we work with."

Most of CREST's projects are with government agencies. But Löffman said her group also tries to help private landowners concerned about creating wildlife habitat, such as the late Charmelle Fee. In 1997, Fee bought the property along the Klaskanine River where she founded the Wildlife Center of the North Coast.

In 2013, CREST oversaw the Fee-Simon Wetland Enhancement, which breached dikes to reclaim 50 acres of wetland to the southwest of the wildlife center. The project resulted in a new wetland area, and a new U.S. Army Corps of Engineers-certified dike to protect property to the west.

### Helping the Port

CREST recently hired an engineer to study the feasibility

of removing dikes along the Skipanon River to reclaim some former wetlands owned by the Port of Astoria, which has been thinking of moving its boatyard to Warrenton. Löffman said the project has the potential to create 90 acres of wetlands, gaining both Bonneville and the Port valuable wetland mitigation credits needed to offset future construction projects like the boatyard, and providing new Corps-certified levees to protect surrounding property.

Löffman said engineers are looking at soil conditions, how the existing levees are constructed and what would be needed to protect adjacent property owners from the potential new wetlands. That research will help CREST and Bonneville decide whether the project has enough benefit to warrant the cost of construction.

Jim Knight, the Port's executive director, said it is difficult to gauge the potential of the project until the feasibility study is done — possible around the early part of next year — but that CREST should be applauded for doing a feasibility study on their dime that could help the Port and the community.



Photos by Danny Miller/The Daily Astorian

Kevin Cronin holds his daughter, Teagan, 3, on his shoulders before marching during the Astoria Regatta Junior Parade.

## Regatta Grand Land Parade takes over town Saturday

The Daily Astorian

A signature event of the 2016 Astoria Regatta, the Grand Land Parade, sponsored by Fred Meyer and Teevin Brothers, starts at noon Saturday, and follows the same route used for the last several years.

The parade starts at 16th and Exchange streets, then goes west on Exchange to Ninth Street, where it turns north for one block. At Ninth and Duane streets the parade turns east, and goes to 17th Street, where the parade ends.

Exchange and Duane streets, between Ninth and 17th streets, will have no on street parking on Saturday until the parade ends. The no parking areas will be signed, and any vehicle parked at those locations will be removed by a tow truck. The owner will be responsible for the tow fees.

At 8:30 a.m. Exchange

Street closes between 16th and 23rd streets. Access to Columbia Memorial Hospital, and dialysis and urgent care facilities in the Park Building is available from 20th, 21st and 23rd streets.

At about 10:30 a.m., all streets that travel north and south (the numbered streets) are being closed from Commercial Street to Franklin Avenue, and between Eighth and 17th streets. These traffic disruptions last until the parade ends and the street has been swept.

U.S. Highway 30 remains open, but may experience delays due to pedestrian traffic and floats moving to the disband area. Traffic needing to get to or from the South Slope of Astoria should use unaffected, alternate routes.

For information, contact Dan Arnoth at 503-338-0799 or email [parade@astoriaregatta.com](mailto:parade@astoriaregatta.com)



Kids walk in costume during the Astoria Regatta Junior Parade on Wednesday in downtown Astoria.

## Quake: Death toll could reach as high as 10,000

Continued from Page 1A

### MORE ONLINE

View the full report online: <http://pubs.usgs.gov/pp/pp1661f/>

Using nearly 200 core samples of underwater landslide deposits, left behind by past subduction zone earthquakes, Goldfinger and his team, which included scientists from Canada and Spain, have found that the northern sections are coming due for a shaker. Previous studies were based on as few as 12 core samples.

The section that runs from Newport to Astoria was previously thought to rupture about every 400 to 500 years, but the new data shows that interval is closer to 350 years. The northernmost section, from Astoria to Vancouver Island in British Columbia, had its quake frequency revised down from an earthquake every 500 to 530 years down to one every 430 years.

The last time the subduction zone saw a major quake where the entire zone ruptures, which scientists have been able to pin down because it caused a tsunami that traveled across the Pacific ocean to Japan, was in 1700, 316 years ago.

"What this work shows is that, contrary to some previous estimates, the two middle sections of the Cascadia Subduction Zone that affect most of Oregon have a frequency that's more similar than different," Goldfinger said.

Given that data, the chances of a quake hitting the central Oregon region in the next 50 years have been upgraded as well, going from between 14 and 17 percent to between 15 and 20 percent.

The Cascadia Subduction Zone has long been studied by experts, but it gained prominence in the mainstream last year after Kathryn Schulz's Pulitzer Prize winning feature in The New Yorker on the perils facing the Pacific Northwest.

"What's important is that these findings give us more confidence about what's coming in our future."

As Schulz and others have pointed out, it won't just be the

ground shaking that causes the most destruction. The ensuing tsunami that would likely follow a major quake, which could be stronger than a magnitude 9.0, would wreak just as much, if not more, damage than the quake itself.

The death toll could reach as high as 10,000 from the combined earthquake and tsunami should the big one hit, some 85,000 buildings could be damaged and the rebuild costs could top \$32 billion.

The new elevated risk comes as Oregon State moves forward with plans to build a \$50 million marine sciences facility in Newport at the mouth of Yaquina Bay, squarely in the path of tsunami. Goldfinger has protested the plan, calling it "completely inexplicable" and questioned why the school would ignore the relevant science showing the risk to the structure.

University administrators, however, have pushed ahead with the 100,000 square foot facility at the Hatfield Marine Science Center campus in Newport, saying the building will be able to withstand a magnitude 9.0 quake and provide shelter for its students and staff.

Building issues aside, the new research has helped Goldfinger and others in the earth sciences refine projections for when the Pacific Northwest can expect to feel its next quake.

"Part of what's important is that these findings give us more confidence about what's coming in our future," Goldfinger said. "Now we have a great deal more certainty about the general concern that the earthquakes caused by the Cascadia Subduction Zone is scientifically valid, and we also have more precise information about the earthquake frequency and behavior of the subduction zone."

## Park: The Great Recession impacted the amusement park

Continued from Page 1A

to a cool, cobalt blue. As Cox worked on the base, Strong and Peven alternated turns climbing, cleaning and repainting the "scissors," one of several parts that had to be replaced on classic carnival ride. The "Octopus," "Rock-O-Plane" and "Midge-O-Racer" each had new parts installed and are awaiting a final inspection.

"A couple little things and we'll be ready to rock on three more rides," Summerer said. Some rides, including the bumper boats, were simply beyond saving.

"There was just way too much wood rot and rust," Summerer said. Instead, the vacant space will allow for as many as six or seven new rides.

### Recession, rain

The Great Recession had a

direct impact on Long Beach businesses including the amusement park. The "Rock-O-Plane" and the "Octopus" were shut down in 2008, the result of the recession, according to Bob Steffens. Steffens heads a five-man crew overseeing the maintenance and operation at the park, a position he had for more than 20 years.

The park was long owned by the Rutherford family, most recently by Don, son of legendary Long Beach Mayor Fred Rutherford.

"The economy was hit hard," Steffens said, "So he decided to shut them down." Vacant and exposed to the wet Pacific Northwest winters, soon the wind and water took a toll. The Tilt-A-Whirl, first purchased

d in 1999, began showing wear beyond its age early on. Rides require reconditioning

after only a couple of seasons because of rampant rust, but little attention was given, particularly to those no longer in service.

### Bigger than ever before

After the refurbishing of existing rides is complete, new rides will be added in the coming months.

"By next year, we're going to acquire a number of additional rides. It will be much bigger than it ever really was before — the largest that we're aware of on the coast," Summerer said. The search for a centerpiece ride and new additions appealing to a broader audience will occupy much of the off-season.

"We want to buy a Ferris wheel, and we're looking at some other rides. There needs to be a good mix of rides for young children, and also

rides that will bring in the high school and college-age crowd. A Ferris wheel is something a grandparent can take a grandchild on — you want to have a nice mix," Summerer said.

Even with only a few rides running, the park hasn't lost its appeal.

"We bring our grandkids down all the time," said Long Beach resident Vicky Hacker looking on as granddaughter, Emma Griffith, climbed into a bumper car. Hacker has been coming to the carnival since retiring to Long Beach in 1986.

After 30 minutes, Emma had weaved her way through all the available rides and retired to an open seat next to her grandmother by the bumper cars where she started. Next year it will likely take Emma much longer to experience all the amusement park has to offer.