

Could water supply be found under the ocean?

By Andrew Alden, KQED-TV

Underground boundaries between land and sea aren't as stark as they are to us as we stand on the beach. Water knows this. Groundwater everywhere responds slowly to changes above, even geological changes. In most of the Earth's crust, water moves around a meter per year. This enormous contrast between surface water and groundwater may be the big fact that hydrologists appreciate more than the rest of us, even geologists, who know a lot about slow things.

Seawater moving inland is a well-known problem for coastal cities. It arises when groundwater is pumped out faster than it can be replenished, and saltwater moves into the space. In the city of Fremont, the Alameda County Water District successfully manages saltwater intrusion in its major water source, the Niles Cone, by effectively building a wall of freshwater along the outer rim of the cone.

The opposite situation, freshwater intrusion, can occur offshore. Fresh groundwater lying above sea level on land would have the pressure needed to push aside the denser, salty water of the ocean once it reached that level. And scientists have known for a long time about freshwater springs that occur offshore. In the 1970s, U.S. government geologists learned that fresh water may underlie the seafloor for a surprising distance offshore, up to 100 kilometers in places.

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