The Groundwater Resources at Kaloko-Honokōhau National Historical Park

*What is th **value of water** at **Kaloko-Honokōhau** National Historical Park?*

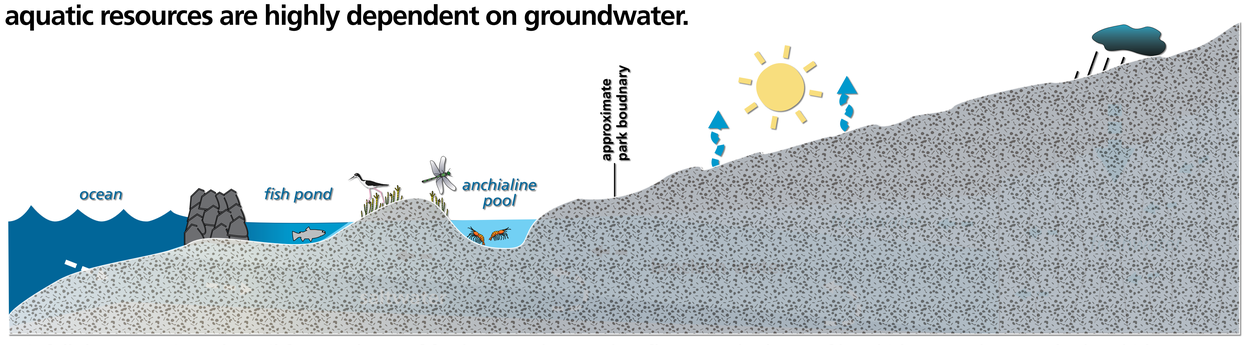
Kaloko-Honokōhau National Historical Park, located in north Kona, Hawai'i, contains globally rare anchialine pool habitats and significant Hawaiian cultural sites.

Groundwater emerges in shallow anchialine pools. Brackish water provides habitat for unique, culturally significant plants and animals.

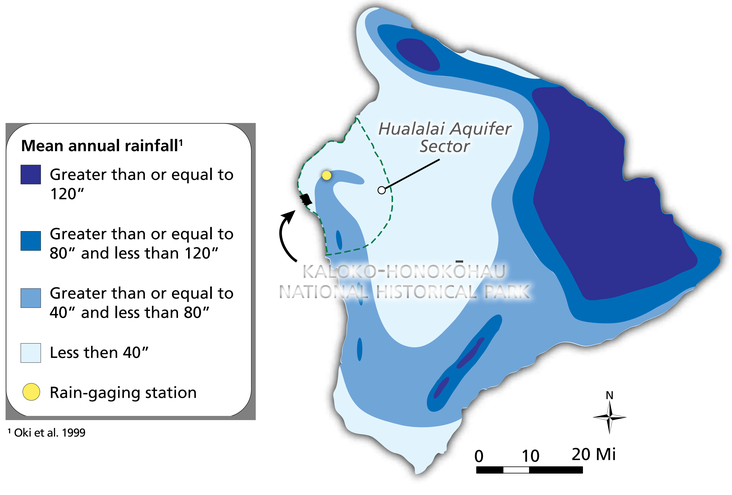
Traditional Hawaiian fishponds receive brackish water that supports the life cycle of culturally significant fish.

*How does the **groundwater system** work in north Kona?*

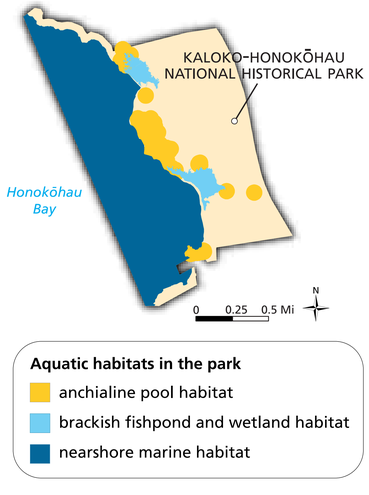
North Kona has low rainfall, dark porous soils, abundant sun, and high evaporation. As a result, aquatic resources are highly dependent on groundwater.



Rainfall that seeps into the soil forms a layer of fresh groundwater that floats on the layer of brackish groundwater. The brackish water emerges in low anchialine pools and seeps into the fishponds, wetlands, and nearshore marine waters.

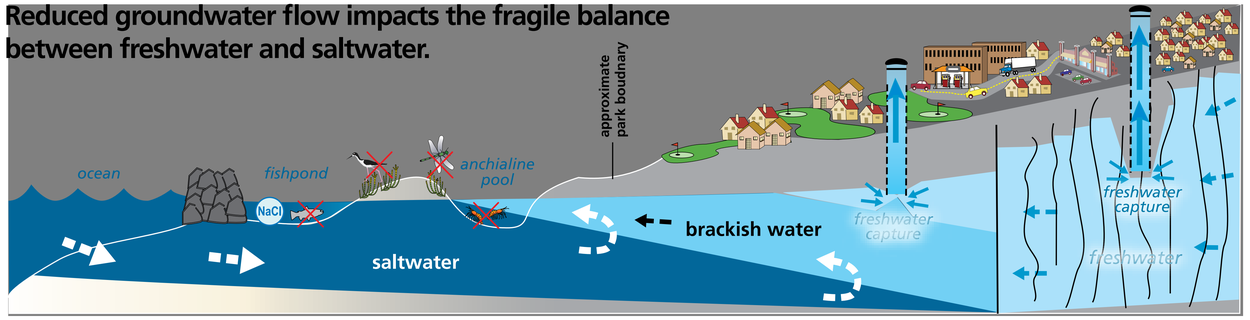


[1] Oki et al. 1999



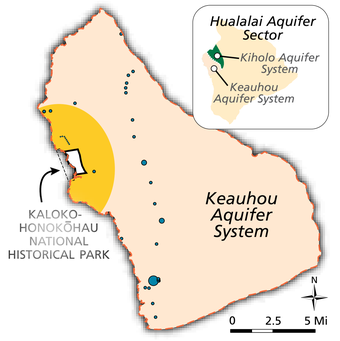
*What is the **human threat** to the groundwater system in north Kona?*

Reduced groundwater flow impacts the fragile balance between freshwater and saltwater.



As groundwater resources are captured by more development wells pumping groundwater coastal anchialine pools may become increasingly saline, altering native communities and may dry at low tide. Historic fishponds could also become too saline (NaCl) affecting culturally important species as more saltwater is drawn inland .

Planned developments, if implemented around the park, will more than double this current water extraction to 30 million gallons per day (MGD).

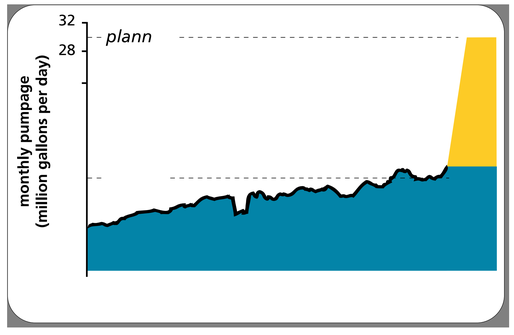


Keauhou Aquifer System water use[2,3]

- 12 million gallons per day current water extraction for this area
- 18 million gallons per day planned additional water extraction just within this 2.5 mi zone around the park

[2] http://hawaii.gov/health/environmental/oeqc/index.html

[3] http://hi.water.usgs.gov/recent/westhawaii/pumpage.html



The *sustainable yield was set at 38 MGD* for the Keauhou Aquifer System by the Hawaii Commission on Water Resource Managment. However, that yield was established to protect drinking water resources only and did not consider potential ecological or cultural resource requirements.

*What are the **potential consequences** of reduced groundwater flow to the natural and cultural resources of Kaloko-Honokōhau National Historical Park?*

The park's ecologically fragile and culturally significant habitats may be adversely affected by excessive groundwater withdrawal in developments outside the park.

anchialine pools

fishponds

nearshore marine

For more information, contact:
Kaloko-Honokōhau National Historical Park
73-4786 Kanalani St., #14, Kailua-Kona, HI 96740
Ph. 808-329-6881 ext.1220

Pacific Island Network Inventory & Monitoring Program
National Park Service
science.nature.nps.gov/im/units/pacn/

Integration & Application Network (IAN)
University of Maryland Center for Environmental Science
www.ian.umces.edu