IAH network on "Coastal aquifer dynamics and coastal zone management"

QUESTIONNAIRE

IAH national committees, IAH members and non members from all around the world involved in SWI and SGD research and management are kindly asked to fill in the questionnaire in this page with as many details as possible.
A world database will be set up and made available, with basic coastal aquifer main characteristics.
We expect to gather standard and comparable information on the knowledge level and hopefully the state of the art of the research on SWI and SGD, and coastal aquifer management methods adopted around the world

1)	Location of aquifer (country, more specific location):	Central and West Coast Basins in southern Los Angeles County, CA
2)	Reported by:	Theodore A. Johnson, Chief Hydrogeologist, WRD
3)	Type of medium (karst, porous, fracture)	Porous alluvial and marine sediments
4)	Type of aquifer (phreatic or confined)	Multiple layered aquifer system, semi to fully confined
5)	Main lithology - (e.g. gravel, sand and clay)	Coastal sandy aquifers with some gravel and silt and clay aquitards
6)	Hydrochemistry: fresh or saline	Fresh,saline and brackish
7)	Saltwater intrusion: lateral from sea or lakes - upconing	Lateral seawater intrusion due to excessive extraction
8)	Aquifer geometry: hydraulic characteristics	Central Basin is 700 km^2; West Coast Basin is 360 km^2
9)	Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually)	Hydraulic Conductivity ranges from 0.3 m/d to 200 m/d. Annual pumping extractions 300 MCMA. Annual Injections 35 MCMA.
10)	Depth of aquifer (water level and bottom) - water level 5-30 m - aquifer depth - 50-200 m	Depth to groundwater 3-75 m. Depth to base of lower-most aquifer 125-600 m
11)	Major chemistry (anions - ?; Cations - ?):	Calcium,Sodium,Bicarbonate,Sulfate and Chloride
12)	Major salinity sources:	Seawater intrusion, oil field brines
13)	Population:	This problem is significant because much of the water used by the nearly 10 million residents of Los Angeles County comes from ground-water sources
14)	Aquifer status: special features - e.g. thermal springs, major faults,…	Coastal aquifers extend offshore, providing pathway for seawater. Newport-Inglewood active fault zone impedes flow.
15)	Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical),	Time Domain Electromagnetic Induction (TDEM) and High Resolution Electric Resistivity (ER); geohydrological and geochemical analyses
16)	Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD)	Groundwater flow simulation,Chemical and isotopic methods See USGS Report 03-4065 "Geohydrology, Geochemistry, and Ground-Water Simulation Optimization of Central and West Coast Basins"
17)	Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal)	325 nested monitoring wells at 55 locations sampled semi-annually and water levels collected every 6 hours. Temperature, conductivity collected using data loggers. Seawater monitoring wells.
18)	Management methods:	Hundreds of seawater barrier injection and monitoring wells.
19)	Aquifer management actions:	Managed aquifer recharge of overdrafted basins using reclaimed water and imported river water from Northern California
20)	Identification of existing or potential problems:	Intrusion can be a serious problem resulting in the shut down of wells or necessitating expensive desalination treatment. In the early half of the 20th century, groundwater extractions causing severe overdraft and lowering of the groundwater elevations to over 30 m below sea level. Aquifers now sustainable due to managed recharge
21)	Annexes:	http://www.wrd.org/engineering/drinking-water-documents.php
22)	Observations:	Groundwater basins currently managed successfully. Seawater intrusion contained, but remnant salt plumes remain to be treated.