

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

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| 1) | Location of aquifer (country, more specific location): | San Diego, California, USA |
| 2) | Reported by: | Wesley R. Danskin, Bert J. Stolp, Geoff Cromwell, Robert Anders and Larry Feinson |
| 3) | Type of medium (karst, porous, fracture) | Porous |
| 4) | Type of aquifer (phreatic or confined) | Phreatic aquifer |
| 5) | Main lithology - (e.g. gravel, sand and clay) | Sedimentary aquifer |
| 6) | Hydrochemistry: fresh or saline | Fresh, saline to brackish |
| 7) | Saltwater intrusion: lateral from sea or lakes - upconing | Lateral seawater intrusion (Ocean) |
| 8) | Aquifer geometry: hydraulic characteristics | Coastal depositional graben; hydraulic characteristics determined from slug tests |
| 9) | Aquifer parameters: storage - annual water pumping - (in MCMA - millions cubic meters, annually) | Model coastal pumping; about 20 m ³ /yr for municipal supply; 5 m ³ /yr for coastal agriculture |
| 10) | Depth of aquifer (water level and bottom) - water level 5-30 m - aquifer depth - 50-200 m | Aquifer depth : more than 500 meters
Water level: 5-50 m |
| 11) | Major chemistry (anions - ?; Cations - ?): | NaCa water |
| 12) | Major salinity sources: | Salinity from irrigation return flow, salts from marine deposits and seawater intrusion |
| 13) | Population: | More 50000 residents. Water demand has been broken down into these general categories: Residential, agriculture and industrial |
| 14) | Aquifer status: special features - e.g. thermal springs, major faults,... | Pull-apart basin, with normal faulting |
| 15) | Investigation methods - e.g. water level measurements, EC (electrical conductivity profiles), TDEM (geophysical), | Geology, geophysical, geochemistry and hydrology investigations
Water level measurements |
| 16) | Numerical hydrological modeling, chemical and isotopic methods, age determination, IR survey, seepage meters (for Submarine Groundwater Discharge, SGD) | Three-dimensional geologic framework and flow model; hydrologic sw-gw model; Age determination and Chemical and Isotopic methods |
| 17) | Monitoring methods applied and duration - water level measurements, EC (electrical conductivity profiles - seasonal) | The techniques include installation of twelve 500-meter-deep, multiple-depth, monitoring-well sites, each with 4 to 6 piezometers equipped with pressure-recording transducers. Geophysical logs were obtained to identify formations and depths of saline water
Water-quality samples collected were analyzed for a variety of chemical constituents including major and minor ions, trace elements, stable isotopes and radioactive isotopes |
| 18) | Management methods: | Joint technical committee developing a required groundwater management plan |
| 19) | Aquifer management actions: | Expansion of an existing brackish groundwater desalination facility |
| 20) | Identification of existing or potential problems: | The presence of saline groundwater reduces the supply of drinking water, future development of the local groundwater resources in the San Diego area of southern California is limited by the presence of saline-to-brackish groundwater in some parts of the coastal aquifer |
| 21) | Annexes: | |
| 22) | Observations: | |