

Topics: Appropriate Technology, Water Resources Management, Applied Research,
Experiences and Lessons Learned

**Megawatersheds of the Caribbean: *Results from Trinidad & Tobago's
Pioneering Megawatershed Projects Promise Liberation from the Tyranny of
Future Droughts and Unaffordable Water Supply Alternatives***

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In 1999 the twin-island state of Trinidad & Tobago faced an uncertain future with regard to fresh drinking water sources. Much of the general population lacked continuous or predictable drinking water; the growth of the industrial sector of Trinidad was being stifled; and Tobago's tourism-dependent economy faced imminent collapse due to water restrictions. A Report submitted to WASA in 1999 by a prominent European consulting firm proposed measures ranging from new surface water reservoirs for both islands to seawater desalination. The conventional hydrological concepts and technologies used to assess the potential for further groundwater development led to the conclusion that additional sources were non-existent in Tobago and limited to Twelve (12) million imperial gallons per day (MGD) in Trinidad.

While accepting that Report as representative of the best available information based on conventional hydrological concepts and technologies, WASA also launched in 1999 a pilot study in Tobago utilizing the non-traditional "Megawatersheds" hydrogeological paradigm combined with novel groundwater exploration technologies. At the conclusion of that programme twelve (12) months later, WASA was presented with a very different paradigm of Tobago's groundwater resource base, including a map and technical report identifying forty (40) MGD of sustainable, previously undeveloped groundwater and production wells capable of delivering over four (4) MGD of high-quality fresh groundwater to WASA's Tobago customers. Further, the production wells were located nearby the most critically water-short areas of the island, and new water sources were placed in service incrementally and within weeks of well completion.

Based on the Tobago success WASA initiated an identical groundwater exploration and development programme in Trinidad. While the islands of Trinidad and Tobago are geographically proximal and politically united, the two islands' geological origins are dramatically different, and the nature of their hydrogeological environments equally dissimilar. Nevertheless, within two (2) years WASA was presented with a radically different picture of Trinidad's groundwater potential, over 280 MGD of undeveloped, sustainable resource, plus new water supplies totalling over 15 MGD of production capacity from strategically located bedrock and alluvial wells with average yields of one (1) MGD each. The successful application of the "Megawatershed" approach to the hydrogeologically dissimilar islands of Trinidad and Tobago represents an unprecedented opportunity for the twin-island Republic to fully realise its economic development potential and also clearly demonstrates potential benefits to many other small island developing states (SIDS)