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Gabriel Eckstein

Yoram Eckstein

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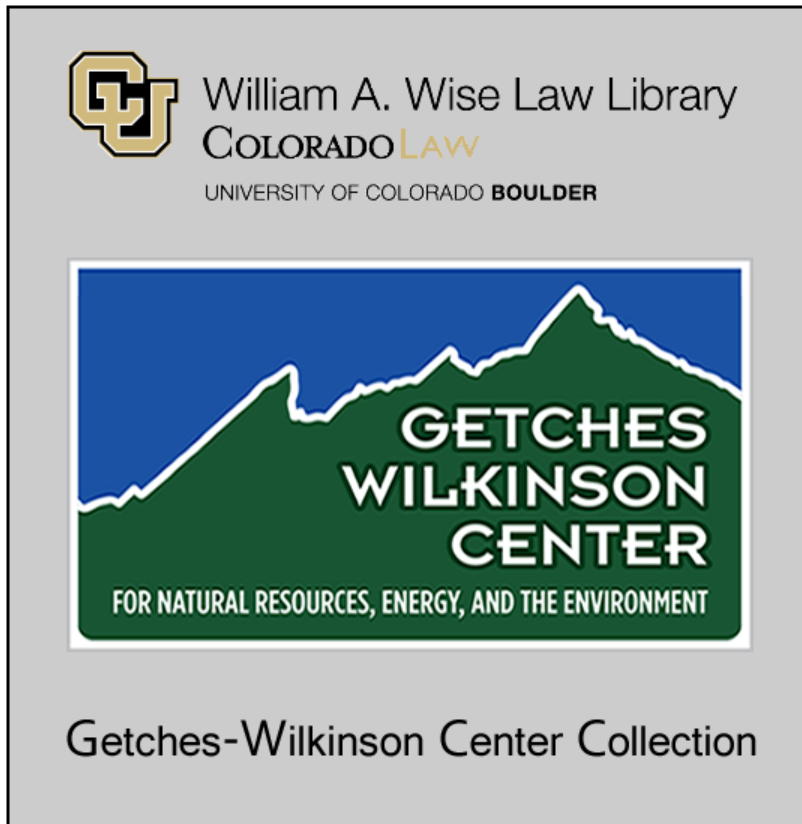
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# **A Hydrogeological Approach to the Status of Transboundary Ground Water Resources Under International Law**

By: Gabriel Eckstein and Yoram Eckstein

Gabriel Eckstein  
Environmental Attorney  
Washington, DC  
Phone (office): (202) 872-3882  
Phone (mobile): (202) 285-4633  
Email: [gabriel3@att.net](mailto:gabriel3@att.net)

Yoram Eckstein  
Professor of Hydrology  
Kent State University  
Kent, Ohio  
Phone: (330) 672-2364  
Email: [yeckstein@neo.rr.com](mailto:yeckstein@neo.rr.com)

Gabriel Eckstein is an environmental attorney working in Washington, DC. He writes extensively on international water law and policy, and consults on environmental and water issues for organizations such as the World Commission on Dams and the US Agency for International Development. He holds a Master in Law in International Environmental Law from American University and a Bachelor's Degree in Geology from Kent State University.

Yoram Eckstein is Professor of Hydrogeology at Kent State University, Ohio. He has taught and consulted for over 40 years. He has authored dozens of scientific articles on various aspects of hydrogeology, and has consulted as a hydrogeology expert in various parts of the Middle East, Far East, and North and Central America. He holds a PhD in Geology from the Hebrew University in Jerusalem, Israel.

## **ABSTRACT**

Ground water resources have long been the neglected stepchildren of water law. While agreements focusing on transboundary rivers and lakes are relatively common,<sup>1</sup> there is a paucity of treaties and international norms squarely addressing shared ground water resources.<sup>2</sup> As a result, the international norms governing the use, management, and conservation of transboundary ground waters are unclear at best.

In large part, this paucity is the result of a deficit of scientific understanding among legislators, policymakers, and the judiciary. This deficit is evidenced in many international and domestic laws and policies that have little or no scientific underpinning. Accordingly, there is a significant need to demystify ground water and its relationship to surface water. Moreover, there is a need to inject hydrogeologic concepts and understanding into legal and political discourse in order to assist in the development of sound, science-based laws and policies.

Barberis, in his well-known study published by the UN Food and Agriculture Organization, made a significant effort to infuse science into legal understanding by proposing four models in which ground water forms part of an international water

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<sup>1</sup> See D. Caponera, *PRINCIPLES OF WATER LAW AND ADMINISTRATION: NATIONAL AND INTERNATIONAL*, Ch. 10 (1992) (discussing sources of international water law).

<sup>2</sup> See D.A. Caponera & D. Alh riti re, *Principles for International Ground water Law*, 18 NAT. R. J. 589, 592-594, 612-613 (1978) (discussing the few references to ground water resources found in treaties).

system.<sup>3</sup> While these models have been generally accepted among legal scholars (including the drafters of the UN Watercourse Convention<sup>4</sup>), the models are incomplete and imprecise and require refinement to conform to the hydrogeology of known site-specific cases.

Adapting and building on Barberis's study, the authors propose six models in which ground water resources can have international implication. These models are based on basic hydrogeological principles and supported by actual field examples, many of which involve potential transboundary conflict and opportunities for cooperation. They are intended to help in the evaluation of the applicability and scientific soundness of proposed and existing rules governing shared ground water resources. Through such analyses, it is hoped that the models will assist in the development of clear, logical, and appropriate norms of state conduct.

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<sup>3</sup> Barberis's four cases are:

- 1) A confined aquifer is intersected by an international border, and is not linked hydraulically with other groundwater or surface water, making the aquifer the shared water resource;
- 2) an aquifer lies entirely within the territory of one State but is linked hydraulically with an international river;
- 3) the aquifer is situated entirely within the territory of a single State but is linked hydraulically with another aquifer in a neighboring State; and
- 4) the aquifer is situated entirely within the territory of a given State but has its recharge zone in another State.

J. Barberis, *International Groundwater Resources Law in FOOD AND AGRIC. ORGANIZATION LEGIS. STUDY NO. 40*, at 1 (1986).

<sup>4</sup> Convention on the Non-Navigational Uses of International Watercourses, G.A. Res. 51/229, U.N. GAOR, 51<sup>st</sup> Sess., U.N. Doc. A/RES/51/229 (1997).