

IAH Groundwater & Ecosystems Network
Accomplishments, outputs and programmes

2013

1. Leading people

Chair - Joe Gurrieri (USDA Forest Service, Golden, CO, USA), jgurrieri@fs.fed.us

Co-chair - Mike Wireman (US-EPA, Denver, CO, USA), Wireman.Mike@epa.gov

Co-chair – Alessandro Gargini (University of Bologna, Italy), alessandro.gargini@unibo.it

2. Foundation assembly

The first assembly of the Network was held in Niagara Falls (Canada) on September 19th 2012. Achievable goals for the first year and suggestions for Network Activities were established.

3. Main accomplishments and outputs

- In terms of statements:

- The term “Groundwater & Ecosystems” is the right indicator for the Network, with respect to Groundwater Ecosystems or Groundwater-Dependent Ecosystems (Groundwater ecosystems exist in their own right, as microbial life in deep groundwater; GDE refer more to ecosystems that are “surface-like”, with direct connections to or potential interactions with surface life or significant resemblance to surface systems.

- In terms of activating discussion and working groups:

- A survey of members was launched in October 2012, via mailing list, to define interests and priorities, including a list of possible examples of GDEs considered important priorities for the Network. 32 people were targeted. In first three positions: 1) Wetlands mainly fed by groundwater; 2) Rivers and streams dominated by groundwater; 3) Springs;

- With the help of Cindy Starzyk in October 2012 a LinkedIn discussion group, called “Groundwater & Ecosystems”, was set up to enhance communication and dissemination among members;

- A Working Group (WG) was established for the writing, layout and publication of a GDE brochure, formed by: Kirsti Korkka-Niemi, Irmi Pawlowski, Antonio Chambel, Marco Petitta, Zuzana Boukalova, Alessandro Gargini, Allison Aldous, Marios Sophocleous, Juan Bernal, Sandor Arvino Grehs, Chris Lowry, Joe Gurrieri and Mike Wireman;

- A Working Group (WG), called *GDE Impacts-WG*, was established to help with developing guidelines to forecast, evaluate and mitigate/remediate impacts on GDEs originating from human activities (with particular attention devoted to tunnel excavation and pumping/groundwater abstraction/dewatering schemes), coordinated by Alessandro Gargini and formed by: Rick Evans, Abe Springer, Jean Marie Haney, Antonio Chambel, Phoebe Koundouri, Marco Petitta, Allison Aldous, Marios Sophocleous, Sandor Arvino Grehs, Joe Gurrieri, Antonio Dematteis and Alessandro Gargini. The main goals of the WG are: 1) Prepare a chapter of the document about GDE that is under preparation by the IAH Groundwater & Ecosystems Network; 2) Organize a data-set of publications and papers; 3) Prepare publications or reports or event on the topic; 4) Provide guidelines to address scientists, professionals, regulators, constructors, planners, project designers during the different phases of preliminary design, monitoring, excavation activities, post-audit evaluation. Concerning point 4, cooperation has been activated with a similar Italian IAH WG, called GESTAG (Italian acronym for “Sustainable Water Management” in Tunnels), coordinated by Antonio Dematteis, a member of IAH Italian National chapter, hydrogeologist consultant and a member of the *GDE Impacts* WG that was constituted at a workshop held in Piacenza, Italy on October 4th 2012, and that put at the same table different stakeholders about tunnel excavations and groundwater resource protection. All documents produced by GESTAG and the workshop presentations are published on the Italian IAH website <http://nuke.iahitaly.it/>;

- A discussion group of the *GDE Impacts-WG* was established in LinkedIn in January 2013 to share opinions and queries about the topic;

- In terms of collecting information and data:

- A compilation of existing documents related to the description, classification and mapping of GDEs was performed. Among them particularly meaningful and updated resulted:

Australian groundwater-dependent ecosystems toolbox part 1 and part 2: assessment framework and assessment tools (December, 2011), prepared by: S Richardson, E Irvine, R Froend, P Boon, S Barber, B Bonneville for the National Water Commission of Australian Government;

Atlas of Groundwater Dependent Ecosystems-GDE Atlas, Identifying and Mapping GDEs (July 2012), prepared by: SINCLAIR KNIGHT MERZ for the National Water Commission of Australian Government;

Groundwater Dependent Ecosystems: the challenge of balanced assessment and adequate conservation (2002-2006), prepared by Stephen Foster, Phoebe Koundouri, Albert Tuinhof, Karin Kemper, Marcella Nanni & Héctor Garduño for the World Bank;

Y. Fan, H. Li, G. Miguez-Macho (2013) – *Global Patterns of Groundwater Table Depth. Science, 22 February 2013: Vol. 339 no. 6122, pp. 940-943.*

- The working group on man-made impacts on GDE has begun to establish a list of references and documents related to the issue. Interesting examples, particularly concerning impacts originating from excavation of tunnels, derive from the following documents:

Arrowhead Tunnels Project Special Uses Permit – GeoSciences Specialist Report (September, 2012; 208 pp.), prepared by: Michelle Bearmar (U.S. Forest Service, Ca, USA);

- Call for Photos of Groundwater Dependent Ecosystems. In January 2013 Joe Gurrieri activated a call for photos of GDEs from around the world to include in a short IAH publication with the chance to show off the fabulous GDEs of each country involved in the network; Photos with a minimum resolution of 300 dots per inch (dpi) are preferred with a caption that includes the location, and the photographers name or other standard citation.

- In terms of activating connection with other groups:

- With the GENESIS project, “Groundwater and dependent Ecosystems: NEw Scientific basis on climate change and land-use impacts for the update of the EU Groundwater Directive”, financed by European Union under VII Framework Programme (<http://www.thegenesisproject.eu>), coordinated by Bjorn Klove (University of Oulu, Finland) and researching from 2009 to 2014 about the same topic; it was discussed about the chance to publish together main results and experiences;

- in January 2013 a list of potential contacts (groups and organizations) with similar interests in groundwater and ecosystems was defined and disseminated via LinkedIN;

- In terms of disseminating, reporting and publishing:

- “Groundwater Dependent Ecosystems – A Primer” (December 2012): 3 page leaflet as an introduction to the network’s topic with the following contents: *What are GDE?; Main types of GDE; Recommended Approaches to Managing GDEs; Management Considerations;*

- call for abstracts concerning GDE was launched for Perth IAH International Conference in September 2013; David Lockington and Richard Evans of the Organizing Committee of Perth Conference will assure the coordination with the Network in the Conference;

- at the XII International Conference of IAEG (International Association of Engineering Geology), to be held in Turin (Italy) in September 2014, a session called "Sustainable water management in tunnels", with Convener: Antonio Dematteis and Co-conveners: Joe Gurrieri, Alessandro Gargini, Giona Preisig, will be organized (session No. 6.18) by *GDE Impacts WG*. The session is directed at all operators in the field of design, supervision and construction of tunnels, such as universities and research institutes, designers, construction companies, control authorities, contracting authorities. Interesting topics for this section are the following: past experience; water inflow rates; examples of exploitation of water and heat; methods of forecasting; technologies for drainage, waterproofing, and collecting; impact on Groundwater Dependent Ecosystems; risk and mitigation analysis; communication to decision makers and concerned peoples; laws, rules and policy framework;

- with Clifford Voss (Editor of Hydrogeology Journal) has been verified the chance of a dedicated issue or session for GDE in the journal; the best defined chance is to organize an article Group - this can fill no more than about one-half of a printed issue (usually Groups consist of 7 or fewer articles including the first one in the Group - an introductory Essay that describes the topic of the Group and perhaps describes some of the results presented in the other 6 articles). A Group can appear much sooner than 2015 and within any issue of a year;

4. Future programmes

- 1) Produce a publication describing GDEs;
- 2) Organize dedicated sessions in International Conferences (IAH Perth 2013; IAEG Turin 2014);
- 3) Organize the next network meeting at the Perth IAH Conference in September 2013;
- 4) Publish a special issue of Hydrogeology Journal or an Articles Group inside it on GDEs (possibly originated from best papers submitted to Perth 2013);