

Course 1.7. Report. 7th-9th June 2014

Planning and Implementation of Hydrogeological Surveys

This course was held Saturday-Monday 7th-9th June 2014 at the training room of RuWatsip MRRD, Kabul. The course lecturers were

- Prof. Naim Eqrar - Introductory lecture
- David Banks - Majority of course
- Prof. Shuaib Zarinkhail - Demonstration of hydrogeology MIS/GIS system for Faryab

Translation, where needed, was provided by Prof. Noorahmed (Kabul University), Ewaz Ali Poya (MRRD) and Eng. Ehsanullah Bayat (NCA).

The objective of the course was to **provide the participants with the necessary skills, tools, understanding and conceptual background to plan and manage a Provincial Hydrogeological Survey in Afghanistan.**

The course had previously been held over 5 days during September 2013. A few of the participants on this course were “repeat” participants, but the majority were new. The shorter duration of the course meant that only 3 of the 4 practical sessions could be carried out.

The course comprised:

Day 1

- **Introduction: History of Hydrogeological Surveys in Afghanistan.** An introductory lecture to assist participants to appreciate the historical context: i.e. what surveys have been carried out in Afghanistan in recent decades?
- **What is a hydrogeological map?** An overview of a number of international hydrogeological maps and mapping concepts, graduating from paper maps to digital maps to full web-based interactive hydrogeological mapping systems.
- **Practical 1.** An exercise based on understanding an example of a British hydrogeological map, and using it to make a water well prognosis.
- **Types of Data.** Summarises the various types of hydrogeological data available, from reports to borehole logs, to aerial images, to old Soviet maps.

Day 2

- **Aquifer Properties.** How can we deduce aquifer properties from sparse data? The use of Logan’s approximation was demonstrated to convert yield/drawdown data to estimated transmissivity. A summary was also given of how aquifers were classified in Faryab to produce NORPLAN’s hydrogeological map.

- **Data Entry.** This covers how different forms of hydrogeological data can be reduced to a consistent electronic format in Excel. It also covers the forms of quality control that can realistically be applied.
- **Practical 3.** A simple exercise in quality control to identify the “mistakes” in a hydrogeological Excel spreadsheet.
- **Field Surveys.** An overview of the various types of hydrogeological survey that have been used in the Faryab case and what their purpose is.

Day 3

- **Practical 4.** An exercise in constructing (manually) a hydrogeological cross section at Maimana Airport using data from Google Earth and from borehole logs submitted by DACAAR. This was extremely useful, I believe, to many course participants, with little experience of this type of exercise.
- **Sustainability and recharge.** A brief consideration of why an understanding and quantification of recharge mechanisms is important for the assessment of sustainability of groundwater abstraction from an aquifer.
- **GIS/MIS.** A real-time demonstration of how data has been processed in the Faryab project, from simple Excel spreadsheets up to a full geographical database and ArcMap visualisation.

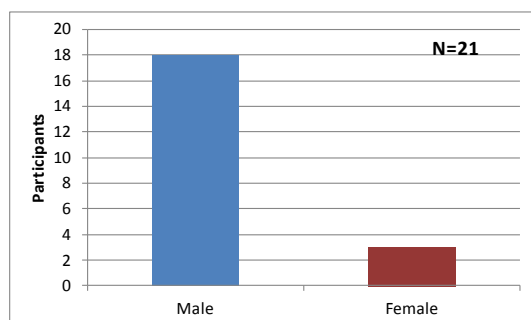
I believe that the level of the course was pitched approximately correctly. I think the content challenged many participants but was not beyond their ability.

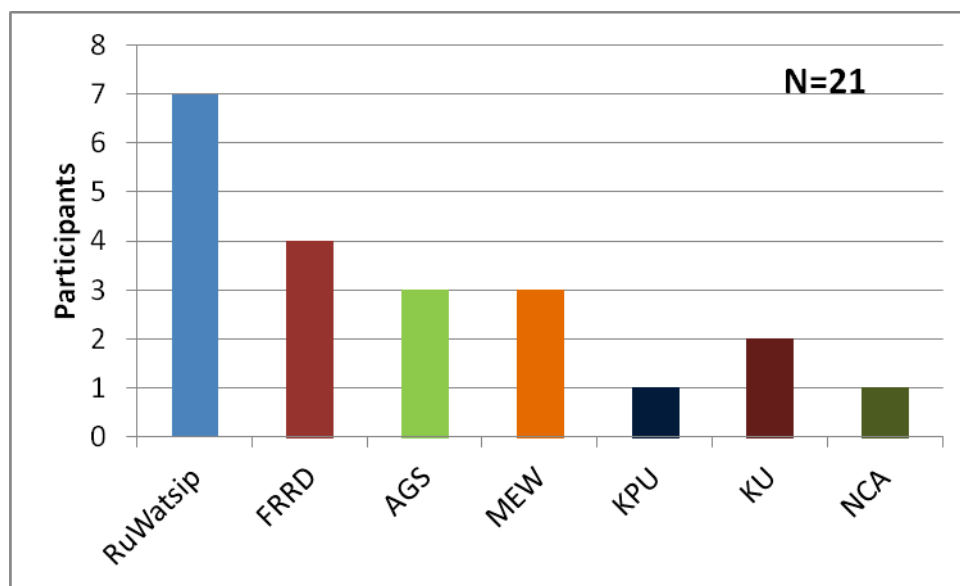
The ideal length of this course should be **4 days** (with translation), or 3 days if taught in Dari.

Participation

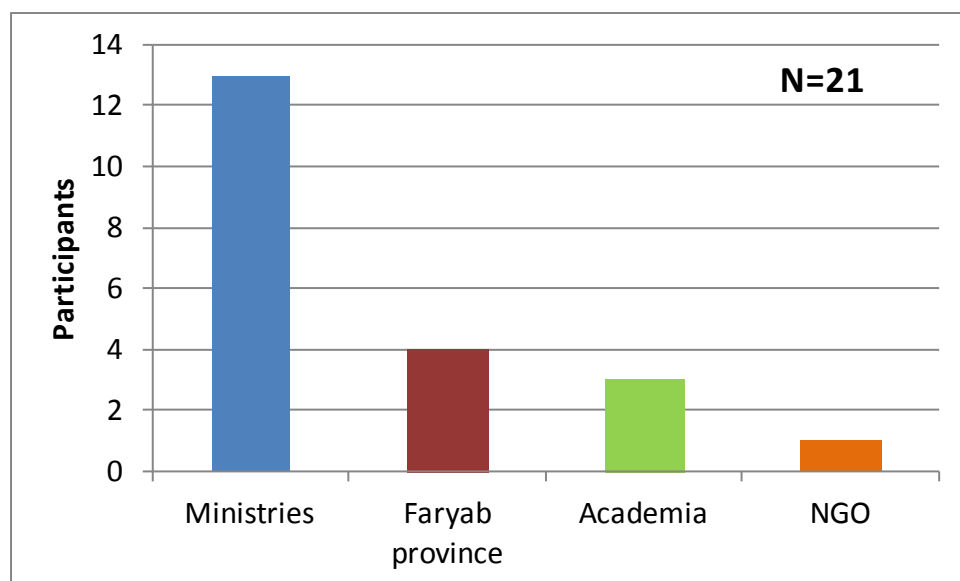
21 participants were registered on the course comprising 18 men and 3 women (although only 1 woman maintained attendance throughout the whole course).

The participation was divided as follows:





Participation in course 1.7 by institution. RuWatsip = MRRD RuWatsip; FRRD = Faryab Department of Rural Rehabilitation and Development; AGS = Afghan Geological Survey; MEW = Ministry of Energy and Water, KPU = Kabul Polytechnic University; KU=Kabul University; NCA = Norwegian Church Aid.



Participation in course 1.7 by sector.