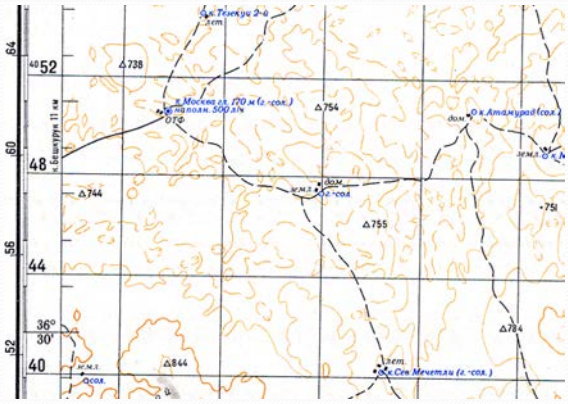
Data Entry and Quality Control

by: David Banks, Hydrogeologist and thermogeologist

NORAD supported project in MRRD:
Capacity Building and Institutional Cooperation in the field of Hydrogeology for Faryab Province , Afghanistan

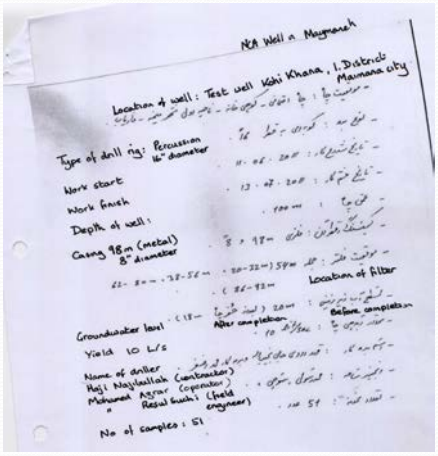
NORPLAN

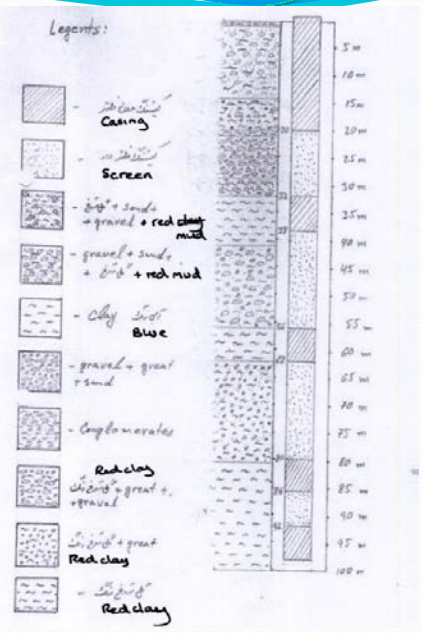
Data on wells, boreholes and springs may arrive in many formats



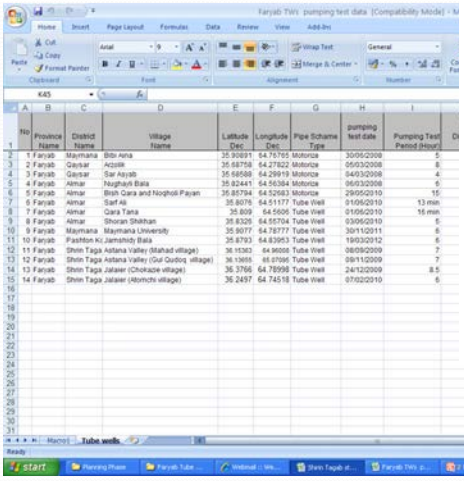
Data from old maps

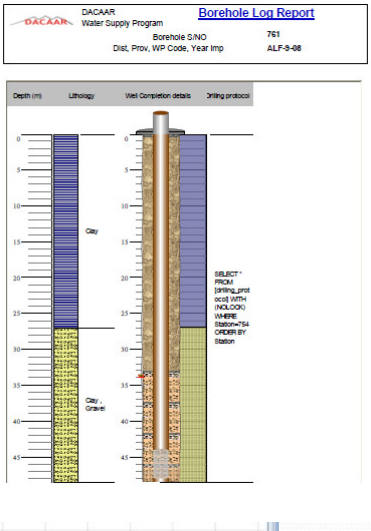
Paper data



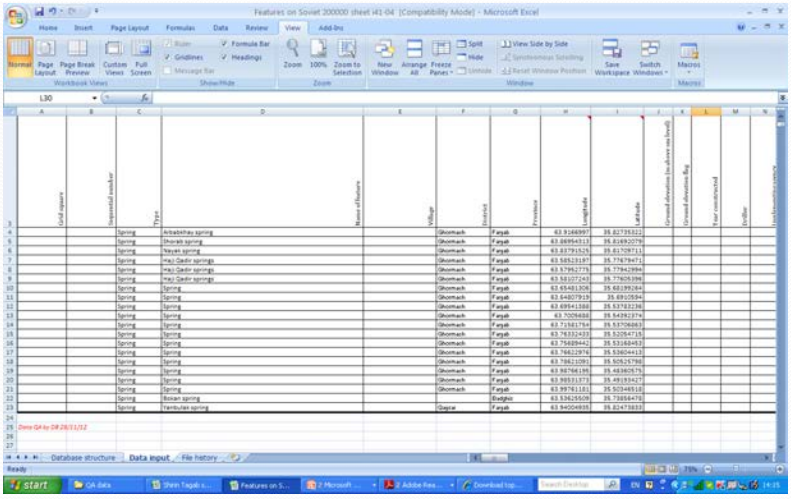


Digital data





...and it all needs to be converted to a standard format (in Excel)



We have prepared four standard formats

1. For groundwater points (wells, boreholes, springs, karezes)
2. For surface water (monitoring / sampling stations)
3. For meteorological stations (monitoring / sampling stations)
4. For soil sampling stations

All summarised in Templates\Combined data structure GRO SUR MET SOL.xlsx

The standard groundwater data entry file is Templates\GRO structure of data.xlsx

Well Index Number											
Grid square	Sequential number	Type	Name of feature	Village	District	Province	Longitude (digital degrees)	Latitude (digital degrees)	Ground elevation (m above sea level)	Ground elevation flag

Quality control

- The Second Law of Thermodynamics says….

…left to its own devices

Information always gets corrupted!

"The Second Law also applies to communications and information theory. In these fields, information tends to be lost, and order tends to decrease. " Jim Loy (2000)

We can't check everything

- From the office we can't go and verify the geological log or the pumping test results.
- But we can make some evaluation of whether they make sense.
- We can also check that well depth, grid reference, water level etc. seem logical and consistent.

Common errors – Grid References

These can be really confusing!

- GPS devices are never as accurate as they claim!
- Latitude and longitude can be confused
- Are you using:
  - Degrees, minutes and seconds 36°15'20"
  - Degrees and digital minutes 36°15.333'
  - Digital degrees 36.25555°

Common errors – Grid References

- When recording these in the field, always state which format you are using and use clear symbols!
- Prefer digital degrees
- If you use other formats make sure you show the units clearly

For example: 36°45'22" for degrees, minutes and seconds

In the office, you can check grid references in Google Earth by the macro MapExcelData.xls
(called MapExcelData MRRD.xls on the memory stick).
Check:

- The well location seems logical (near a village)
- The well location is in the correct province / district

Common errors – Altitude / District

Altitude

GPS devices estimate altitude:

- Make sure it is in metres above sea level and not feet
- Check altitude versus grid reference on Google Earth

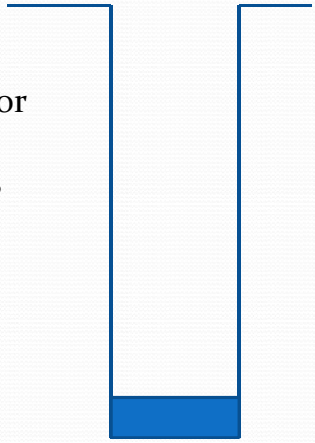
District

- District boundaries change
- Check using MapExcelData in Google Earth

Check depth

Ask yourself

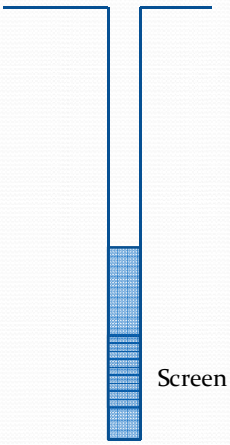
- What is the maximum likely depth for
  - A dug well?
- Where is the water level likely to be?



Check depth

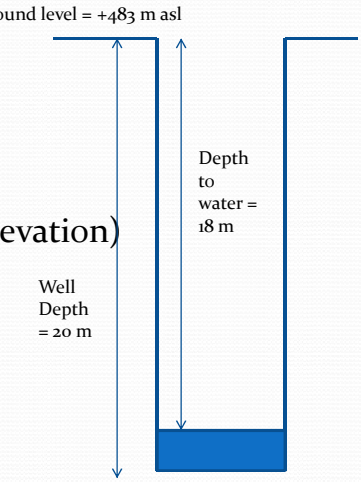
Ask yourself

- What is the maximum likely depth for
  - A borehole?
- Where is the water level likely to be?

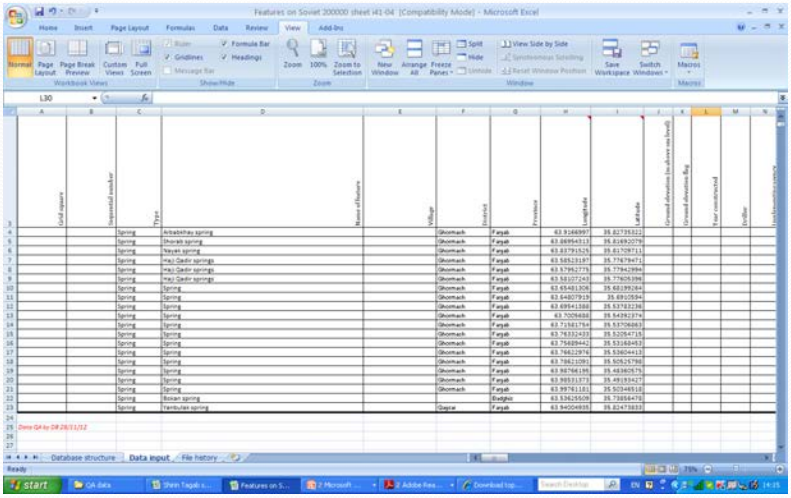


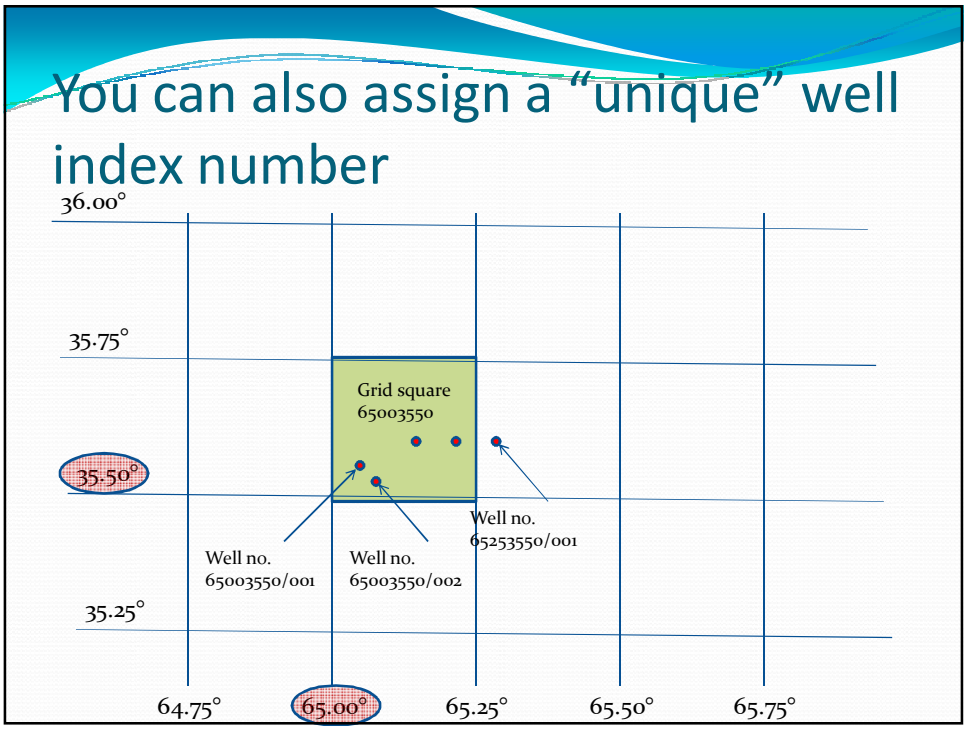
How is the water level cited?

- Metres below well top
- Metres below ground level
  18 m bgl
- Metres above sea level (absolute elevation)
  +465 m asl
- Depth of water in well
  2 m



When you have finished your quality control, you can upload the Excel file to your main database




You can also assign a "unique" well index number
36.00°
35.75°
35.50°
35.25°
Grid square 65003550
Well no. 65003550/001
Well no. 65003550/002
Well no. 65253550/001
64.75°
65.00°
65.25°
65.50°
65.75°