



GROUND WATER RELIEF

MEET THE MEMBER - DAVID NDAGO - HYDROGEOLOGIST

Area of Expertise: hydrogeology and mining.

Years' Experience: 17 years

Nationality: Kenyan

GWR Joining Date: February 2017

Number of GWR projects completed: 9

GWR Projects: Hydrogeological desk studies for Gabilei (Somaliland), Kitale (Kenya) and Chad. Borehole drilling supervision and advice for a variety of projects, including in Uganda, Kitale (Kenya) and Cox Bazar (Bangladesh). 2D ERT geophysical surveying in Kodok and Wau Shilluk (South Sudan, 2020), and Wau (South Sudan, 2024). Supporting water supply network handovers and capacity building in Cox Bazar (Bangladesh).

PROFESSIONAL BACKGROUND

An introduction to your background in groundwater...

My interest in groundwater began during my tenure as an exploration geologist, overseeing Diamond and Reverse Circulation (RC) drilling projects, back in 2007. Our work focused on mineral exploration in areas where water was scarce, necessitating long journeys for both domestic and livestock water needs by the host community.

During the drilling operations, we frequently encountered water at varying depths, sometimes tapping into artesian aquifers. Witnessing the local community's deep appreciation of this underground water resource was deeply impactful, prompting a reevaluation of our initial plans to seal some of the drillholes. Subsequent testing confirmed the water's potability, leading to the development and conversion of some RC exploration drillholes into productive water boreholes.

Since that time, I have gained extensive experience in various roles as Hydrogeologist, supervising and advising on groundwater exploration, drilling, and supply across sectors including oil and gas, NGOs, and private enterprises.

The assessment, management, and conservation of groundwater resources have been central to my work, particularly through my membership with GWR since 2017. Through this membership, I have supervised assessments and drilling operations in diverse geological and hydrological settings across Africa and Asia over the past seven years.



David preparing project materials whilst working for GWR in Bangladesh

Your inspiration in pursuing a career in groundwater...

During my geological training, I got so fascinated by the dynamics of hydrological cycle and the critical role that geology plays in groundwater systems to sustain ecosystems and human life. Witnessing how groundwater availability made direct impact to the communities during my field work solidified my passion.

The immediate relief provided by accessibility of groundwater in water scarce areas was a motivation to delve into Hydrogeology and explore further the sustainability and quality especially where contamination and scarcity poses a challenge.

A brief overview of your day job outside of GWR...

I support the mining community in evaluating the mines and ensuring quality control during exploration and mining activities. What I enjoy most is my ability to effectively integrate water management practices within the mining sector.

DID YOU KNOW?

David is one of our most active members, particularly when it comes to fieldwork, and has completed an astounding six field projects for us during his time as a GWR member!

INSIGHTS AND EXPERIENCES

A particularly challenging groundwater issue you've encountered and how you addressed it...

Challenge faced:

Encountering two aquifers, with the primary aquifer being highly brackish and the secondary, thinner aquifer being fresh.

Solution:

To tackle this, we conducted water conductivity tests to precisely delineate the aquifer boundaries. We isolated the brackish aquifer by backfilling with clay, and successfully developed and brought into production the upper fresh water aquifer. Additionally, we installed two piezometers for long-term monitoring of the distinct aquifers.

Where you find the most enjoyment working in groundwater... The immediate satisfaction by the recipients when water is discovered, particularly in the arid and semi-arid regions provides a reward to hydrogeologists that can often exceed mere monetary gain

The best piece of advice you have ever received... I prioritising sustainability over short-term gains!

The alternative career path you would have chosen if you weren't a hydrogeologist... mining.

What you believe to be the most pressing challenges related to groundwater and water supply today..

- Aquifer depletion specifically in areas that are relying solely on groundwater for domestic and agricultural uses
- Groundwater contamination as a result of vulnerability to contamination from industrial activities, agricultural runoff, poor waste disposal, and urban development.



Providing pump testing training as part of a capacity building project in Bangladesh.

GWR INVOLVEMENT AND ADVICE



Completing 2D ERT geophysical survey works for borehole siting in Fashoda County, South Sudan.

What motivated you to join GWR's membership... The network of hydrogeologists and the fact that I could get a chance to share my expertise within and outside our country

The most rewarding project you have worked on with GWR... Without a doubt, this would be the assessment and drilling of water borehole in an upcoming school that serves the less privileged pupils in Kenya. The school was relying on water from a nearby shallow well that was contaminated, and therefore not suitable as a safe supply of drinking water. The drilling was very successful and the borehole is serving the school to date.

Advice you would give to someone aspiring to get involved at GWR... Networking is incredibly important in the professional space and being a technical field, it is important to take every chance to visit various geological and hydrogeological environments.
Becoming a member of GWR ensures access to diverse opportunities to visit and work within various geological and hydrogeological contexts, offering valuable professional connections and experiences.

Hopes for contributing to the GWR community in the future... As well as continuing to support as I always have, I am interested in participate in training and orientation of the new members, so that I can share my previous experiences with GWR across the membership.

GWR INVOLVEMENT AND ADVICE

A memorable experience from your work with GWR...

During the groundwater assessment in Kodok and Wau Shilluk, South Sudan, the Nile River experienced flooding. Within our target area we had to navigate a swampy section before getting to the work site. One particular memorable day, while in the field, the river flooded to such an extent that water flowed backwards into the swamp and towards our work area.

We had to take an unexpected boat ride back to the camp, having realized that sometimes when you are looking for water, it can find you first.

This situation illustrated the irony of "looking for water where there was already plenty," to a point of posing a significant threat to local residents. It confirmed the importance of considering quality, reliability, and sustainability in defining water resource management practices, despite the apparent abundance of water as was visually observed at the surface.

...and a second.... I was called upon to rapidly take over a drilling project in Bangladesh from the hydrogeologist who had to depart to take other responsibilities. I quickly moved to obtain the visa, a process that proceeded swiftly due to a detailed letter of introduction to the embassy.

Upon meeting the hydrogeologist for the handover, I was pleasantly surprised to find that he was my former line manager during my time as a water well geologist in the Kenyan oil exploration sector. It equally didn't occur to him that he was handing over to me. This was a pleasant surprise that demonstrated how GWR connects the Professionals across different contexts.

This encounter reinforced the importance of maintaining professional relationships, confirming the adage "don't burn bridges".

As a member of GWR rapid response team, our shared philosophy is to deliver services where they are most needed, exemplified by this unexpected reunion and seamless transition.



Completing 2D ERT geophysical survey works for borehole siting in Kodok, South Sudan.

How being an active member of GWR has benefitted you professionally and personally... Being a member of GWR has made me travel different places in Africa and Asia and interact with diverse ethnic communities.

These experiences has significantly enhanced my interpersonal skills in a way that would not have been possible otherwise. These skills are crucial in capacity building and ensuring that field work is fun even in the remotest of areas.



Discussing work plans with the team in Bangladesh.