

# Partnerships, perseverance, and progress: Overcoming the challenge of the COVID-19 pandemic to rehabilitate wells in Malawi

## Background

Since 2013, our university organization has been working with communities in the Sakata region of Malawi to improve potable water access by building borehole wells. Almost 40% of people in Sakata lack basic access to water, so borehole wells are vital to improved education, health, and quality of life. Students planned to drill borehole wells in the communities of **Liti and Nkagula** in the summer of 2020 when the COVID-19 pandemic made international travel impossible. Determined to continue the project despite the pandemic, students engineered a new kind of solution – a **remote borehole rehabilitation project** to improve existing wells.



Borehole well in Malawi



Students in Malawi in 2017

## The Team

### Engineering Students

- Manage project budget
- Communicate with in-country partners
- Research and make project decisions

### Faculty Advisors

- Handle financial transactions
- Communicate with College of Engineering
- Provide guidance to project managers

### Professional Engineers

- Review and approve implementation reports and safety plans
- Negotiate with contractors
- Sign off on all engineering designs and oversee construction

## Maintenance Training Sessions

Students worked with local partners to organize community maintenance trainings to train **145 people** in routine maintenance and part replacement, including:

- Performing weekly and monthly checks
- Replacing common parts including bobbin, foot valve, o-ring, and rising main joints
- Checking for stand vibration and performing a leak test

Maintaining and repairing borehole wells extends the lifetime of the wells and prevents contamination.



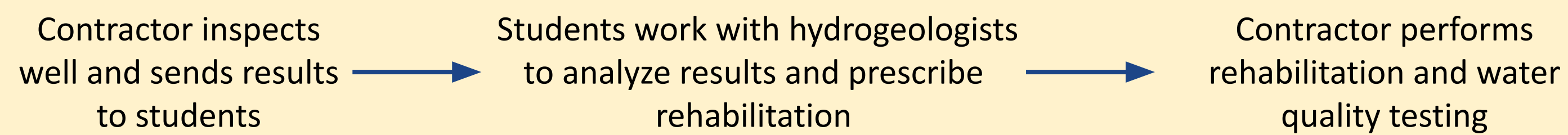
Replacing well parts in Nkagula



Spare parts for water committee

## Remote Rehabilitation

Students worked with a local contractor to inspect and rehabilitate **14 existing wells** in Liti and Nkagula. This **remote work** was a new endeavor for our organization and required adaptability and good communication.



Camera survey of borehole



Pump test rig in the field

This project was the **first of its kind in the Sakata region** and was commended by the Zomba District Water Department and the WASH District Team, who have since organized a similar, government-funded borehole rehabilitation program.

## Results

In 2022, a student team travelled to Liti and Nkagula to assess the success of the remote rehabilitation. Students talked to local leaders, held open community meetings, and conducted household surveys to assess community satisfaction. Students also performed field water quality tests, in-country chemical tests, and analyzed data upon return to the U.S.

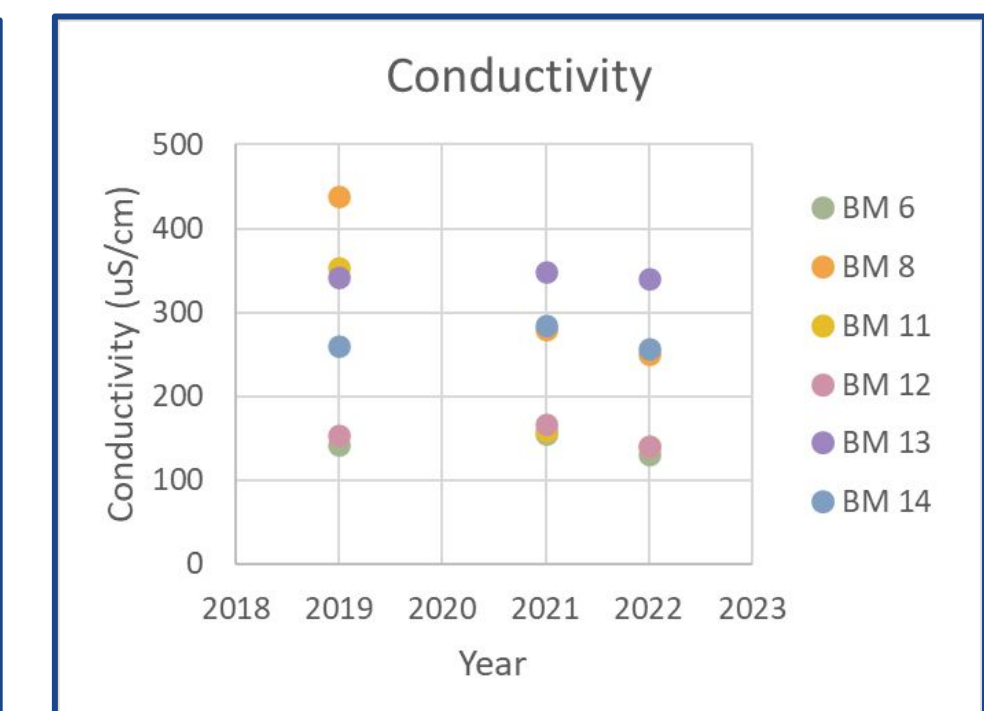
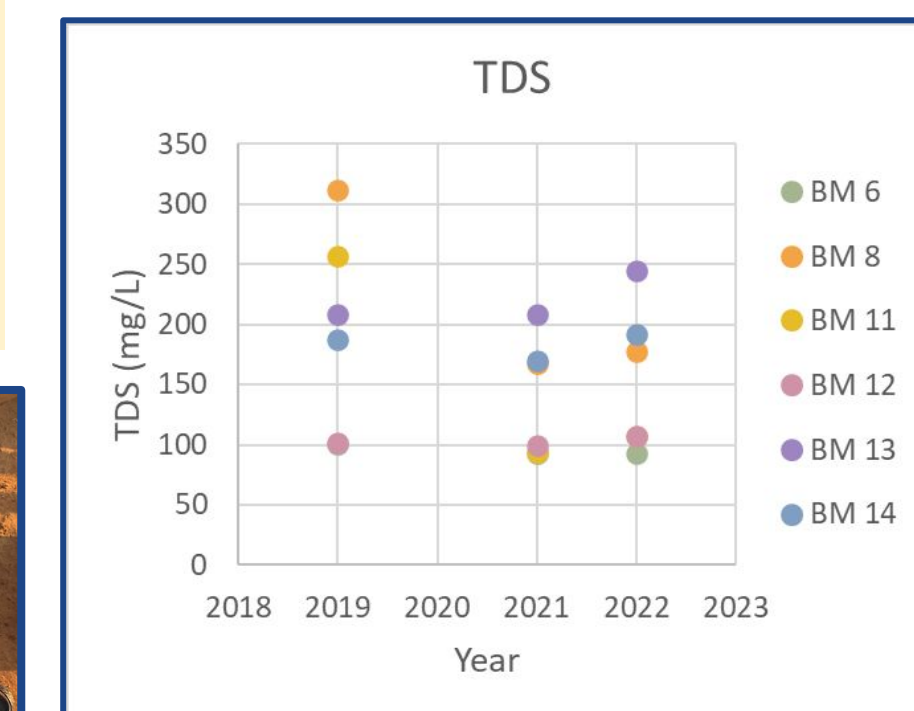
- Over **95%** of households surveyed were satisfied with the rehabilitation
- Water was reported to be **cleaner and better tasting**
- Wells were reported to be **easier to pump**



Community meeting



Field water quality testing



TDS and conductivity improved from 2019 to 2021 and remained steady from 2021 to 2022, indicating an **improvement following the rehabilitation** and **continued maintenance** following the training.