

# INVESTIGATIONS INTO GROUNDWATER POTENTIAL OF EHA-AMUFU, SOUTHEASTERN NIGERIA

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*Geoscientists without Borders Application:  
2025 Q1Q2*

## ***Okechukwu Donald Nnebedum***

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# FollowUp Form

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## *Basic Information*

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### **Project Name\***

Name of Project

INVESTIGATIONS INTO GROUNDWATER POTENTIAL OF EHA-AMUFU, SOUTHEASTERN NIGERIA

### **Project Performers\***

List all project participants. Include their title and affiliation.

Onwuka Okechukwu S., PhD, Hydrogeology, Professor, University of Nigeria

Ugbor Charles, C., PhD Geophysics, Reader, University of Nigeria

Nnebedum Okechukwu, D. PhD Marine Geoscience, Senior lecturer, University of Nigeria

Emeh Chukwuebuka O., PhD, Engineering/Environmental Geology, Lecturer I, Nnamdi Azikiwe University

Ahaneku Chibuzo .V. MSc Sedimentology, Lecturer I, Nnamdi Azikiwe University

Ijeoma Umeadi, PhD, Stratigraphy, Research II, University of Nigeria

### **Project Start Date\***

Select the date when your project was started.

10/01/2025

### **Anticipated Project End Date\***

Select the date when you expect the project to be completed.

09/30/2026

## *Report*

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### **Summary of Project Goals and Objectives\***

Provide a short summary of the project's goals and objectives as outlined in your Phase I and Phase II applications

The goals and objectives are to:

1. Conduct geophysical exploration to identify aquifer units for potable water.
2. Drill appraisal well to confirm hydraulic properties & water quality.
3. Build capacity for SEG students within Southeastern Nigeria through training.
4. Assess water-borne diseases & community needs to provide evidence for continued investment to enhance project impact & longevity in the region, addressing water scarcity & public health concerns.

## Summary of Progress Made\*

Provide a brief summary of the progress you have made toward the planning and execution of the tasks in your project as outlined in the statement of work in the grant agreement. If available, preliminary results should be included in this section. Please make sure to assign a %age of progress made/completion for each goal, even if it is 0% for any goal. This is a requirement by the Committee. [Continued on last page.](#)

Permissions obtained from the Enugu State Ministries of Environment and Water Resources, as well as the local government, for community access & security. Project advertised via banners, flyers, & social media to raise awareness. Groundwater exploration; hands-on training for 40 students from 5 universities in the use of VES & AMT for groundwater exploration; water sampling; community education on the importance of the project and on WASH, all 100% completed.

## Problems or Challenges Encountered\*

Describe any problems or challenges that the project team has encountered and what actions have been taken to mitigate those problems.

Initial progress was slowed by delayed credit alerts, the L.G.A Chairman's unavailability, and the need for additional permits after survey lines extended into Benue State. Furthermore, the Naira's appreciation from 1,600 to 1,350 per USD reduced the total available budget. To adapt, we consolidated the exploration into a single extended phase. Financial shortfalls were managed by reusing disposables, reducing consumable quantities, and utilising participant labour instead of outsourcing.

## Evaluation of project schedule\*

Give an assessment of how the project is progressing according to the projected schedule. Is it on schedule? If not, what has contributed to the delays? How will the schedule need to be adjusted to complete the project? What, if any, challenges will the adjustment(s) create? If any changes are needed, please submit an updated schedule for approval by the Committee.

Interpretation of geologic, geophysical, and water-laboratory data will be completed on April 30. The results will determine the borehole locations and depth. Key upcoming milestones include:

- Drilling Phase: May
- Report Dissemination Seminars: June
- Final Report Submission: September

Please provide high resolution photos and/or videos of project participants, people from the community, places impacted by the project and activities associated with the project to [withoutborders@seg.org](mailto:withoutborders@seg.org). Please use Dropbox.com, WeTransfer.com, or some other file transfer program to send photos and videos. The SEG server will block any email with an attachment that is larger than 8 MB.

### **\*Summary of Project Goals and Objectives**

The goals and objectives are to:

1. Ascertaining from geophysical exploration the aquiferous units that can be drilled to yield potable water within the study area. Exploration 100% completed, Data interpretation still ongoing (50%)
2. Drilling an appraisal well to ascertain the aquifer hydraulic properties and to confirm its prolific nature as well as the groundwater quality. 0% completed
3. Incorporating a training scheme within the project that aims at capacity building for the SEG student community within Southeastern Nigeria through training. 100% completed
4. Investigate the prevalence of water-borne disease and the water needs of the immediate population to provide evidence that will support the need for continual funding of the project by the host community to maintain its sustainability. Water sampling and qualitative data collection from health centers and community members are 100% completed. However, the water laboratory tests and qualitative data analysis are still ongoing (55%), while dissemination of the report to stakeholders and the community is 0% completed.

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4. Investigate the prevalence of water-borne disease and the water needs of the immediate population to provide evidence that will support the need for continual funding of the project by the host community to maintain its sustainability. Water sampling and qualitative data collection from health centers and community members are 100% completed. However, the water laboratory tests and qualitative data analysis are still ongoing (55%), while dissemination of the report to stakeholders and the community is 0% completed.

## **GWB FIRST QUARTER REPORT EXTENDED**

### **Summary of Project Goals and Objectives**

The goals and objectives are to:

1. Ascertaining from geophysical exploration the aquiferous units that can be drilled to yield portable water within the study area. Exploration 100% completed, Data interpretation still ongoing (50% complete)
  2. Drilling an appraisal well to ascertain the aquifer hydraulic properties and to confirm its prolific nature as well as the groundwater quality. 0% completed
  3. Incorporating a training scheme within the project that aims at capacity building for the SEG student community within Southeastern Nigeria through training. 100% completed
  4. Investigate the prevalence of water-borne disease and the water needs of the immediate population to provide evidence that will support the need for continual funding of the project by the host community to maintain its sustainability. Water sampling and qualitative data collection from health centres and community members have been 100% completed. However, the water laboratory tests and qualitative data analysis are still ongoing (55% complete), whereas dissemination of the report to stakeholders and the community is 0% complete.
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### **Summary Of Progress Made**

The project performers held an inception meeting on 18/11/25, during which tasks were assigned to each performer. The exploration groundwater permission was obtained from the Enugu State Ministry of Environment and the Ministry of Water Resources, whereas permission to operate within the local community and the request for security personnel were obtained from the local government authority chairman. Banners, flyers, and other materials to advertise the project across various social media and on campus were produced and disseminated. As part of the groundwater exploration phase, which is now 100% complete, 40 students from five universities received hands-on training in geophysical field data acquisition methods and actively participated in the exploration process. Educating the community about the importance of the project and the need for water, sanitation, and hygiene has been 100% completed. Water samples were collected and are currently undergoing laboratory analyses.

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### **Problems and challenges encountered**

There was a delay in receiving the bank credit alert when the first project tranche was disbursed. Delay in receiving approval from the local government Chairman due to his absence and busy schedule. Some proposed survey lines, selected remotely, fell beyond the Enugu state boundary, which warranted an additional exploration permit from the neighbouring Benue state. Devaluation of US dollars against the Naira from the budgeted 1600 Naira per USD to 1350 Naira per USD. To account for the time delays, the exploration phase was redesigned into a single, extended period rather than the initial phase-by-phase approach. The reduction in the disbursed fund due to the devaluation of the USD and the Naira was mitigated by adjusting the quantity of consumables and reusing disposables. Some labour was performed by the participants rather than outsourced to save costs.

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### **Evaluation of Project Schedule**

While there were some delays in the project's commencement, the challenges were overcome, and the project is on course. The acquired geologic and geophysical data are being interpreted and will be completed by April 30<sup>th</sup>. The water samples are currently being analysed in the laboratory, and the interpreted results will be ready by April 30<sup>th</sup>. Upon completion of the geologic and geophysical data, the borehole drilling location and total drilling depth will be determined. This will help in the appraisal well prognosis. The drilling phase of the project will commence in the first week of May and end after three weeks. The report dissemination seminar will be held in June-July, and the final project's report will be submitted in August-September.

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## **Attachments**

The project activities were captured in pictures and videos, and they include activities such as;

- Inception meetings of the project performers,
- Meetings with the state commissioner and local government chairman,
- Introductory training of the student participants,
- Geophysical data gathering and interpretation training sessions,
- Health and Environmental Safety Briefings
- Geophysical field data acquisition,
- Focus discussion Group Meetings with the community to educate them about the importance of the project and WASH.
- sampling of surface water for quality analysis,
- Other in-between field activities
- Some results from the geologic and geophysical data,