



<http://living-earth.org/>

13 January 2003

Dear Grantor:

The Living Earth Institute (LEI) is seeking a grant of \$40K to embark on developing rural water supply projects in Anambra State of Nigeria. The project will be implemented through Nnamdi Azikiwe University in partnership with the local communities. These projects will be developed to support basic water supply needs of many people within the region. This proposed project would add greatly to the over-all capacity of Nnamdi Azikiwe University to meet infrastructure needs in Anambra State of Nigeria by providing training and materials to students as well as providing clean water to meet the basic necessity of the area.

Consistent with LEI and the university philosophies, the project is very locally focused and driven. The local community will be invested in all aspects of the project including the system design, construction, training, operation and maintenance. The Living Earth Institute (LEI) is currently developing a working relationship with the staff of Nnamdi Azikiwe University. Over the past several years, Dr. George Onwumere of LEI in Olympia, Washington State has been working with Dr. Bernard Akudinobi, our local LEI project lead and a hydrogeology professor, in Nigeria to develop the project proposal and draft a preliminary budget. The project is planned to be carried out in three phases.

In the following paragraphs and attachment you will find more details on the project, planned phased implementation, design aspects, and budget.

Project Description

Nnamdi Azikiwe University is located in Awka which is the capital of Anambra State. Dr. Akudinobi will be located in Awka throughout the project and will be the key contact to oversee the project.

Nigeria, with population well over 120 million people is probably the most populous black country in the world. Over the years, severely reduced income-per-capita, poorly founded political base and ethnic frame work have resulted in an increase in devaluation of the quality of life among the citizenry, and general environmental degradation.

The increasing water demand linked to population growth and harsh climatic conditions notwithstanding, obtaining safe water for drinking and other domestic activities has remained a prerogative to the privileged few. Water supply situation in public schools (primary and post-primary), health care institutions and markets, still falls short of the requirements for effective operation of sewage waste disposal and management. Very poor and further deteriorating sanitary conditions (including toilet facilities) thus prevail in many public schools, health centers and markets. Avoidable losses associated with fire outbreaks in urban and suburban markets have been common resulting in socioeconomic destabilization of many. Prevalence of water-born diseases (such as typhoid fever, cholera and diarrhea) has been on the increase, especially among the children and the elderly.

Alleviation of these problems through improved groundwater resources development is considered viable, more so in hydrogeologically favored areas where the depth to water table ranges from less than 40 m to about 1000 m. Lives of many Nigerians could be saved, with overall improvement in socio-economic well-being of many.

LEI is hoping to raise the necessary funds to begin Phase I of the project by the end of this year. The overall cost of the project is estimated at US\$ 40,000. The water supply users will contribute to the project by providing land for the wells and by supplying the labor and locally available materials to the project. The villagers will also be responsible to operate and maintain the system. A local ordinance will be developed to describe the functions and responsibilities of the individuals in the community, participation requirements, decision-making processes, dispute resolutions, etc., in order to assure sustainability of the system in the long-term. The detailed project plan proposal is included as an attachment to this correspondence.

I want to thank you for your interest in supporting this project. I am truly excited about this opportunity to develop potable water supply for the benefits of public schools (primary and post-primary), health care institutions and markets around Anambra State, and I see tremendous opportunity to continue similar projects throughout needy areas in Nigeria.

I look forward to continuing the dialogue about this project and more with you. If you have any questions, do not hesitate to call me at (360) 537-5947. Or you may email me at GOnwumere@juno.com Thank you for your consideration.

Sincerely,

George Onwumere, Ph.D.
LEI Project Manager

The Living Earth Institute (LEI) is a non-profit 501(3)(c) organization based in the United States formed to provide environmental education on the protection, restoration, and sustainable use of natural resources.

LEI achieves these basic purposes through three basic approaches:

- *Technical assistance and education in establishing sustainable development.*
- *Assessments for citizen groups needing assistance in management of environmental issues.*
- *A system of distance learning for providing environmental education to a wide audience.*

BASIC WATER SUPPLY NEEDS IN PUBLIC SCHOOLS AND HEALTH INSTITUTIONS IN ANAMBRA STATE, NIGERIA

Needs Statement:

Nigeria, with population well over 120 million people is probably the most populous black country in the world. Unfortunately, severely meager income-per-capita characterizes the people, resulting from among other factors, the poorly founded political base and ethnic frame work. Consequently, the end result is an increase in devaluation of the quality of life among the citizenry, and general environmental degradation.

The increasing water demand linked to population growth and harsh climatic conditions notwithstanding, obtaining safe water for drinking and other domestic activities has remained a prerogative to the privileged few. Water supply situation in public schools (primary and post-primary), health care institutions and markets, still falls short of the requirements for effective operation of sewage waste disposal and management. Very poor and further deteriorating sanitary conditions (including toilet facilities) thus prevail in many public schools, health centers and markets. Avoidable losses associated with fire outbreaks in urban and suburban markets have been common resulting in socioeconomic destabilization of many. Prevalence of water-born diseases (such as typhoid fever, cholera and diarrhea) has been on the increase, especially among the children and the elderly.

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OBJECTIVES OF THE PROJECT:

- To provide safe water (for drinking and improved hygiene) to socio-economically and ecologically disadvantaged public institutions, including health institutions, schools, destitute homes, rural communities, and urban dwellers in high density areas in geo-hydrologically favored areas of southeastern Nigeria, and
- To provide effective water quality assessment and monitoring services to the needy public, and alleviated the rising problems of well failure and debilitating water-borne diseases in Nigeria.

ADDITIONAL BENEFITS:

The project shall provide industrial training services for many Nigerians (especially the undergraduates and graduate students in water sciences) who would be part of the field team. Paucity of hydrological and hydrogeological field data and the extreme difficulty in obtaining same through field operations constitute an important barrier in water research in Nigeria. This project would initiate a positive step toward establishing a reliable data bank for groundwater resources planning. All these are relevant, and are likely to succeed since the coordinator of the project in Nigeria **is a university lecturer and a graduate program supervisor in hydrogeology.**

Project Description:

When funded, the project will be scheduled in three phases over a period of 2 to 3 years.

Phase 1 Activities:

- The university in Nigeria in conjunction with the local communities and governments will prepare site and project profiles (to identify the most water scarce and project-potential area).
- Field verification to select the most suitable public schools and health institutions, consultation with local governments and the potential beneficiaries for their participation/support.
- Design the project scope, and prepare suitable plan of action.
- Develop an interdisciplinary team from the university with subject specialists (Sociologist, Sanitation Expert, and Public Health Expert) to develop training concepts and outreach programs for the school, health institutions and the local communities.

Phase II Activities

- Tubewell and Drilling Expert and Water Supply and Sanitation Engineer prepare the detailed engineering designs and the cost estimate for suitable development schemes.
- Subject Specialists (Social Scientist, Sanitation and Environmental Expert and Public Health Expert) prepare the training materials for the schools, health institutions and local communities.
- Preparation of the Final Project Design Specifications.
- Mobilization of interest parties and local communities through the university.
- Commence Training Programs through the university.
- Regular monitoring and supervision of training Programs by the Project Leader.
- Procure equipment - The low-cost drilling machine (model LS-100) is manufactured by LONE STAR BITS
- Procure equipment (others) – Terameter (for water table mapping and well-logging for accurate location of screen; consumables (drilling mud and additives) by 20; casing, screening, cementing, gravel-packing, pump installation and sanitary protection for each borehole (x20 boreholes); water quality test kit for anionic and catatonic constituents; and field PH-meter and thermometers.
- Provide training from the drill rig manufacturer to Living Earth Institute (LEI) project manger (in Texas) and provide local training to a Nigeria driller to be hired by the project to operate the drilling machine.
- Two trips by LEI project manager to Nigeria (at phases 1 and 2/3 part of the project) for consultation and overall project evaluation.
- Procure well assembly materials and the necessary hand-pump sets.

Phase III Activities

- Training Programs will continue.
- Construction work will begin.
- Field checking and trouble-shooting (3-4 times)

- Long term project follow up (annually for 5 years)

PROJECT PARTICIPANTS: (Curriculum Vitae are attached)

Dr. Bernard Akudinobi, Senior Lecturer, Nnamdi Azikiwe University in Awka, Nigeria.

Dr. George Onwumere, LEI project manager and Senior Environmental Scientist with Washington State Department of Ecology.

BUDGET SUMMARY AND TIMELINE

The project would involve pre-drilling water table mapping, borehole drilling, completion and development; and water quality assessment for each benefactor location. About twenty (20) boreholes would be involved in the first few phases of the operation. The required items of equipment and other expenses would include:

Description	Timeline	Cost (US Dollars (US\$))
Phase 1 <ul style="list-style-type: none"> • Money for preparation of site and project profiles (to identify the most water scarce and project-potential area); field verification to select the most suitable public schools and health institutions, consultation with local governments and the potential beneficiaries for their participation/support and design of the project scope, and preparation of suitable plan of action. 	8 – 12 Months	\$2,000.00
Phase 2 <ul style="list-style-type: none"> • Equipment procurement (http://www.lonestarbits.com). The drilling equipment itself costs US\$ 8,000 to 10,000. We include spare parts for about 2 years operation, and transportation/tariff costs, bringing the total to about \$12,000 - \$15,000. • Other equipment procurement, materials, preparation of engineering designs, and training (local officials (Nigeria) and LEI project manager (Texas). • Two trips to Nigeria from USA for LEI project manager (US\$ 5,000). 	6 – 8 Months	\$25,000.00
Phase 3	6 – 8 Months	\$2,000.00
Used Truck (any size and make for drill equipment transportation)		\$7,000.00
Miscellaneous (local travels, fuel, chemicals, etc)		\$4,000.00
Services of a Hydro-geologist		In-kind
Services of LEI Project Manager/Hydrologist		In-kind
Total Grant Request		US\$40,000

CURRICULUM VITAE

NAME: Bernard E. B. Akudinobi, Ph.D.

Address: Department of Geological Sciences, Nnamdi Azikiwe University, P.M.B. 5025, Awka, Anambra State, Nigeria

Phone: 011-234-48-551-565 e-mail: bebego @justice. com

Professional Experience:

PRESENT EMPLOYMENT

Lecturer/Researcher, Department of Geological Sciences, Nnamdi Azikiwe University Awka

- | | | |
|---------------------------|---------------------------------|----------------------------|
| 1) Lecturer 11 | From 30-04-92 to 01-10 95 | Geological Sciences |
| 2) Lecturer 1 | From 01-10-95 to 01-10-98 | Geological Sciences |
| 3) Senior Lecturer | From 01-10-98 to present | Geological Sciences |
- 4) Representative of the Faculty Of Natural Sciences in the University Senate November 2001 to date.

UNIVERSITY EDUCATION

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| 1) University Of Ibadan, Nigeria
B.Sc.(Hons) Geology; 2nd Class Upper Division. | Sept.1978—July, 1982. |
| 2) University Of Ibadan Nigeria,
M.Sc.Geology(Hydrogeology/ Engr. Geology
Specialisation) Eligible For Ph.D. | November 1984—February,1986 |
| 3) Nnamdi Azikiwe University Awka
Ph.D. Geological Sciences. | October, 1987-December, 1991 |

RESEARCH INTEREST

- 1) Environmental Geology; with special interest in pollution and erosion – related environmental problems.
- 2) Water Resources Development (groundwater and surface water).

PERSONAL: Age 44. Married

CURRICULUM VITAE

GEORGE C. ONWUMERE, Ph.D.
1735 So. Boone, Unit 602
Aberdeen, Washington 98520, USA
Phone: (360) 537-5947

PROFESSIONAL EXPERIENCE:

EMPLOYMENT HISTORY

Senior Environmental Scientist: September 2001- Present
Washington State Department of Ecology

Water Resources Manager: October 1997- September 2001
Quinault Indian Nation

Co-op Researcher/Contractor: February 1994 - September 1997
British Columbia Ministry of Transportation & Highways, Canada

Sessional Instructor: September 1992 - April 1995
University of British Columbia, Civil Engineering Department, Canada.

Research/Teaching Assistant: September 1990 - July 1992
University of British Columbia, Bio-Resource Engineering Department, Canada.

EDUCATION

Ph.D. degree (May 2000) in Civil Engineering.
University of British Columbia, Vancouver, BC, Canada

M.Sc. degree (July 1992) in Bio-Resource Engineering
University of British Columbia, Vancouver, BC, Canada

B.Sc. degree (July 1990) in Geography
University of Alberta, Edmonton, Alberta, Canada

B.Sc. degree (May 1988) in Biological Sciences and minor in Chemistry.
University of Alberta, Edmonton, Alberta, Canada

Diploma of Technology (May 1982) in Chemical Engineering Technology
British Columbia Institute of Technology, Burnaby, BC, Canada

PERSONAL: Age 44. Married