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**Living Earth Institute
in cooperation with
Women Development Service Centre**

**Nepal Drinking Water And Sanitation Project
Dhanusha District**

Living Earth Institute (LEI) is developing a cooperative project with a local Nepali non-governmental organization, Women Development Service Centre (WDSC) , to bring water supply and sanitation services to a village area in the Dhanusha District of Eastern Nepal. The project is currently in the conceptual phase, however, LEI is now reaching out to inform potential supporters of this effort and will follow-up with more project-specific information as it develops.

Participating Non-governmental Organizations

Women Development Service Centre is a women-focused NGO in Nepal working in skill development, local craft promotion, drinking water and sanitation, and women empowerment projects primarily for women. WDSC is currently working with LEI representatives to design and implement a village-scale water supply and sanitation project that will be linked to the broader goals of WDSC including empowerment and skill development of the village water consumers.

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.

LEI's initial focus is on issues related to the beneficial uses of water, but will branch out to other natural resource issues as the organization grows. LEI will focus efforts to provide technical expertise and education services at no cost to groups that normally do not have the financial resources to hire environmental professionals.

The Conceptual Project

The following is a preliminary description of the drinking water and sanitation project proposal for the Dhanusha District in Nepal. Future updates with more project specific detail will be distributed as the project develops.

There is a dearth of necessary hygienic drinking water and sanitation facilities throughout the rural areas of Nepal. The Dhanusha District is no exception. The cooperative association formed between LEI and WDSC will focus on a project for water supply and sanitation in the Dhanusha district. Other similar projects may be developed and carried out in other areas of Nepal in the future.

The current practice in the village areas of installing dug wells or boreholes are not technically sound nor hygienically safe. The wells are dug to very shallow depths (30-50 feet) in shallow groundwater where they are highly susceptible to bacterial and/or chemical groundwater contamination. Often cow-dung is used during boring as a drilling mud, which causes further bacterial contamination at shallow depths.

Furthermore, the quantity and quality of groundwater in the area is increasingly at risk. Planned increases in groundwater irrigation will lower the water table leaving many shallow wells dry. Also, due to the increased use of chemical fertilizers and pesticides in the area, the presence of the contaminants in groundwater has slowly increased, and is expected to increase more rapidly in the future.

WDSC and LEI are proposing a solution to the groundwater supply and quality problem by supporting the tubewell construction practice. This is a well-established drilling method for groundwater development that uses a safe construction method and can reach depths at an average of 100 feet. The tubewells use standard drilling mud (to replace the cow-dung method) and are gravel packed, which provides a natural filter and increases the functional life of the well.

This project can act as an opportunity to introduce low cost mechanical boring technology in the country. There are very low cost, low technology boring machines available, which can be affordable for medium-sized well construction projects in Nepal. One such boring machine is manufactured in Texas and costs approximately US\$10,000. The tubewell project in Dhanusha can be used as a prototype demonstration project to provide an example for other villages in rural Nepal.

The tubewell technology is also sustainable in the sense that the drilling machine itself is mechanically simple and, except for the drilling rods and drill bits, can be repaired or even replicated by mechanical enterprises in Nepal. There is a potential to help develop local entrepreneurship and local employment with the development of this technology in Nepal.

The project will be combined with a sanitation program as well. Rural communities generally do not have adequate sanitation systems. The LEI/WDSC project will include the construction of community and/or private latrines in combination with the drinking water program. There will also be a strong emphasis on health and sanitation education.

The water supply users will contribute to the project by providing land for the wells and latrines 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.

In addition, the program will include:

- ⇒ training for system users on operation and maintenance of the drinking water and sanitation systems,
- ⇒ an Integrated Pest Management (IPM) program in order to educate the rural population on the proper use and handling of chemicals and the importance of preventing groundwater contamination,
- ⇒ an organization of women's groups to make decisions and to manage, operate, and maintain the drinking water and sanitation systems in the community (usually, women are most directly connected to water supply and health in the Nepali culture),
- ⇒ education and development of programs addressing other social concerns in the community consistent with the goals of WDSC.

Finally, LEI will provide follow-up and evaluation of the project on a yearly basis to ascertain the success of the project, provide consultation for project improvement (if necessary), and develop knowledge to make improvements when replicating this project elsewhere.