



1930 Woodland Creek N.E.,  
Olympia, WA, 98516  
<http://living-earth.org/>

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Dear Grantor:

The Living Earth Institute is seeking a grant of \$15K to assist the Ecology Vocational College, in Moldova, for a capacity building project. This project will be developed to support some of the very successful work that is already in-place within the region. This proposed project would add greatly to the over-all capacity of the College to meet infrastructure needs in Moldova by providing training and materials to help financially strapped students gain access modern technology.

The Living Earth Institute (LEI) is currently assisting the Ecology Vocational College, in Chisinau, Moldova, to develop curriculum and processes to integrate and disseminate their coursework over the internet. The Moldovan Ministry of Education founded the Ecology Vocational College in 1998. The Ministry of Education has recently revised the College's mission in order expanded the goal of the College to include training in computer sciences. Starting in the next academic year, the College will introduce new courses for a degree in "Computers and System Administration". The proposed project will allow the College to pilot a "distance learning approach" program that will integrate their existing coursework into a web-based accessible format. The project proposal is attached.

LEI was formed to provide environmental education on the protection, restoration, and sustainable development of natural resources. LEI focuses on efforts to help provide these types of education and technical assistance services at no cost to groups that do not have the financial resources to hire consultants. LEI is also currently conducting projects in Europe, Asia, and South America and is a tax-exempt organization under Section 501(c)(3) under the United States Tax Code.

LEI is actively involved in providing environmental services to many disadvantaged people throughout the world. These activities are being conducted through the volunteer efforts of our members, many who work professionally in their field of expertise. Our members want to make a difference in the world. Your support will help us make that difference.

If you would like to discuss the details of this proposal further, please call me at 360-407-6742 or email me at [LivingEarth@attbi.com](mailto:LivingEarth@attbi.com). Thank you for your consideration.

Steve Butkus, President

*\*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.*

## **Higher Education Capacity Building in Moldova**

### **Needs Statement:**

The Republic of Moldova is situated in southeastern Europe. It is an agricultural country with limited natural resources, especially surface waters. The high density of the population, intensive agricultural water use and extensive water pollution due to the use of outdated treatment technology has led to significant lack of safe, available fresh water for domestic use.

Currently, Moldova is currently in a very difficult economical situation. During the last 5 years, all economy indexes have declined significantly. The average monthly salary of workers is \$29 (US dollars). At the same time, the minimum cost for needed consumer goods has grown to about \$100. The number of available jobs has dropped due to the transition to the market economy, with the current unemployment rate of about 8%.

Rural residents encounter a nearly catastrophic situation. The majority of rural residents used to be employed by collective farms. Since the privatization of farms, only a small proportion of the rural population has been re-employed by the new farm owners. These private farms employ workers that receive an annual salary of between \$48 - \$65 once each year at the end of the agricultural season. Most of the rural population remains unemployed and farms for subsistence from small pieces of land near their homes.

Because of this desperate economic situation, the national government cannot provide much funding for existing educational institutions. Due to this lack of adequate funding, it has become impossible for many educational institutions to function effectively. An assessment conducted in 1996 by USAID has shown the need to improve infrastructure in environmental monitoring. The USAID Environmental Policy and Technology Project recommends greatly enhancing training to provide environmental analytical capabilities (Report PN-ACB-143) and to procure laboratory equipment for environmental monitoring (Report PN-ACB-144).

This project will help build the infrastructure needed to conduct environmental monitoring of Moldova's strained water resources. The funding will support the Ecology Vocational College to develop new curriculum and obtain analytical equipment to train a new generation of professionals with skills needed to protect their environment and help solve the water resource problem.

### **Project Objectives:**

- To develop new curriculum that integrates into the existing coursework for the "Environmental Protection" degree. A new course will be developed focused on the theme of "Water Quality Assessment and Management".
- To pilot the integration of the new "Computers and System Administration" degree program into existing programs teaching the "Water Quality Assessment and Management" over the internet using web-friendly curriculum formats.
- Procure computers and simple analytical equipment for the college to support the new "Computers and System Administration" degree program and the new "Water Quality Assessment and Management" curriculum.

## **Project Participants:**

The **Ecology Vocational College** was founded by the Moldovan Ministry of Education in 1998. The goal of the College is to train professionals in trades related to the environment and its protection. The college teaches at two academic levels. There are currently 300 students at the College level and 350 students at High School level. The High School graduates receive Baccalaureate diploma after successful completion of the coursework. The High School curriculum primarily focuses its attention on courses such as chemistry, biology, geography, math, computers and foreign languages.

At the College level, the curriculum is focused more on specific to vocational disciplines. The college offers a two-year program for holders of the Baccalaureate diploma and three-year program for those who do not have a Baccalaureate diploma. After a successful completion, the students receive a College degree in disciplines such as "Environmental Protection", "Forestry", and "Law". As an example, listed below are the current course requirements for the Environmental Protection Degree: Chemistry, Biology, Microbiology, Biotechnology, General Ecology, Human Ecology, Methods of Environmental Components Testing, Methods and Systems for the Purification of Environmental Components, Methods for Nature Conservation, Restoration and Improvement, Waste Treatment Technologies, Ecology Expertise, Assessment and Management of Ecological Risk, Environmental Impact Assessment, and Eco-statistics.

Additionally, the Ministry of Education has expanded the goal of the college to include training in computer sciences. Starting the next academic year, the college will introduce new courses for a degree in "Computers and System Administration". The proposed project will allow the college to pilot a approach that will integrate new and existing coursework over the internet.

The **Living Earth Institute (LEI)** was formed to provide environmental education on the protection, restoration, and sustainable development of natural resources. LEI achieves these basic purposes through three approaches:

- LEI provides free consultation work for citizen groups needing assistance in management of environmental issues.
- LEI is establishing a system of "distance learning" for providing environmental education that is designed to be assessable wide audience with specific needs and technical expertise.
- LEI provides education and technical assistance in establishing sustainable development through a inter-disciplinary approach to the environment.

LEI focuses on efforts to help provide these education and technical assistance services at no cost to groups that do not have the financial resources to hire consultants. LEI is assisting the Ecology Vocational College, in Chisinau, Moldova, to develop curriculum to integrate and offer their coursework over the internet.

## **Project Leads:** (Curriculum Vitae are attached)

**Dumitru Danu** is the Director of the Ecology Vocational College in Chisinau, Moldova

**Vitalie Coica** is the Principle of the University of Ecology and Social-Human Sciences, and previous Deputy Director of the Ecology Vocational College in Chisinau, Moldova.

**Steve Butkus** is the President of the Living Earth Institute in Olympia, Washington, USA. He is also employed as a Senior Environmental Specialist for the Washington State Dept. of Ecology.

### **Methods and Timelines:**

Curriculum is currently being developed according to the attached outline. There are 3 components that build knowledge and skill for the final workshop which involves field work. The course will be taught on the internet using the Living Earth Institute domain (<http://living-earth.org>). Students will be self-directed followed by formal testing. Students will be able to confer with the teacher via the internet as they progress through the coursework. Each student will prepare a final report based on the water quality analysis and modeling conducted at the workshop. The course will be taught in 3 languages: Romanian, Russian, and English.

Steve Butkus will travel to Moldova for initial project scoping. This activity will entail providing instruction on the use of the water quality testing equipment to the professors, setting up the computers, and collecting information needed to develop the water quality model. A calibrated water quality model is essential for the project for use in the workshop. Information on stream geometry, flows and pollution sources must be collected to set up and calibrate the model. Steve Butkus will also return to Moldova to help teach the water quality workshop.

It is expected that this project will take about 1 year to complete. Depending on the timing of available grant funding, it is proposed that initial scoping will occur in the Autumn of 2002 with the "Water Quality Assessment and Management" course taught in the Spring of 2003.

### **Budget Summary**

Equipment and Supplies = \$9K

Includes water quality test kits, field water testing equipment, and 4 desktop computers.

Travel = \$6K

Covers 2 round-trips Seattle to Chisinau: 1 for project scoping, 1 for workshop

Salary = \$0

In-kind staff time provided by LEI and the College

The equipment and supplies will be used by the College to support the new "Computers and System Administration" degree program and the new of "Water Quality Assessment and Management" curriculum. The equipment includes test kits that provide a simple analytical approach for water quality analysis. The computers are used to assess data collected and conduct water quality modeling. The computers will also be used to access the internet to conduct lessons of the new curriculum.

The testing equipment will also be used in other courses currently taught at the College including "Methods of Environmental Components Testing", "Methods and Systems for the Purification of Environmental Components", and "Waste Treatment Technologies"

Additionally, the new computers will be used for new courses in the "Computers and System Administration" degree program. The new program is being developed to introduce computer technology to Moldovan students. Due to the lack of computers in Moldova, most new students have previously only seen computers on TV. Procurement of new computers will greatly enhance the capacity of the College to support the new program.

## New Course Outline: “Water Quality Assessment and Management”

### Principles of Water Quality:

- Water quality indicators
- Review of water quality management laws
- Establishing criteria
- Development and implementation of pollution controls

### Water Quality Monitoring:

- Defining objectives
- Network design (where, what and when to sample)
- Sampling methods & field measurements
- Laboratory analysis methods for: Dissolved Oxygen, Ammonia, Nitrate, and Phosphorus
- Data handling

### Water Quality Information Utilization:

- Statistical methods
- Graphical methods
- Modeling methods
  - Calibration & Verification
  - Evaluating Pollution Control Strategies
- Reporting and understanding results
- Techniques for the development of implementation strategies

### Water Quality Workshop:

- One week of hands-on training to be held at the College in Chisinau, Moldova
- \*Training will focus on the evaluation of the Bac River water quality.

#### *Workshop Outline:*

#### **Monday** - Seminar in Class

- Water Quality Monitoring Design
- Quality Assurance Project Plans
- Process Mechanisms in Stream Modeling
- Setting-up appropriate Model Framework and Geometry

#### **Tuesday** - Seminar in Field

- Monitor water quality and flows from the Bac River

#### **Wednesday** - Seminar in Field ...*continued*

- Monitor water quality and flows from the Bac River

#### **Thursday** - Seminar in Class

- Assessing Data Quality Objectives
- Calibration of a Stream Model with collected data

#### **Friday** - Seminar in Class

- Assessing different pollution controls with Stream Model

Final Report = Recommendations for Pollution Controls in the Bac River

## CURRICULUM VITAE

Dumitru Danu,  
Str.Bulboaca 23  
Chisinau, MD-2023  
Republic of Moldova  
Phone: (373-2) 55-52-61

### PROFESSIONAL EXPERIENCE:

- 1997 – Present - Director of State Ecology Vocational College from Chisinau, Republic of Moldova.
- 1995 – 1997 - Main officer at the Department of Accreditation at the Ministry of Education from Republic of Moldova.
- 1991 – 1995 - Teacher at the University of Commerce from Moldova
- 1990 – 1991 - Director of General School from Parcani, Calaras.
- 1984 – 1990 - Teacher at the General School from Raciula, Calaras.
- 1974 - 1984 - Police officer, Ministry of Internal Affairs from Republic of Moldova.

### EDUCATION:

- 2000 - Present - Student at the University of Ecology and Social-Humanitarian Sciences, Department of Law
- 1985 - 1990 - Pedagogical University “I.Creanga” from Chisinau, Moldova.

### INTERESTS:

- 1995-Present - Vice-President of Social-Cultural Society “Romii Moldovei”.

### PERSONAL:

Age 47. Married, one child.

## CURRICULUM VITAE

Vitalie Coica  
Str. Sarmizegetusa 47A, ap.29  
Chisinau, MD-2032  
Republic of Moldova  
Phone: (373-2)-55-55-28  
email: cvm710 @ hotmail.com

### PROFESSIONAL EXPERIENCE:

- June 2000 – present - Principal at the University of Ecology and Social-Human Sciences.
- 1998 – June 2000 - Deputy Director at the Ecology Vocational College.
- 1997 – 1998 - Head of Administrative Department at the Ministry of Education, Youth and Sports.
- 1993 – 1996 - Deputy Director of Industrial Pedagogic and Ecology College.
- 1989 - 1993 - Engineer at the Soil Research Institute named after N.A.Dimo, Laboratory of Waste Waters Utilization.

### EDUCATION:

- 1997 – 2000 - Academy of Public Administration, Department of International Relations.
- 1992 – 1995 - Tree years Post University School, Waste Waters Utilization Research Program.
- 1984 – 1989 - Chisinau State University, Department of Soil Sciences and Agro-Chemistry.

LANGUAGES: - Romanian (native), Russian (fluent), English (good).

COMPUTER SKILLS: - Norton, Word, Excel, Corel Draw.

INTERESTS: - President of Youth Ecology Association “PROVITA”.

PERSONAL: - Age 41. Married. 2 children.

## CURRICULUM VITAE

Steve Butkus  
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Olympia, WA 98516, USA  
Phone: 360.493.1063  
email: stevebutkus@attbi.com

### **PROFESSIONAL EXPERIENCE:**

**Senior Environmental Specialist:** October 2000 to Present  
Washington State Department of Ecology, Environmental Assessments Program

**Senior Fisheries Biologist:** January 2000 to October 2000  
National Marine Fisheries Service, Habitat Program, Washington Field Office

**Research Analyst:** June 1998 to January 2000  
U.S. Environmental Protection Agency, Washington Operations Office

**Environmental Specialist:** January 1991 to June 1998  
Washington State Department of Ecology, Water Quality Program

**Environmental Engineer:** October 1987 to December 1990  
Tennessee Valley Authority, Water Quality Department

**Research Assistant:** March 1986 to June 1987  
University of Washington, Department of Civil Engineering

### **EDUCATION:**

**Master of Science in Environmental Engineering and Science** in August 1987  
University of Washington, Dept. of Civil Engineering, Seattle

**Bachelor of Arts in Aquatic Biology** in December 1979  
University of California, Santa Barbara, Dept. of Biology

**Leadership Fellow** with Class 22 for the period 1999-2001  
Washington Agriculture and Forestry Education Foundation, Spokane, WA

**PERSONAL:** Age 44. , Married, One child