

# AEG FOUNDATION



## CHARTER

## CORNERSTONE FUND

SUPPORTING UNIVERSITY AND COLLEGE PROGRAMS IN  
ENGINEERING GEOLOGY AND GEOLOGICAL ENGINEERING

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## THE PURPOSE OF AEG FOUNDATION FUND CHARTERS

An AEG Foundation Fund Charter is a guidance document adopted by the Foundation's Board of Directors. It describes (as applicable)

- the history of a fund,
- donor intent,
- the purposes for which the fund may and may not be used,
- the Board's goals for the fund,
- administrative operating criteria, and
- financial operating criteria.

A Fund Charter demonstrates the Board's commitment to prudent management of the Foundation's resources and compliance with applicable accounting and legal standards. Within the framework of AEG Foundation governance, a Fund Charter is a policy document that may be amended or interpreted by the Board through a simple majority vote. A Fund Charter may refer to other documents or contain appendices that further describe the history, nature, and operations of a fund. Formal Resolutions of the Board that apply to a particular fund are attached to the Fund Charter as appendices.

This Charter for the Cornerstone Fund of the AEG Foundation was duly adopted by the Board of Directors of the AEG Foundation on September 10, 2013.

By:



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Rosalind Munro, Secretary



# **FUND CHARTER CORNERSTONE FUND**

## **PREFACE**

### **Why this Fund is Important**

University-level programs in engineering geology and geological engineering are disappearing, and remaining programs are in jeopardy. Yet graduates of these programs are uniquely qualified to help our society meet its critical needs for their expertise. The AEG Foundation Cornerstone Fund is the *only* charitable/educational/scientific fund in the geosciences that focuses on supporting university-level teaching of engineering geology and geological engineering in the United States. These two disciplines, the first growing within the science of geology and the second growing within the field of engineering, share much academic background and practice emphasis, hence this fund supports the teaching of both disciplines. The output of both disciplines supports the societal goal of managing and reducing the costs and adverse effects of geologically-sourced risks. (For convenience, the two closely related disciplines are combined here in the term “engineering geoscience,” context permitting.)

### **The Role of Engineering Geoscience in Meeting 21<sup>st</sup> Century Societal Needs**

A report by the American Geosciences Institute (2012) examines the role of the geosciences in terms of serving critical societal needs for the twenty-first century. Critical societal needs, driven by growth in population and demand for natural resources and overprinted by climate change, are identified in the report (page 1, Critical Needs) as:

1. Energy and Climate Change: How do we secure stable energy supplies in an increasingly carbon-constricted world?
2. Water: Will there be enough fresh water and where will it come from?
3. Water treatment and disposal: How will we reduce and handle waste and provide a healthy environment for all?
4. Natural Hazards: How will we mitigate risk and provide a safe environment?
5. Infrastructure Modernization: How will we develop and integrate new technology and modernize aging infrastructure?
6. Raw Materials: How will we ensure reliable supplies when they are needed and where will they come from?
7. Geoscience Workforce and Education: Who will do the work to understand earth processes and meet demands for resources and resiliency? Who will educate the public and train the work force?

Engineering geologists and geological engineers will provide important — in some cases critically important — contributions to the efforts to meet all seven of these critical societal needs because of their unique academic training in the classroom, laboratory, and

field — learning supported by this fund. Table 1 relates the contributions of engineering geoscience practice to each of the seven critical societal needs identified by the American Geosciences Institute (2012).

TABLE 1  
CONTRIBUTIONS OF ENGINEERING GEOSCIENCE PRACTICE TO  
TWENTY-FIRST CENTURY CRITICAL SOCIETAL NEEDS

<b>Critical Need (from AGI, 2012)</b>	<b>Beneficial Practice Inputs and Activities of the Engineering Geoscience Disciplines</b>
Energy and Climate Change	Geohazards evaluation and risk reduction for energy development and energy infrastructure planning, design, and construction; sea level rise.
Water	Geohazards evaluation and risk reduction for water resources exploration, development, management, and protection.
Waste Treatment and Disposal	Geohazards evaluation and risk reduction for solid waste (landfill) siting, construction, and monitoring, and for liquid waste disposal (injection, ponding, evaporation) siting, construction, and monitoring.
Natural Hazards	Geohazards discovery and evaluation for planning and design of engineered fixed works, general planning of land use, and disaster response and recovery.
Infrastructure Modernization	Discovery and evaluation of geologically sourced risks (from geohazards and geologic conditions) for the planning, design, and construction of engineered fixed works.
Raw Materials	Discovery, evaluation, and development of earth materials for construction purposes.
Geoscience Workforce	Teaching of discipline-related courses and programs at the university level.

### Characterizing 21<sup>st</sup> Century Practice of Engineering Geoscience

Engineering geoscience practice makes significant contributions to the public health, safety, and wellbeing based on its unique knowledge base, work methods, and work products. Practitioners in these disciplines benefit society by discovering, analyzing, characterizing — and communicating actionable information about — geologic *hazards* and *conditions* that affect the interaction of people — and their works and activities — with their natural and built environments. Two major enhancements to societal wellbeing come from this work:

1. geologically-sourced *risks* (from *geohazards*) are recognized, evaluated, and managed for the benefit of humankind, enhancing the public safety and security, and to protect investments in public and private infrastructure and in commercial and private structures. Geohazards include, for example, earthquakes, landslides, volcanoes, surficial fault offset, land subsidence, sinkholes, and expansive soils.

2. geologic *conditions* that affect land use planning and engineering design and construction are discovered and considered during the planning and design process. These conditions include, for example, availability and quality of earth construction materials, earth materials properties for foundation and excavation design, stability of natural and constructed slopes, presence of groundwater, and contaminants in groundwater and soils.

The application of this practice is highly scalable. At the individual level, for example, the practice serves the individual citizen who is considering the purchase of a single-lot hillside home site and concerned about slope stability. Government agencies, utilities, and businesses draw on this practice to bring geologic hazard knowledge to the planning, design, construction, and operation of their facilities. At a broader scale, the practice serves major infrastructure projects subject to risks from multiple geological hazards, the failure of which would have widespread and long-lasting impact.

## INTRODUCTION

### Goal and Scope

Advanced education at the university level is the *cornerstone* of all learned professions — hence the name of this fund. (For convenience, the words *university* or *college* here include any accredited 4-year institution of post-secondary education, whether designated as a university, college, institute, or school.) This fund supports engineering geology and geological engineering programs and teaching at both undergraduate and graduate levels in universities in the United States, with a focus on supporting curricula that prepare students academically for careers as licensed professionals. This fund charter was developed in cooperation with an advisory panel consisting mainly of faculty members who teach engineering geology and geological engineering at universities.

The overall operational goal of the Cornerstone Fund is:

*To support the continuation and improvement of the teaching of engineering geology and geological engineering by providing funding to university-level engineering geology and geological engineering programs in the United States.*

In pursuing this goal, the AEG Foundation supports the societal goal of reducing the harmful effects of geologic hazards and conditions.

## Statement of the Problem

The underlying problem addressed by the AEG Foundation Cornerstone Fund is the decline in the availability of university-level programs of instruction in engineering geology and geological engineering in the United States. This decline can be traced to a chain of self-reinforcing factors:

1. Engineering geology and geological engineering programs enroll small numbers of students compared to other geoscience and engineering disciplines.
2. The programs tend to be carried by a one or two professors in a department
3. As professors who teach in these disciplines retire, they are not replaced by people with similar expertise, and the program ends. Factors in the university environment that contribute to the demise of the program are:
  - a. Engineering geology and geological engineering are regarded as applied science programs and thus professors find it difficult (although not unheard of) to receive research funding from the National Science Foundation (NSF). Therefore,
  - b. Engineering geology and geological engineering programs are regarded as out of place in many Tier 1 (doctoral degree-granting, research-oriented) universities because, first, they are applied sciences; second, with little NSF funding for research, the programs and professorships lack an element of self-support; and third, the university budget does not benefit from overhead charges against NSF grants. Hence, the programs are economically unattractive to the university and there is a tendency to allow the program to lapse when the professor who carries the bulk of the teaching load retires.
4. When a program ends at a Tier 1 university, the capability, on a national basis, to produce new doctoral degree holders declines, therefore
  - a. The availability of qualified doctoral-level graduates who can become professors in engineering geology and geological engineering and teach these subjects at colleges and universities becomes ever lower over time,
  - b. The availability of programs in engineering geology and geological engineering decreases over time, and consequently
  - c. Student enrolment in these programs decreases over time, and the output of qualified graduates decreases over time.
5. As the number of available practitioners decreases, the utilization of their knowledge and skills in the design and construction of engineered works, in geohazard risk characterization, and in other applications of their expertise, decreases; therefore
6. Society as a whole will endure otherwise preventable losses as the number of well-trained people engaged in the practice of these professions decreases. Hence the need for this fund.

## **FUND OVERVIEW**

### **Basic Cornerstone Fund Goals**

The two basic goals for the Cornerstone Fund are:

1. Support of programs in engineering geology and geological engineering at colleges and universities in the United States where the academic program goals include preparing students to qualify for careers as licensed professionals in engineering geology or geological engineering.
2. Support for doctoral level programs in engineering geology and geological engineering where the emphasis is to prepare and train professors who will teach those subjects at colleges and universities in the United States.

Program support includes department-level support and support, through departments, of individual professors, lecturers, or instructors. These basic goals will be expanded in detail as the board develops specific operational plans for the Cornerstone Fund. Prioritization in grant-making may include support for programs that are subject to closure, support for early-career academics, support for developing new programs or courses, and support for program expansion.

### **Definitions of the Supported Professions**

Supported classroom, laboratory, and field topics and instructional programs must be consistent with these working definitions adapted for use in this charter:

#### **Engineering Geology**

This definition is slightly modified from the definition given by the International Association for Engineering Geology and the Environment (IAEG Statutes, 1992, as quoted on the current IAEG web page).

*Engineering geology is the science devoted to the investigation, study, and solution of engineering and environmental problems which may arise as a result of the interaction between geology and the works and activities of man, as well as to the prediction of, and the development of measures for the mitigation of, geological hazards.*

#### **Geological Engineering**

This definition is slightly modified from the definition of an undergraduate educational program in geological/geophysical engineering from National Center for Education Statistics, CIP 2000.

*A program that prepares individuals to apply mathematical and geological principles to the analysis and evaluation of engineering problems, including the geological evaluation*

*of construction sites, the analysis of geological forces acting on structures and systems, the analysis of potential natural resource recovery sites, and applied research on geological phenomena.*

## **Supportable Academic Programs in Geological Engineering and Engineering Geology**

### **Geological Engineering**

ABET-accredited programs in geological engineering (see Supplement A) are candidates for support from this fund.

### **Engineering Geology**

Accreditation for engineering geology programs is not widely adopted, thus requiring a program to be accredited for consideration is not a workable criterion at this time.

The focus of the Cornerstone Fund as to engineering geology is to support programs that teach engineering geology in a comprehensive way, thus preparing students for careers as licensed geologists with an emphasis or specialty (or certification) in engineering geology. Santi and Higgins (2005) provide current thinking about course content.

## **CORNERSTONE FUND ADMINISTRATION**

### **Overview**

In keeping with the Internal Revenue Code classification of the AEG Foundation as a 501 (c) (3) charitable organization, activities supported by grants from this fund must be consistent with the nonprofit educational and scientific purposes of the AEG Foundation. The AEG Foundation's Board of Directors will make all decisions regarding the making of grants from the Cornerstone Fund in its sole discretion. Grant applications will be accepted from departments or administrative units or university foundations. The AEG Foundation may approach selected professors, lecturers, or departments on its initiative to discuss their interest in receiving a grant.

### **General Grant Conditions**

In applying for a grant from the AEG Foundation, the grant applicant agrees to abide by the terms of the Grant Application and Agreement, and to

- use the funds received from the AEG Foundation directly for the proposed use
- use the funds in accordance with applicable law and regulation
- avoid activities in the use of the funds that would jeopardize the AEG Foundation's tax-exempt status,



- track the receipt and expenditure of grant funds in its bookkeeping and accounting system in a way that provides a clear audit trail demonstrating compliance with appropriate accounting standards and the terms of the Grant Application and Agreement, and provide the Foundation with written periodic reports that document and demonstrate compliance with grant conditions and demonstrate how the grant has supported the academic program.

Additional grant conditions are imposed on each grant as appropriate through the mechanism of the Grant Application and Agreement. It is especially important to the AEG Foundation that its grants under the Cornerstone Fund shall be used only for the intended purposes. To protect its own interests and to honor donor intent, the AEG Foundation may include in the grant agreement terms whereby the funds are returnable if the intended purpose becomes no longer practicable or obtainable at the receiving institution. The AEG Foundation may wish to schedule grants incrementally in time and value so that the performance of the receiving institution can be monitored, thus reducing the risk to the AEG Foundation.

### **Prioritization of Grants**

The first priority is support for programs in engineering geology and geological engineering at colleges and universities in the United States where the program goals include preparing students for employment as licensed geologists or engineers. Support for teaching doctoral level programs in engineering geology and geological engineering, where the emphasis is to prepare and train new professors who will teach those subjects at colleges and universities in the United States, is also a high priority for the Cornerstone Fund.

Grant applications will be evaluated based on their consistency with the goals of this fund and in comparison with other grant applications and academic programs. Applications that will support the hiring of new professorial staff or staff to replace retiring professors so that the program can continue are especially welcome, as are applications to support program expansion.

Depending on donations received, donor intent, available funds, matching or challenge funds or grants, and the policies and needs of individual institutions, grants will be tailored to the needs and programs of each applying institution and the desires of individual donors. The AEG Foundation will coordinate with donors and foundations at universities to achieve optimal results for all.

### **Types of Grants**

Depending on the availability of resources, matching or challenge grants, donor intent, and the nature of recipient institution's programs and requirements, the Cornerstone Fund may support by grants any of the following generally recognized forms of support and recognition for the teaching of engineering geology and geological engineering:

1. Course support or course or program development support
  - a. Course release for new course development by current faculty member
  - b. Hiring an adjunct to start teaching engineering courses
2. Named Lectureship/Instructorship
  - a. Term designation for a number of years
  - b. Permanent designation
3. Named Professorship
  - a. Term designation for a number of years
  - b. Permanent designation
4. Named Chair
  - a. Term designation for a number of years
  - b. Permanent designation
5. Named Distinguished Professorship
6. Endowed Professorship
7. Endowed Chair

Naming terminology varies among institutions, and the relative position of the terms listed above may differ. The AEG Foundation's Board of Directors may consider all opportunities that are consistent with the intent of this charter and may negotiate special terms and conditions consistent with donor intent, good management practices, and the intent of this charter in consideration of such opportunities. Corporate funding, carrying naming privileges, as well as bequests and other forms of planned giving, including naming privileges, will be welcome providing it is acceptable to the receiving institution. Planned giving donors are encouraged to discuss their wishes, including naming privileges, with the leadership of the AEG Foundation as their trust or will documents are drawn.

In addition, the AEG Foundation will consider, dependent on funding, early-career grants to individuals who wish to develop or expand programs in engineering geoscience. Part of the funding may be used to support applied research and participation in professional organization technical meetings (including travel) if the grantee presents his or her work at the meeting.

### **Cornerstone Fund Operating and Management Protocols**

Recognizing the value of structured management of the funds, the Board adopted these protocols for the management of the Cornerstone Fund assets:

1. Unless otherwise specified by the donor, contributions to the Cornerstone Fund are classified as Temporarily Restricted Net Assets in accordance with Accounting Standards Codification (ASC) until such contributions are expended for purposes consistent with this Charter. Earnings from contributions are classified as Unrestricted Net Assets, unless otherwise specified by the donor.

2. The AEG Foundation may accept contributions to the Cornerstone Fund with time or purpose limits consistent with this Charter. The Foundation's gift acceptance policy and policy on pass-through gifts will apply.
3. The Board may from time to time reclassify assets of the Fund in accordance with ASC, consistent with donor intent.
4. Identifiable costs directly related to the operation of the Cornerstone Fund may be expensed to the Fund.
5. The AEG Foundation's normal Administrative Fee will apply to contributions and fund earnings to assist in funding the Foundation's general administrative and fundraising functions. The Board may establish a graduated scale for the Administrative Fee that assesses smaller fees for larger donations, or may negotiate the Administrative Fee with prospective donors of large gifts.
6. Designated Accounts within the Cornerstone Fund may be created to accumulate and track donations for a specific purpose. Once a Designated Account is used to meet a funding or grant-making goal, the remaining funds may be transferred to other accounts within the Cornerstone Fund as the Board directs.
7. The Board may consider grants that are distributed over more than one year. Successive grants may be conditioned on the demonstration of the recipient achieving mutually agreed-upon goals and demonstration that the funds were tracked and used in accordance with the Grant Agreement.
8. The AEG Foundation may participate in or initiate funding mechanisms such as challenge grants, matching grants, or similar funding or fund-raising mechanisms in the administration of the Cornerstone Fund.
9. Planned Giving Donations. The AEG Foundation may negotiate Letters of Agreement with donors that set forth specific terms and conditions in order to meet donor intent

### **Financial Operating Criteria: Fund Balance Goals**

The Cornerstone Fund balance is expected to fluctuate. Grants from the Cornerstone Fund will come from current and accumulated contributions and their earnings. The Board may, from time to time, transfer funds from the Greatest Need Fund to the Cornerstone Fund. The Cornerstone Fund has no restrictions against spending down any of its designated accounts unless donor intent or board action restricts such spending.

### **SCHEDULE FOR REVIEW OF CHARTER**

The Board may maintain this charter unchanged or make revisions at any time. This fund charter shall be reviewed by the Board of Directors at least every five years on a schedule approved by the Board. The Programs Committee shall prepare a report based on experience with fund operations, with recommendations for consideration by the Board, at that time.

## ACKNOWLEDGMENT

Many of the concepts presented in the Preface and Introduction to this Charter are drawn from comments from an informal advisory panel convened to help define the rationale, content, and scope of this charter, and from many of the references listed below.

### Advisory Panel Members

Dr. Scott Burns, Portland State University, Portland, Oregon  
Dr. Jordi Corominas, University of Barcelona, Spain  
Dr. C. Dale Elifrits, Northern Kentucky University, Highland Heights, Kentucky  
Dr. Gregory L. Hempen, URS Corporation  
Dr. Nazrul Khandaker, York College (The City University of New York)  
Dr. Robert Mitchell, Western Washington University, Bellingham, Washington  
Dr. J. David Rogers, Missouri University of Science and Technology, Rolla, Missouri  
Dr. Paul Santi, Colorado School of Mines, Golden, Colorado  
Dr. Abdul Shakoor, Kent State University, Kent, Ohio  
Dr. John W. Williams, San Jose State University, San Jose, California (Retired)

Helpful commentary was also provided by:

Dr. Jean M. Bahr, University of Wisconsin, Madison  
Dr. Kim Bishop, California State University, Los Angeles  
Dr. John Foster, California State University, Fullerton  
Dr. Richard J. Gentile, University of Missouri (Retired)  
Dr. James H. May, Mississippi State University  
Dr. Debasmita Misra, University of Alaska, Fairbanks, Alaska  
Dr. Thomas Oommen, Michigan Technological University, Houghton  
Dr. Darrell Schmitz, Mississippi State University  
Dr. William K. Smith, U.S. Geological Survey (Retired)

## REFERENCES CITED AND BACKGROUND SOURCES

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Williams, John W., 2003, Past and Future Trends of Academic Preparation of Geologists, *in* Elifrits, C. Dale, editor, Symposium Proceedings, Visioning the Future of Engineering Geology: Degree Program Quality and Accreditation, Association of Engineering Geologists Annual Meeting, Reno, Nevada. Special Publication 19, Association of Engineering Geologists, Denver, Colorado. CD-ROM.

**APPENDIX ONE: HISTORY OF INCOME, EXPENSES, AND  
DISBURSEMENTS**

(To be written as events and operations occur)

**APPENDIX TWO: BYLAWS EXCERPTS**

RESTRICTIONS ON FUND USE IN THE FOUNDATION'S BYLAWS

Bylaws Provisions (if necessary)

**APPENDIX THREE: BOARD RESOLUTIONS AND MOTIONS**

09/10/2013 Original Charter approved by the Board of Directors.

**Supplement A to AEG Foundation Cornerstone Fund Charter**

Geological Engineering – Accredited programs  
(From ABET web site 6/1/13, updated 10/12/12)

Colorado School of Mines, Golden, CO  
Michigan Technological University, Houghton, MI  
Missouri University of Science and Technology (Formerly University of Missouri-Rolla),  
Rolla, MO  
Montana Tech of the University of Montana (Formerly Montana College of Mineral  
Science and Technology), Butte, MT  
South Dakota School of Mines and Technology, Rapid City, SD  
University of Alaska Fairbanks, Fairbanks, AK  
University of Minnesota-Twin Cities (Formerly University of Minnesota-Minneapolis),  
Minneapolis, MN  
University of Mississippi, University, MS  
University of Nevada-Reno, Reno, NV  
University of North Dakota, Grand Forks, ND  
University of Texas at Austin, Austin, TX  
University of Utah, Salt Lake City, UT  
University of Wisconsin-Madison, Madison, WI

## **Supplement B**

Programs in Engineering Geology and Programs offering emphasis in Engineering Geology, in the United States

(To be compiled)