

**MEMORANDUM**

**To:** Board of Regents  
**From:** Board Office  
**Subject:** Post-Audit Report of the Bachelor of Science in Environmental Science Major at Iowa State University  
**Date:** May 6, 2002

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**Recommended Action:** Refer the Post-Audit Report of the Bachelor of Science in Environmental Science Major at Iowa State University to the Interinstitutional Committee on Educational Coordination (ICEC) and the Board Office for review and recommendation.

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**Executive Summary:** Regent policy (*Policy Manual* §6.07) requires that a post-audit report be prepared for each new program five years after initial approval by the Board to (1) assess its progress during the five-year time period and (2) ensure that the program is meeting its original expectations.

The Environmental Science Program was approved by the Board of Regents in July 1996. The program appears to meet the expectations that were defined at the time of its initial approval. The report will be reviewed by the Interinstitutional Committee on Educational Coordination and the Board Office and the results of these reviews will be reported at the Board meeting in June 2002.

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**Link to Strategic Plan:** This report addresses the following Key Result Area (KRAs) and Objectives that are included in the Board's Strategic Plan:

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|-------------------|---|
| KRA 1.0.0.0       | Become the best public education enterprise in the United States.   |
| Objective 1.1.0.0 | Improve the quality of existing and newly created educational programs.   |
| KRA 2.0.0.0       | Provide access to educational, research, and service opportunities within the missions of the Regent institutions.          |
| Objective 2.2.0.0 | Evaluate annually and, where appropriate, make recommendations to meet relevant educational and service needs of the state. |

**Background:** In July 1996, Iowa State University received approval to implement a Bachelor of Science in Environmental Science Major in the College of Liberal Arts and Sciences. This program was designed to provide students with an integrated interdisciplinary approach to environmental sciences and an emphasis on two principles: (1) scientific foundation and (2) integration and systems analysis.

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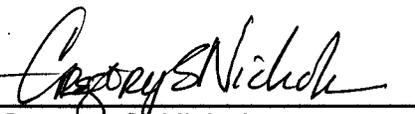
**Analysis:** A preliminary review of the post-audit report indicates that the program appears to meet the Board's criteria for post-audit review. Following referral by the Board, a comprehensive review of the report will be undertaken by the Interinstitutional Committee on Educational Coordination (ICEC) and the Board Office.

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Regent Post-Audit Questions The institution's responses to the Regent questions for post-audit review are included in the Attachment (pgs. 3-7).

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Diana Gonzalez

Approved:   
Gregory S. Nichols

## Regents Post-Audit Review Questions

**Program Title:** Environmental Science

**Administrative Unit:** Environmental Programs

**College:** Agriculture & Liberal Arts & Sciences

### Introduction

Given the magnitude and complexity of our environmental problems, there is a growing need for scientists trained in the integrated analysis of environmental systems. Environmental emphases and tracks offered through traditional natural science disciplines provide strong disciplinary specialization, but at the expense of interdisciplinary training. In contrast, integrated, interdisciplinary training is the greatest strength of ISU's Environmental Science major. The program emphasizes a dynamic systems approach to the analysis of energy and material flows, which provides a framework for integrating physical, chemical, and biological aspects of environmental systems. The curriculum at ISU is intended to prepare our graduates for positions of leadership in this emerging discipline. Our graduates are provided both a solid foundation in biological and physical natural sciences and the interdisciplinary training necessary for integrated analysis of environmental systems.

In addition to the Environmental Science major, a variety of environmental "options" are available within traditional science and engineering majors at ISU. However, the various environmental opportunities in individual departments do not provide the integrated training that is the core of the Environmental Science program. The Environmental Science core courses can provide this training for students in traditional natural science and engineering disciplines, and a significant number of students from other majors take advantage of these courses. Approximately half of the students enrolled in Environmental Science core courses are from other majors in the Colleges of Agriculture, Engineering, and Liberal Arts and Sciences. We have developed strong interactions with traditional natural science disciplines, and most of the Environmental Science courses are now co-listed with other natural science majors. These interactions extend well beyond ISU through offerings of cross-listed Environmental Science courses at Iowa Lakeside Laboratory. Each summer, approximately six Environmental Science courses are offered at Iowa Lakeside Lab, including courses from our Environmental Science core. These courses serve students attending colleges throughout the state of Iowa and beyond.

## 1. Program Availability

**a. Is this program now available in other Regent universities or in other colleges and universities in Iowa?**

The University of Iowa is the only other Regent university to offer an undergraduate Environmental Science major. However, undergraduate students interested in environmental science may elect environmental “options” or “emphases” within a number of disciplinary majors at ISU, UNI and UI. In addition, approximately one third of Iowa’s private colleges offer some type of environmental science major.

**b. If so, has the availability of other similar programs changed in the last five years? Do existing programs in Iowa have the capacity to meet student demand and the demand for graduates?**

Four institutions have added an Environmental Science major in the last five years and there now seems to be sufficient capacity to meet undergraduate demand in this area.

**c. What are the similarities and differences among programs in this general area at Iowa institutions? What distinguishes this program from similar programs at other Iowa institutions?**

There is no universal model for environmental science curricula. Programs at Iowa’s private colleges generally resemble the environmental emphases and options within the disciplinary majors at ISU, UNI, and UI. The environmental science curricula at ISU and UI are similar in their emphasis on rigorous scientific training, but differ greatly in the balance between interdisciplinary training and specialization. The program at UI requires specialization in either geoscience, hydroscience, or bioscience whereas the program at ISU emphasizes environmental science as a distinct, integrative field of study. ISU’s Environmental Science core courses emphasize a dynamic systems approach to the analysis of energy and material flows, which provides a framework for integrating physical, chemical, and biological aspects of environmental systems. ISU’s Environmental Science curriculum is designed to provide a solid background in biological and physical natural sciences and the interdisciplinary training necessary for integrated analysis of environmental systems.

**d. What interactions are there between this program and similar programs at other Iowa institutions?**

The most significant interactions between this program and similar programs at other Iowa institutions are through course offerings at Iowa Lakeside Laboratory. Ten courses are cross-listed between ISU’s Environmental Science program and Iowa Lakeside Laboratory, and each year approximately six ISU Environmental Science courses are offered at Iowa Lakeside Lab, including courses from our

Environmental Science core. These courses serve students attending colleges throughout the state of Iowa and beyond. In addition, we have and will continue to explore web-based opportunities for interactions with other programs.

**2. Enrollment**

- a. Provide the actual fall semester enrollment in the program for the last four years and the current year, and estimate enrollment for the next three years.**

		Year 1 96-97	Year 2 97-98	Year 3 98-99	Year 4 99-00	Year 5 00-01	Year 6 01-02	Year 7 02-03	Year 8 03-04
1	Total majors in program (fall semester enrollment)	18	42	48	64	57	58	60*	60*
2	Non-major enrollment in program courses (fall and spring semesters).	57	75	47	62	57	58*	50*	50*

\* Projections

- b. Estimate the number of Iowa residents and the number of international students who have enrolled in the program (by percentage of total number of declared majors).**

72% Iowans; 1.75% Internationals

- c. If the actual enrollment figures for the last four years differ markedly from those projected in the original program proposal, indicate the factors which may have led to the disparity.**

Enrollment projections were exceeded every year.

**d. Dropouts**

- 1) How many "dropouts" can be identified for this program over the last five years?**

Year 1 96-97	Year 2 97-98	Year 3 98-99	Year 4 99-00	Year 5 00-01
6	10	18	17	13

- 2) What reasons were given by "dropouts" for leaving the program?**

Usually these students are freshmen changing to a major outside of the natural sciences.

**3. Graduation and Placement Information**

- a. Indicate the number of graduates of the program each of the previous four years and estimate the number that will complete the program this year and each of the next three years.

Year 1	96-97	0	Year 5	00-01	15
Year 2	97-98	2	Year 6	01-02	15
Year 3	98-99	5	Year 7	02-03	15
Year 4	99-00	15	Year 8	03-04	15

- b. To what extent have graduates been successful with respect to certification and/or licensure (if applicable)?

Not applicable.

- c. Estimate placement of program graduates for each of the past five years (by percentage of total graduates for each year).

	Year 1 96-97	Year 2 97-98	Year 3 98-99	Year 4 99-00	Year 5 00-01
Further study in graduate or professional school	0		20	13	7
Employed in field or related field	0	50	60	54	47
Employed in non-related field	0		20		26
Unemployed	0				
Unknown	0	50	0	33	20

- d. To what extent have graduates been successful in obtaining the preferred first job?

Unknown but most are finding employment in their field.

- e. Indicate the employment (placement) experiences of the graduates of the program.

Most graduates found employment in the field or pursued advanced study.

**4. Accreditation Status**

**Is an accreditation process available in this field of study? If so, what is the accreditation status of the program?**

There are no recognized academic accreditation organizations or standards for environmental science.

## 5. Staffing

Outline the previous and current FTE staffing of the program and estimate future staffing needs for the next three years.

	Year 1 96-97	Year 2 97-98	Year 3 98-99	Year 4 99-00	Year 5 00-01	Year 6 01-02	Year 7 02-03	Year 8 03-04
Faculty	.5	1	1.25	1.25	1.25	1.25	1.25	1.25
Graduate Assistants	0	.5	.5	.5	.5	.5	.5	.5
Other Staff	.5	.5	.5	.5	.5	.5	.5	.5

## 6. Expenditures

Outline the **increases** in expenditures that resulted from the adoption of this program, as well as estimate the increases which will occur over the next two years.

	Year 1 96-97	Year 2 97-98	Year 3 98-99	Year 4 99-00	Year 5 00-01	Year 6 01-02	Year 7 02-03
Faculty	0	0	0	0	0	0	0
Graduate Assistants	0	0	12,020	436	420	432	432
Other Staff	0	0	0	0	0	0	0
General Expense (Excluding computer use)	0	0	4,580	0	0	0	0
Equipment	0	0	0	0	0	0	0
Library Resources	0	0	0	0	0	0	0
Space Needs (amt. & cost of new space and/or remodeled space)	0	0	0	0	0	0	0
Computer Use	0	0	0	0	0	0	0
Other Resources (please explain)	0	0	0	0	0	0	0
TOTAL	0		16,600	436	420	432	432

## 7. Projected versus Actual

**If the actual staffing or expenditure figures for the last four years differ markedly from those projected in the original proposal, explain the disparity.**

Expenditures were similar to projections (within \$3000).