**Infrastructure Support for the Waste Management Institute
at North Carolina A&T State University**

Progress Report

**To DOE's Savannah River Operations Office
September 1994 through January 1995**

Submitted by

Waste Management Institute

Director

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Introduction and Background

North Carolina Agricultural and Technical State University (NCA&TSU) is developing an infrastructure for an interdisciplinary Waste Management Institute. North Carolina A&T State University is a comprehensive state university with more than 90 academic programs (undergraduate and graduate) offered through the Schools of Agriculture, Business and Economics, Education, Nursing, Technology, College of Engineering and the College of Arts and Sciences. The University enrolls nearly 8,000 students from nearly every county in North Carolina, 40 states, and 61 foreign countries. Faculty and staff number nearly 1,300.

NCA&TSU is a member of the Historically Black Colleges and Universities/Minority Institutions Environmental Technology and Waste Management Consortium (HBCU/MI-ET/WM Consortium) are involved in environmental curriculum development and community outreach programs. NCA&TSU has gained experience in waste management and currently has on board a strong cadre of environmental and waste management faculty.

Mission

The mission of the Waste Management Institute is two-fold: (1) to enhance awareness and understanding of waste problems and their management in our society and, (2) to provide leadership in research, instruction, and outreach to improve the quality of life on a global scale and protect the environment.

Goals and Objectives

The goals of the Waste Management Institute are as follows:

- A. Goal 1.** Increase the number of minority professionals who will work in environmental and waste management fields.

Objectives

- o Offer courses in waste management that encompass technical, scientific, legal/policy, economics/business, psychological, sociological, and ethical issues, including historical perspectives.
- o Recruit more minority students who will pursue waste management education.
- o Offer financial incentives (scholarships/stipends, and work study) to encourage minority students to complete their degree programs with a concentration in waste management.
- o Develop waste management instructional materials for academic program enhancement.
- o Provide "hands-on" waste management experiences for pre-college students and teachers.
- o Prepare graduates who will have an in-dept knowledge of conservation and pollution abatement, who will consider the relationship between wise resource use, proper waste management, and societal well-being.

- B. Goal 2.** Develop cooperative and exchange programs involving faculty, students, government, and industry.

Objectives

- o Establish partnership with industry and government.
- o Increase faculty participation in summer research programs at national and federal laboratories.
- o Introduce commercial applications of new technologies.

- C. Goals 3.** Serve as institutional sponsor of public awareness workshops and lecture series.

Objectives

- o Organize and conduct waste management seminars, workshops, and lecture series for middle/high school students, teachers, private industry, and the general public.
- o Increase faculty participation in workshops, seminars, and lecture series.

D. Goal 4. Support interdisciplinary research programs.

Objectives

- o Initiate research programs in waste management
- o Involve faculty in national significant waste management programs.
- o Upgrade research facilities for waste management.

Organization and Administration

The Waste Management Institute involves but is not limited to the following academic units: Animal Science, Architectural Engineering, Biology, Business Administration, Curriculum and Instruction, Chemical Engineering, Chemistry, Computer Science, Civil Engineering, Electrical Engineering, Economics, History, Human Environment and Family Science, Industrial Engineering, Construction Management and Safety, Mechanical Engineering, Natural Resources and Environment Design, Nursing, Psychology and Social Work. The Institute coordinates waste management efforts of the University.

As a unit of NCA&TSU, the Institute is governed by the policies of the University and is accountable to its administration. The Institute conducts its activities through faculty members and facilities of the participating departments. WMI faculty members and waste management speciality areas are listed in the Appendix.

Development of the Waste Management Institute's Office

The Waste Management Institute has a director, Dr. Godfrey A. Uzochukwu (Professor of Natural Resources); an administrative assistant, Carolyn Ruff; and outreach coordinator, Broadus Funderburk; and four student workers. The director is also assisted by faculty members from participating departments. The Interdisciplinary Advisory Board also advises the director on all matters pertaining to the conduct of the Institute's activities. The external advisory committee is yet to be appointed by the Chancellor of the University. The WMI organizational chart is in the Appendix.

Acquisition of office furniture, a fax machine, metal cabinets, computer hardware/software is almost complete.

Management Structure

The director of the WMI reports directly to the Vice Chancellor for Academic Affairs and is also a member of the administrative council of the division of academic affairs.

- o The director is point of contact for the University's waste management programs.
- o The director maintains a schedule for WMI review.
- o The director monitors waste management resources.
- o The director works closely with the offices of the Vice Chancellor for Research and Contracts and Grants; they report financial and project control data to DOE Savannah River Operations Office.

Progress Made Towards Accomplishing Goals and Objectives

Waste Management Instruction

Nine hundred and sixty (960) students enrolled in twenty four (24) waste management courses in the Fall of 1994. The Spring 1995 enrollment has not been released by the University. Interest in waste management is high among the student body. A list of Spring 1995 interdisciplinary waste management and related courses is in the Appendix. The courses are grouped according to needs (waste management certificate courses, waste management project courses and waste management graduate courses).

The University has the following environmental and related degree programs:

Environmental Degree Programs

B.S. in Agricultural Science (Earth and Environmental Science)
B.S. in Chemical Engineering (Environmental Option)
B.S. in Civil Engineering (Environmental Option)
B.S. in Agricultural Engineering (Environmental Option)
B.S. in Occupational Safety and Health
M.S. in Plant, Soil, and Environmental Science
M.S. in Engineering (Environmental)

Environmental Related Degree Programs

B.S. in Chemistry
B.S. in Business Administration (Management)
B.S. in Economics (Transportation)
M.S. in Chemistry
M.S. in Biology

Certificate Program

Waste Management Certificate

Undergraduate Scholarships/Stipends

Twenty five (25) qualified full time undergraduate students (see Appendix) enrolled at NCA&TSU from the academic units involved in the activities of WMI were awarded scholarships (\$700/student). Selection of waste management scholars was based on the student's academic program and performance (GPA of 3.0 or better), a letter of recommendation, on-campus waste management activities (e.g. recycling, environmental science clubs, etc.) and career plan (see Appendix). Students receiving financial assistance (scholarships) are encouraged to complete 18-20 hours of recommended WMI core courses which will qualify them for a waste management certificate. WMI certificates will be awarded in May, 1995. The waste management certificate will complement the students' degree programs, and will also help to increase the number of qualified minority students available to work in waste management and related fields.

Materials Development

This represents NCA&TSU's commitment with the help of DOE's Savannah River Operations Office to impart useful waste management knowledge of NCA&TSU students as well as those at other colleges/universities, especially the predominantly black colleges and universities. Acquisition of waste management materials which cover information on agricultural, engineering, technology, history, psychology, business administration, economics, and sociology is in progress.

Faculty/Student Development

The following faculty members and students are involved waste management activities:

- o K.T. Davis*, F.G. King, M.S. Ali, and S. Ilias (Department of Chemical Engineering) Effect of Environmental variable on CO² Diffusion through Tuffs." This paper will be presented in May 1995, International High-Level Radioactive Waste Management Conference by K.T. Davis (M.S. student) scheduled to be held in Las Vegas.
- o Dr. Derek Norford (Department of Animal Science) "Mid-America Toxicology Course" scheduled to be held in April 1995, in Kansas City, MO. Dr. Norford is an Assistant Professor of Toxicology and hopes to enhance his courses in toxicology.
- o Mr. Perry Howard (Department of Natural Resources). Mr. Howard plans to visit DOE-SR to learn more about environmental restoration for infusion into landscape architecture courses.
- o Dr. Dilip Shah, School of Technology attended the Industrial Hygiene Conference in October 1994 with the following OSHA students:
Terrell Smith, Candance Byrdsong, Tabitha Williams, Travis Montague, William Fletcher, and Anthony Alston.
- o Mr. John Lee, a graduate student in Plant, Soil, and Environmental Sciences, attended the National Agronomy meetings in Seattle, WA on November 12-17, 1994. He participated in Waste Management presentations.
- o Ms. Karri Cecil, an environmental science major, attended a sustainable Agriculture Conference in November 28, 1994.
- o Dr. Pamela Hunter, School of Education, attended a Conference in December 1994 on environmental curriculum development for pre-college students in North Carolina.

- o Dr. Eugene Lord, School of Technology, attended an EPA Pollution Prevention and Waste Minimization Conference in Atlanta, GA (December 13, 1994). Dr. Lord plans to infuse environmental concepts into his courses.
- o Dr. G.A. Uzochukwu and Mr. Wilfred Nixon attended the National Agronomy meetings (November 12-17, 1994) in Seattle, WA. Dr. Uzochukwu presented a paper titled "Strategies for Implementation of Interdisciplinary Waste Management Programs." Mr. Nixon participated in undergraduate activities.

Waste Management Research

The following research activities are in progress:

- o Farm Safety and Health Intervention Among limited Resource Farmers in North Carolina. Dr. F. Watson, (NIH) Agricultural Education (\$199,988). Building Energy Conservation, Environmental Protection and Economic Growth (US DOE)
- o Dr. Peter Rojeski, Architectural Engineering (\$218,000). Ventilation HVAC System Research (Research Triangle Institute) - Dr. H. Singh, Architectural Engineering (\$30,854).
- o Pollution Prevention Opportunity Assessment for Oak Ridge Radioactive Soil/Asphalt (Martin Marietta Energy Systems) - Dr. S. Chang, Civil Engineering (\$39,636)
- o Natural Resources Management Needs Assessment to Facilitate Economics in the Blue Mountain (USDA-FS) - Dr. C.A. Panton, Agricultural Research (\$55,000).
- o Enhancement of OSHA program (HHS) - Dr. D. Shah, Construction Management and Safety (\$31,000)
- o Constructed Wetlands to Treat Swine Waste for Water Quality Improvement (DOD-CE) - Dr. M.A. DeShield, Natural Resources (\$20,000).

- o Developing Partnerships for Sustainable Agriculture (NCCU) - Dr. J. O'Sullivan, Agricultural Extension (\$129,200).
- o DOE Chair of Excellence in Environmental Science (US DOE) - Dr. H. Martin, Academic Affairs (\$400,000).
- o Nuclear Energy Training Program (ORAU) - Dr. W. Craft, Mechanical Engineering (\$19,830).
- o Undergraduate Environmental Science Fellowship (USEPA) - Dr. G. A. Uzochukwu, Waste Management Institute (\$6,590)
- o Environmental Management Pre-College Analytical Chemistry Program (Associated Western Universities) - Dr. J. Kumar, Chemistry (\$10,000).
- o Development of Predictive Models (Hazardous Waste Transportation) NASA - Dr. G. A. Uzochukwu, Waste Management Institute (\$129,832).
- o College Career Research Program in Environmental Sciences (NSF) - Dr. G. A. Uzochukwu, Waste Management Institute (\$22,523).
- o Educational Program - Building Energy Conservation (Phase II) - Dr. P. Rojeski, Architectural Engineering (\$125,000).
- o Academic Partnership Program in ER/WM (US DOE) - Dr. S. Chang, Civil Engineering (\$125,280).
- o Solar Powered Food Preservation Cottage Industry (US AID) - Dr. A. Shahbazi, Natural Resources (\$99,991).
- o Statewide Strategic Planning for Sustainable Agriculture (NC State University) - Dr. J. O'Sullivan, Agricultural Extension (\$10,000).
- o Infrastructure Support for a Waste Management Institute (US DOE - SR) - Dr. G.A. Uzochukwu, WMI (\$262,070)

The Waste Management speciality areas of faculty are included in the Appendix.

Waste Management Outreach

The following outreach projects are in progress/planned:

- o Environmental Issues and Awareness Symposium scheduled for April 1995. Will involve pre-college students/teachers, the community, HBCU's, government, and industries. Topics will include nuclear waste disposal technologies/treatment/policies; hazardous/mixed wastes/problems/treatment/remediation technologies/regulation.
- o Summer (1995), Institute Workshop in Environmental and Waste Management for Pre-College students/teachers.
- o Infusion of Waste Management concepts into Pre-College science curriculum and development of programs for teacher environmental certification in North Carolina.
- o Summer (1995), Grand Canyon Tour by Pre-College students/teachers/parents
- o Waste Management presentations in Selected Waste Management courses at NCA&TSU.
- o Waste Management presentations at college/school meetings at NCA&TSU.
- o Campus recycling programs coordinated by the University's physical plant department.
- o Initiation of recycling programs at Brightwood Elementary School in Greensboro, NC.
- o Waste Management presentations (February 1995) to community groups in Greensboro, NC (Black History Month).
- o Initiation of a Waste Management newsletter titled E N V I R O - N E W S.
- o Revision of Waste Management Brochures/Flyers.
- o Participation of the Waste Management Institute in other outreach projects on campus.

Similar activities which have been described in this document will continue during the 2nd year of the project. The University is excited about the infrastructure support it is receiving from DOE-SR.

PART 2

DOE F 4620.1
(04-93)
All Other Editions Are Obsolete

U.S. Department of Energy
Budget Page
(See reverse for instructions)

OMB Control No.
1910-1400
OMB Burden Disclosure
Statement on Reverse

DE-FG09-94SR18445-A000

ORGANIZATION North Carolina Agricultural and Technical State University				Budget Page No: _____	
PRINCIPAL INVESTIGATOR (PI)/PROJECT DIRECTOR (PD) Godfrey A. Uzochukwu, Director				Requested Duration: _____ (Months)	
A. SENIOR PERSONNEL: PWD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in bracket(s))				DOE Funded Person - mo	
				CAL	ACAD
1. Director (1/3)				1	
2. Faculty Associates (Activities)				1	
3.					
4.					
5.					
6. () OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE)					
7. () TOTAL SENIOR PERSONNEL (1-6)					89,410
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. () POST DOCTORAL ASSOCIATES					30,800
2. () OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.) (1/2)				1	15,400
3. () GRADUATE STUDENTS				1	11,000
4. () UNDERGRADUATE STUDENTS				1	11,000
5. () SECRETARIAL - CLERICAL					
6. () OTHER Administrative Assistant					26,400
TOTAL SALARIES AND WAGES (A + B)					184,010
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS) 24% of Salaries					38,882
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					222,892
D. PERMANENT EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM)					
TOTAL PERMANENT EQUIPMENT					
E. TRAVEL					33,000
1. DOMESTIC (INCL CANADA AND U.S. POSSESSIONS)					
2. FOREIGN					
TOTAL TRAVEL					
F. TRAINEE/PARTICIPANT COSTS					
1. STIPENDS (itemize levels, types + totals on budget justification page)					
2. TUITION & FEES					
3. TRAINEE TRAVEL					
4. OTHER (fully explain on justification page)					
TOTAL PARTICIPANTS () TOTAL COST					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES					3,300
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION (information systems)					13,200
3. CONSULTANT SERVICES Instructional/Student/Faculty Development					77,000
4. COMPUTER (ADP) SERVICES					
5. SUBCONTRACTS					
5. OTHER Scholarships and Outreach Programs					119,500
TOTAL OTHER DIRECT COSTS					213,000
H. TOTAL DIRECT COSTS (A THROUGH G)					468,892
I. INDIRECT COSTS (SPECIFY RATE AND BASE)					
55% of salaries and wages					
TOTAL INDIRECT COSTS					101,206
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					570,098
K. AMOUNT OF ANY REQUIRED COST SHARING FROM NON-FEDERAL SOURCES					
L. TOTAL COST OF PROJECT (J + K)					570,098

U.S. Department of Energy
GRANT APPLICATION
PROJECT PERIOD SUMMARY

(Must be completed for all new and renewal applications.)

OMB Approval
No. 1910-1400

Please Print or Type

Categories	01 Budget Period	02 Budget Period	03 Budget Period	04 Budget Period	05 Budget Period
A. Senior Personnel Totals	35,000	89,410	98,351		
B. Other Personnel Totals	58,000	94,600	104,060		
C. Fringe Benefit Totals	17,520	38,882	42,771		
Total of A, B & C	110,520	222,892	245,182		
D. Equipment	17,400				
E. Travel 1. Domestic	15,000	33,000	36,300		
2. Foreign					
F. Other Direct Costs	68,000	213,000	233,600		
G. Total Direct Costs	215,920	246,000	269,900		
H. Total Indirect Costs	51,150	101,206	111,326		
I. Total Direct & Indirect Costs	262,070	570,098	626,408		
J. Applicant's Cost-Sharing (If any)					
K. Total Amount of Request (Item I. Less Item J.)	(1)* 262,070	(2) 570,098	(3) 626,408	(4)	(5)

*This should equal Item K on Budget Period Summary (ER/F/4620.1)

ESTIMATE

TOTAL COST OF PROJECT
\$1,458,576
(add K(1) thru (5))

7.0 Budget Notes

(a) Personnel:

Director will spend 25% of his time on the day-to-day activities of the Institute (year 1) and 33% years 2 and 3).

Faculty will help with interdisciplinary waste management instruction, research and outreach. Faculty salaries will be determined by tasks performed.

Post Doctoral personnel will assist WMI faculty with waste management research and other waste management programs (years 2 and 3).

GIS/RS technician will manage GIS/RS laboratory for waste management research. Technician will also assist WMI faculty with waste management research activities.

Administrative Assistant will help with office activities.

Student Assistants will assist with community outreach programs.

Graduate student (M.S.) will conduct research in waste management.

- (c) Scholarships will help to attract qualified students into the waste management program. Scholarships will be awarded to students from participating departments.

- (d) Student development includes fellowship, internships, workshops, conferences that are related to environmental and waste management (years 2 and 3).

- (e) & (f) Instructional and faculty development are crucial to the success of the waste management program:

faculty development and training (years 2 and 3)

acquisition of teaching materials

waste management certificate program

workshops and short courses

educational consultants.

(g) Information System:

Database of waste management literature/library resources

video tapes

brochures

postage

newsletters

flyers

(h) Precollege/Community Outreach

Development of waste management instructional materials for training of
precollege students and their teachers

Recycling programs on campus and public schools

Community environmental projects

(j) Development of WMI office

Equipment/Furniture:

Computers

Software

Audiovisuals

Photocopy machine

Chair, table, metal shelves

Telephone

Fax Machine

Repair of building porch

(k) Travel: faculty and student travel to professional meetings, conferences and field
trips related to waste management and student travel to waste
management.

TIMETABLE

July 1994 - May 1995

- Offer of financial incentives to students who are interested in waste management
- Development of guidelines for the waste management certificate program
- Development of GIS/RS technology for hazardous management
- Initiation of contacts with the community and the public school system
- Workshops on infusion of waste management concept into existing courses
- Development and modification of waste management instructional materials

June 1995 - July 1995

- Faculty training
- Student training/development
- Waste management workshops and seminars for precollege students/teachers and community groups.
- Waste management research

August 1995 - May 1996

- External and internal review of project progress
- Development of waste management informational materials (flyers, brochures, databases), slides, etc.
- Initiation of recycling programs
- Offer of financial support to students
- Faculty presentations at middle and high schools
- Waste management research
- Implementation of the waste management certificate program

June 1996 - July 1996

- Student/training and development
- Faculty development and training
- Workshops and short courses for environmental industry employees
- Workshops for public school teachers on infusion of waste management concepts into science curriculum in high schools and middle schools
- Hands-on waste management experiences for precollege students/teachers
- Waste management research

August 1996 - May 1997

- Waste management research
- Dissemination of waste management informational materials
- Implementation of technology transfer program

- External and internal review of project
- Offer of financial incentives to students

June 1997 - August 1997

- Outreach projects
Preparation of project final report

U.S. DEPARTMENT OF ENERGY

UNIVERSITY CONTRACTOR, GRANTEE, AND COOPERATIVE AGREEMENT
RECOMMENDATIONS FOR ANNOUNCEMENT AND DISTRIBUTION OF DOCUMENTS

(See Instructions on Reverse Side)

1. DOE Report No. DOE-94SR18445	2. DOE Contract No. DE-FG09-94SR18445	3. DOE Funding Office DOE - SR	4. OSTI UC Category No.
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5. Title

Infrastructure Support for a Waste Management Institute

6. Type of Document ("x" one). Two completely legible reproducible copies should be transmitted.

a. Scientific and technical report: ☐ monthly ☐ quarterly ☒ annual ☐ final ☐ topical ☐ other

b. Conference paper: Name of conference (no abbreviations) _____

Location (city/st/ctry) _____

Date (mo/day/yr) _____ Sponsor _____

Contents: ☐ proceedings ☐ viewgraphs ☐ paper ☐ poster sessions

c. Computer Media:

Document is accompanied by ☐ magnetic tape(s) _____

☐ diskette(s) _____

☐ other (specify) _____

d. Other (e.g., journal article, manuscript, manual, etc.) (specify) _____

7. Patent Information

a. Does this information product disclose any new equipment, process, or material? ☒ No ☐ Yes If so, identify page nos. _____

b. Has an invention disclosure been submitted to DOE covering any aspect of this information product? ☒ No ☐ Yes
If so, identify the DOE (or other) disclosure number and to whom the disclosure was submitted. _____

c. Are there any patent-related objections to the release of this information product? ☒ No ☐ Yes If so, state these objections. _____

d. Does this material contain Proprietary information? ☒ No ☐ Yes

8. Additional information, remarks, and special handling instructions. (Continue on separate sheet, if necessary.)

9. Submitted by (Name and Position) (Please print or type)

Godfrey A. Uzochukwu, Director

Waste Management Institute

Organization North Carolina

A&T State University

Phone (910) 334-7030

Signature

Date

11/24/95

Appendix

ORGANIZATIONAL CHART WASTE MANAGEMENT INSTITUTE

WASTE MANAGEMENT INSTITUTE INTERDISCIPLINARY COURSES

Spring 1995

AGEC-632-01	INTERNAT AGRIC
AGEC-730-01	RURAL DEVELOP
AGED-607-01**	ENVIRON EDUC
AGED-665-01	OCC EXP M-G AG
AGEN-303-01	POWER & MACHIN
AGEN 602-01***	SPECIAL PROBLEMS
AGEN 714-01*	APPLIED HYDROLOGY
ANSC-413-01***	SEMINAR ANLSCI
ANSC-641-01	DISEA MGM'T LIVES
ANSC-701-01*	TOPICS-ANIM HLTH
ANSC-702-01*	SEMI ANIM HLTH
ANSC-708-01*	SP PROB ANIM HLT
AREN-221-01**	BLD SANIT/FIR PRO
AREN-561-01	FOUND & SOIL
AREN-610-01**	ENERGY & ENVIRO
AREN-666-01***	SPECIAL PROJECTS
AREN-734-01*	ENERGY/MNT MGT.
BIOL-621-01	SOIL MICROBIO
BIOL-700-01*	ENVIRO BIOLOGY
BUAD-461-01	LEGAL ENVIR/BUS
BUAD-462-01	BUSINESS LAW
BUAD-520-01	BUSINESS POLICY
CHEM-503-01***	CHEMICAL RESEA
CHEM-702-01*	CHEMICAL RESEA
CHEN-410-01	CHEM ENG LAB II
CHEN-450-01***	SENIOR SEMINAR
CHEN-500-01***	CHEM ENGIN SEM
CHEN-505-02***	SELECT TOPIC/CHE
CHEN-510-01***	IND STDY CHEM E
CIEN360-01	HYDROLOGY
CIEN-510-01**	ENVIR ENGR DESG
CIEN-614-01**	STR WAT QUAL MO
CIEN-620-01	FOUNDAT DESGN I
CIEN-664-01	OPEN CHANN FLO
CM -599-01***	INDEPT STUDY
CM -690-01***	SPEC PROBL/CM
CUIN-202-01	FILD EXP ORIEN
CUIN-513-01	STRAT TCH/SC ELE
CUIN-562-01	SEMR/ELEM EDUCA
CUIN-720-01*	CURR DEVELOPME
EASC-201-01**	EARTH MAN ENVIR
EASC-309-01	ELE PHY GEOLOGY
EASC-444-01**	EARTH/ENVIR SEM
EASC-625-01	EARTH RESOURCES
EASC-699-01**	ENVIRON PROB
ECON-300-01	MICROECONOMICS
ECON-301-01	MACROECONOMICS
ECON-525-01	ECONOMICS SEMIN
ECT -599-01	INDEPEN STUDY
ECT -690-01***	SPEC PROB TECH
EDLP-651-01	INTRO ADULT ED
ELEN-436-11	POWER SYS EN CO
ELEN-660-01***	SPECIAL PROJECTS
ELEN-666-01***	SPECIAL PROJECTS
ELEN-789-01*	SPECIAL TOPICS
GEEN-666-03***	SPECIAL PROJECTS
GEEN-789-01*	AIR POLLUT CONT
GEEN-789-02*	ENV REMEDIATION
HEFS-604-01	SEMI/HOEC ED
HEFS-631-01	FOOD CHEMISTRY
HEFS-643-01	FOOD PRESERVAT
HEFS-679-01	NUTRITION EDUC

WMI-NCA&TSU

HEFS-730-01*	NUTRI & DISEASE
HEFS-744-01*	SEM/FOOD & NUTR
HIST-200-01	PRIN GEOGRAPHY
HIST-322-01	ECONOMIC GEOG
HIST-633-01***	INDEP STDY HIST
INEN-325-01	QUALITY CONTROL
INEN-489-01	INDUST/ENGR SEM
INEN-490-01***	DESIGN PROJ INEN
LASC-261-01**	MEDICAL TERMINO
LASC-636-01**	GEN TOXICOLOGY
LDAR-102-01	ENVIRON DSGN ET
LDAR-230-01	ENVIRON ECOLOGY
MEEN-260-01	MATERIALS SCIENC
MEEN-444-01	UNDERGRAD PROJ
MEEN-474-01	ENGINEERING DES
MEEN-562-01	HEAT TRANSFER
MEEN-645-11	ALUM PRO DSGN M
MEEN-660-01***	SPECIAL TOPS/ENG
MEEN-733-01*	RADIATION
MEEN-789-02*	SPECIAL TOPIC
MFG -191-01	INTRO MFG PROCE
MFG -300-01	TECH SEMINAR
MFG -470-01	INDUST MATER/PR
MFG -599-01***	INDEPENDENT STU
MFG -651-01***	PRIN/ROBOTICS
MFG -690-01***	SPEC/P/MFG SYS
NARS-720-01*	GRADUATE SEMIN
NURS-320-01	HEALTH ASSESSM
NURS-510-01	COMMU HLTH NUR
NURS-514-01	MNGT/L/HLTH ORG
OSH-311-01**	IND ACCI PREVENT
OSH-312-01**	ACCD/PREV/ANAL
OSH -414-01**	PRIN/FIRE P/ROT
OSH -416-01**	INDUST. HYGIE II
OSH -515-01	EVAL FOR OSH
OSH -516-01**	OSH MANAGEMENT
OSH -517-01**	MATER HANDLG SP
PHYS-406-01	INTRO MODERN PHYS
PHYS-407-01**	NUCLEAR PHYS
POLI-504-01***	INDEPEND STUDY
POLI-653-01	URBAN PROBLEMS
PSYC-320-01	GEN'L PSYC
PSYC-440-01***	INTRO PSYC RESEA
PSYC-500-04***	INDEPENDEN STDY
SLSC-632-01	SOIL PHYSICS
SLSC-721-01*	ADV SOIL MICROBI
SLSC-727-01*	SOIL FERT/PL NUT
SOCI-408-01***	INDEPENDT STDY I
SOCI-525-01***	INDEPEND STUDY
SOCI-670-01	LAW & SOCIETY
TECH-211-01	SEM/TECH EDUCA
TECH-510-01***	RESRCH/DEV T SYS
TRAN-360-01	INTRO TRANSPORT
TRAN-660-01	NATION TRANS POL

*Graduate Students Only

**Waste Management Certificate Courses

***Possible Waste Management Topics/Projects

STUDENTS: PLEASE SEE YOUR ADVISOR!

Dr. Godfrey A. Uzochukwu, Professor
Director of Waste Management Institute
Carver Hall Annex
334-7030

1994/1995 Scholarship Awards

<u>NAME</u>	<u>MAJOR</u>	<u>CLASSIFICATION</u>	<u>GPA</u>
1. Andrews, Alonzo L. (African American Male)	Civil Engineering	Junior	3.01
2. Bailey, TaShara (African American Female)	Agr. & Envir. Sys. Eng.	Sophomore	3.20
3. Barnes, Jade L. (African American Female)	Business Adm.	Junior	3.15
4. Brown, Joseph L. Jr. (African American Male)	Civil Engineering	Senior	3.30
5. Campbell, Harvey W. (African American Male)	Earth&Env. Science	Junior	3.30
6. Carter, Jewel Cherie (African American Female)	Occup. Safety&Health	Junior	3.10
7. Cash, Tonya P. (African American Female)	Earth&Envir. Science	Senior	3.30
8. Cecil, Karri D (White Female)	EASC/Waste Mgmt.	Junior	3.38
9. Exum, Regina N. (African American Female)	Marketing	Sophomore	3.76
10. Gibbs, Rodney W. (African American Male)	Civil Engineering	Junior	3.80
11. Hubbard, Kulema J. (African American Female)	Occup. Safety&Health	Senior	3.40
12. Holloman, Mondez (African American Male)	Civil Engineering	Junior	3.19
13. Jakubiak, Michael (White Male)	Agr. & Envir. Sys. Eng.	Junior	3.92
14. James, Jonathan (African American Male)	Arch. Engineering	Senior	3.40
15. Johnson, Lisa (White Female)	Social Work	Sophomore	3.62

1994/1995 Scholarship Awards

<u>NAME</u>	<u>MAJOR</u>	<u>CLASSIFICATION</u>	<u>GPA</u>
16. Langford, Kimberly (African American Female)	Arch. Engineering	Sophomore	3.10
17. Leak, Roland L (African American Male)	Managment	Junior	3.80
18. Lee, Katina N (African American Female)	Earth&Envir Science	Junior	3.27
19. Martin, Damon D. (African American Male)	Civil Engineering	Junior	3.30
20. Monroe, Roosevelt J. (African American Male)	Envir. Engineering	Senior	3.09
21. Nixon, Wilfred (African American Male)	Envir. Science	Junior	3.50
22. Roberts, Allen (African American Male)	Earth & Envir. Sci.	Sophomore	3.86
23. Tennant, Lois (White Female)	Elementary Ed.	Sophomore	3.64
24. Walton, Camille L (African American Female)	Civil Engineering	Senior	3.50
25. Watson, Dionne M. (African American Female)	Economics	Junior	4.00

Total Scholarship Awards

African American Males	11
African American Females	10
White Male	01
White Females	03
<u>Total</u>	<u>25</u>

**WASTE MANAGEMENT INSTITUTE
NORTH CAROLINA A&T STATE UNIVERSITY
UNDERGRADUATE SCHOLARSHIP APPLICATION**

GUIDELINES

GENERAL INFORMATION:

Environmental/Waste Management Scholarships are available for full-time undergraduate students at North Carolina A&T State University.

GOAL:

The major goal of the scholarship is to help increase the number of minority professionals who will work in environmental and waste management fields.

DURATION:

The scholarship duration is one semester and may be renewed depending on the availability of funds and academic progress. Scholarship recipients are expected to participate in the activities of the Waste Management Institute and must be United States citizens.

ELIGIBILITY:

Scholarships will be awarded to full-time sophomore, junior, or senior undergraduate students who have taken courses in environmental/waste management area and plan to work in environmental fields. The minimum cumulative GPA is 3.0. More courses concerning waste management or related, previously taken are preferable.

BENEFITS:

The scholarship will be in the amount of \$500.

CHECKLIST:

The completed scholarship application should include:

1. Completed application form (See reverse side of this page.).
2. One-page description of interest in environmental/waste management and career goals.
3. One official transcript.
4. One letter of recommendation written by your academic advisor.

DEADLINE: DECEMBER 1, 1994

WASTE MANAGEMENT INSTITUTE

Godfrey A. Uzochukwu, Director

The Waste Management Institute (WMI) coordinates the interdisciplinary environmental and waste management efforts of the University in the areas of instruction, research, and community outreach. The approach to environmental and waste management education at the University rests upon a solid foundation of applied and social sciences, engineering, technology, and law/policy. The following academic units are involved in environmental and waste management activities: Animal Science; Agricultural Education; Agricultural Economics; Architectural Engineering; Biology; Business Administration; Chemical Engineering; Civil Engineering; Computer Science; Curriculum and Instruction; Construction Management and Safety; Economics; Electrical Engineering; History; Human Environment and Family Science; Industrial Engineering; Natural Resources; Nursing; Physics; Psychology and Sociology/Social Work.

Additionally, the Waste Management Institute administers an Undergraduate Certificate Program and offers a Concentration in Waste Management. Interested students are required to complete 18-20 hours of approved environmental and waste management courses. The Waste Management Certificate Program complements the student's academic major and enhances the value of the degree.

REQUIREMENTS FOR THE WASTE MANAGEMENT CERTIFICATE/CONCENTRATION (18-20 CREDIT HOURS):

EASC 201; EASC 444; EASC 622; EASC 699; AREN 221; AREN 573; CIEN 310; CIEN 311; CIEN 410; CIEN 416; CIEN 610; CIEN 618; INEN 664; PHYS 407; HIST 307; CHEM 641; LDAR 203; CROS 603; HEFS 643; ANSC 637; LASC 462; CM 593; OSH 311; OSH; 312; OSH 411; OSH 413; OSH; 414; OSH; 415; OSH 416; OSH 515; OSH 516; OSH 517; AGED 607; ENVIRONMENTAL INTERNSHIP AND SPECIAL TOPIC/PROBLEM COURSES; ENGINEERING DESIGN COURSES; CONSORTIUM COURSES IN LAW/POLICY THAT ARE RELATED TO ENVIRONMENTAL AND WASTE MANAGEMENT. Note that the above courses do not include prerequisites and must be approved by Academic Advisors and the Director of Waste Management Institute.

The Waste Management Institute is located in the Carver Hall Annex.

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL DESIGN

GREENSBORO, N.C. 27411

Agricultural and Environmental Systems Engineering

Earth and Environmental Science

Horticulture

Landscape Architecture

Plant and Soil Science

Phone: (910) 334-7543

Fax: (910) 334-7844

To: Dr. Godfrey Uzochukwu
Director, Waste Management Institute (WMI)

From: G. B. Reddy *G. B. Reddy 1/13/95*
Chairman, WMI-Symposium Committee

Subject: Minutes of the WMI's Symposium Committee Meeting

The following WMI symposium committee members (Dr. Chang, Dr. Schimmel, Dr. Nzewi, Dr. Reddy, Dr. Uzochukwu and Mr. Simpson) met on January 4, 1995 at 10 am in the conference room of the Waste Management Institute. The opening remarks were made by Dr. Uzochukwu. The committee members discussed the possible title for the symposium, audience, subject areas, speakers, etc. The committee reached an agreement on following matters:

1. Symposium title: Environmental Issues and Awareness Symposium
2. Date: Second week in April, 1995
3. Keynote speaker: Federal government administrator
4. Target audience: High school teachers and students; smaller HBCU's; state, county and city officials; federal government officials; professionals from academics and industries; and community.
5. Subject areas: Landfill technologies- their issues and policies; low level nuclear waste disposal and treatment technologies- their issues and policies; hazardous waste problems, policies and regulations; hazardous waste disposal, treatment and remediation technologies.
6. Audience: High school students will be participating in the morning session of the symposium and after lunch they will be given a tour of the laboratories conducting environmental related research.

Symposium speakers and subject areas will be discussed at the next meeting. Dr. Uzochukwu suggested that Drs. Vallie Guthrie (GAMSEC), Melvin Johnson (Business Administration) and Horlin Carter (Technology) should be included in the symposium committee. The meeting was adjourned.

cc. WMI-Symposium Committee Members: Dr. Carter, Dr. Johnson,
Dr. Chang, Dr. Schimmel, Dr. Nzewi, Dr. Guthrie, Mr. Simpson

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

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Plant and Soil Science

Phone: (910) 334-7543

Fax: (910) 334-7844

To: WMI-Symposium Committee Members

Dr. Horlin Carter

Dr. Shoo-Yuh Chang

Dr. Vallie Guthrie

Dr. Melvin Johnson

Dr. Emmanuel Nzewi

Dr. Keith Schimmel

Dr. Godfrey Uzochukwu

Mr. Wayne Simpson

From: G.B. Reddy *G.B. Reddy*
Chairman, WMI-Symposium Committee

Date: January 17, 1995

Ref: WMI-Symposium Committee Meeting

The WMI-Symposium committee meeting is scheduled on Thursday, January 19, 1995 at 2:30 pm in the conference room of the Waste Management Institute. Please be prepared to attend this important meeting. If you cannot attend, please let me know as soon as possible.

Thank you for your cooperation in this matter.

SUGGESTED SUMMER INSTITUTE WORKSHOP TOPICS IN
ENVIRONMENTAL AND WASTE MANAGEMENT

- *Waste Management Concepts*
- *Household Hazardous Wastes*
- *Low Level Nuclear Waste*
- *Chemical Waste*
- *Industrial Chemical Waste*
- *Toxic Wastes*
- *Waste Minimization*
- *Waste Recycle*
- *Environmental Restoration*
- *Environmental Business*
- *Environmental Business*
- *Habitat Alteration and Destruction*
- *Stratospheric Ozone Depletion*
- *Global Climate Change*
- *Acid Rain and Runoff to Surface Water*
- *Airborne T oxics*
- *Oil Spills*
- *Goundwater Pollution*
- *Thermal Pollution*
- *Mathematical Problems in Environmental Waste Management*
- *Participant Survey of Waste Issues*
- *Hands-on Experiences*
- *Infusion of Environmental Concepts into Courses*

**NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
THE GAMSEC TEACHER INSERVICE CENTER**

WHAT IS GAMSEC? THE GREENSBORO AREA MATHEMATICS AND SCIENCE EDUCATION CENTER (GAMSEC) IS ONE OF THE CONSTITUENT CENTERS OF THE UNC MATHEMATICS AND SCIENCE EDUCATION NETWORK LOCATED ON THE CAMPUS OF UNC CHAPEL HILL. GAMSEC IS A COOPERATIVE CENTER BETWEEN NC A&T STATE UNIVERSITY AND UNC GREENSBORO. THE PURPOSE OF GAMSEC IS TO IMPROVE THE QUALITY OF MATHEMATICS AND SCIENCE TEACHING AND LEARNING IN THE SCHOOLS OF REGION 5 AND THE STATE OF NORTH CAROLINA BY (1) STRENGTHENING THE QUALITY OF AND INCREASING THE SIZE OF THE TEACHING BASE IN MATHEMATICS AND SCIENCE EDUCATION; AND (2) INCREASE THE POOL OF STUDENTS WHO GRADUATE FROM HIGH SCHOOL PREPARED TO PURSUE CAREERS REQUIRING COMPETENCE IN MATH AND SCIENCE.

DIRECTOR: DR. VALLIE GUTHRIE
217 MARTEENA HALL; 910 334 7938

ASSOCIATE

DIRECTOR: DR. GEORGE BRIGHT
CURRY BUILDING; UNC GREENSBORO; 910 334 3439

PRECOLLEGE

COORDINATOR: MRS. RITA FULLER
201A MARTEENA HALL; 910 334 7808

FUNDING: STATE OF NORTH CAROLINA; GRANT FUNDS; A&T SUPPORT AND FUNDING; UNCG SUPPORT AND FUNDING; BUSINESS AND INDUSTRIAL SUPPORT; SPECIAL CONTRIBUTIONS.

OPERATING

SCHEDULE: 12 MONTHS (JULY 1 TO JUNE 30)

WHEN: CALL GAMSEC AT 334 7938 FOR REQUESTS FOR ACTIVITIES.

WHERE: AT SCHOOLS IN REGION 5; IN 6 SCHOOL DISTRICTS; AT GAMSEC (A&T AND UNCG).

HOW TO ACCESS SERVICES: CONTACT DR. GUTHRIE OR DR. BRIGHT.

COST TO TEACHERS AND STUDENTS: MINIMAL OR NO COST

INCENTIVES: *FOR TEACHERS:* RENEWAL CREDIT, GRADUATE/UNDERGRADUATE COURSE CREDIT, STIPENDS (\$40 TO \$60 PER DAY) FOR MOST OF THE SUMMER COURSES, EXCELLENT TEACHING BASED ON CURRENT NATIONAL AND STATE STANDARDS, PROFESSIONAL AND ADVISORY SERVICES; SUPPORT FOR GRADUATE STUDIES.
FOR STUDENTS: A 12-MONTH ACADEMIC ENRICHMENT PROGRAM FOR MINORITY AND FEMALE STUDENTS THAT INCLUDES A SATURDAY ACADEMY, A SUMMER SCHOLARS PROGRAM, ACADEMIC ENRICHMENT CLASSES, TUTORIAL SERVICES, AWARDS/RECOGNITION PROGRAMS AND ANNUAL FIELDTRIPS.

(OVER)

GAMSEC GOES TO THE GRAND CANYON

DATES: JUNE 17 - JUNE 24, 1995

WHERE IS IT? NORTHWEST CORNER OF ARIZONA; CLOSE TO THE BORDERS OF UTAH AND NEVADA; THE COLORADO RIVER FLOWS THROUGH THE CANYON.

HOW BIG IS IT? LENGTH: 277 MILES/ 446 KM (FROM LEES FERRY TO GRAND WASH CLIFFS)

DEPTH: 1 MILE/5000-6000 FT.)

WIDTH: 10 - 18 MILES

HOW OLD IS THE CANYON? THE OLDEST ROCKS ARE 2,000 MILLION (VERY YOUNG). THE OLDEST ROCKS IN THE WORLD ARE 4,000 MILLION YEARS OLD.

ITINERARY TO THE GRAND CANYON: GREENSBORO TO NEW ORLEANS TO HOUSTON TO ALBUQUERQUE TO GRAND CANYON TO OKLAHOMA CITY TO MEMPHIS TO GREENSBORO

WHO WILL GO? GAMSEC PRECOLLEGE PROGRAM STUDENTS, INSTRUCTORS, PARENT CHAPERONES, MRS. RITA FULLER, MRS. ADELINE COLLINS, MRS. LOIS HUNTER, DR. VALLIE GUTHRIE AND DR. GODFREY UZOCHUKWU.

SPONSORS: GAMSEC, A&T FOUNDATION(GE FOUNDATION, Z SMITH REYNOLDS), WASTE MANAGEMENT INSTITUTE AND YOU .

PURPOSE: INCENTIVE FOR STUDENTS ACHIEVEMENT: STUDENT PARTICIPATION IS BASED ON ACADEMIC ACHIEVEMENT (GOOD GRADES), CLASS ATTENDANCE, GOOD CONDUCT AND GOOD ATTITUDE AT SCHOOL AND IN THE GAMSEC PROGRAM. WE NEED YOUR SUPPORT TO FUND THIS TRIP.

FOR FURTHER INFORMATION, CALL DR. VALLIE GUTHRIE, (910) 334 7938.

WASTE MANAGEMENT INSTITUTE

North Carolina A&T State University

PARTICIPATING FACULTY AND WASTE MANAGEMENT AREA(S)

Department of Animal Science

George A. Johnson, M.S., Cornell University; DVM., Tuskegee Institute; Professor and Chairperson
Waste Management Area(s): Diseases of Animals.

John Allen, B.S., University of Georgia; M.S., Ph.D., University of North Carolina
Waste Management Area(s): Biotechnology/Disease Resistance.

Tracy L. Hanner, B.S., North Carolina Central University; DVM, North Carolina State University
Waste Management Area(s): Animal Diseases.

Ray McKinnie, B.S. North Carolina A&T State University; M.S. Ohio State University; Ph.D., N.C. State University; Agricultural Extension Faculty
Waste Management Area(s): Radioactive Tracers/Physiology.

Derek Norford, B.S., North Carolina A&T State University; DVM, Tuskegee University; M.S., North Carolina State University; Ph.D. Candidate, N.C. State University
Waste Management Area(s): Pathology/Animal Diseases.

LaNell Ogden, Ph.D., Auburn University; MS, Oklahoma State University; DVM, Tuskegee University; BS, Fort Valley State College
Waste Management Area(s): Toxicology

Willie Willis, B.S., Fort Valley State College; M.S., Ph.D., Colorado State University, Associate Professor
Waste Management Area(s): Poultry Diseases.

Department of Natural Resources and Environmental Design

Godfrey A. Gayle, B.S., North Carolina A&T State University; M.S., Ph.D., N.C. State University at Raleigh; Professor, Coordinator of Agricultural Engineering Program and Chairperson
Waste Management Area(s): Land Application of Agricultural Waste, and Waste Water Management.

Charles W. Raczowski, B.S. M.S., Kansas State University; Ph.D., N.C. State University; Post Doctorate - USDA/ARS
Waste Management Area(s): Agricultural Waste Utilization/Composting.

WASTE MANAGEMENT INSTITUTE

North Carolina A&T State University

PARTICIPATING FACULTY AND WASTE MANAGEMENT AREA(S)

G. Bhaskar Reddy, B.S., M.S.,
A.P.A.U., India; Ph.D., University of Georgia
Professor

Waste Management Area(s): Xenobiotic
Chemicals Biodegradation; Site Assessment;
and Bioremediation by Plants.

M. Raj Reddy, B.S., Osmania University,
India; M.S.A.P.A.U., India; Ph.D., University of
Georgia; Professor

Waste Management Area(s): Land
Application of Wastes; Waste Water
Treatment, and Heavy Metals.

Abolghashem Shahbazi, B.S., University
of Tabriz; M.S., University of California;
Ph.D., Penn State University; Associate
Professor

Waste Management Area(s):
Bioprocessing/Alternate Energy.

Godfrey A. Uzochukwu, B.S., M.S.,
Oklahoma State University; Ph.D., University
of Nebraska; Professor, EASC Coordinator and
WMI Director

Waste Management Area(s): Waste Site
Selection and Characterization.

Department of Biology

David W. Aldridge, B.S., M.S. University
of Texas-Arlington; Ph.D., Syracuse
University; Postdoctoral, Woods Hole Marine
Biological Laboratories; Associate Professor

Waste Management Area(s): Aquatic
Ecology and Toxicology.

Jerry Bennett, B.S., Tougaloo College;
M.S., Atlanta University, Ph.D.; Iowa State
University; Associate Professor.

Waste Management Area(s): Altered
Environments and Insect Development.

Roy Coomans, B.S., Eckerd College; Ph.D.,
University of N.C. at Chapel Hill; Assistant
Professor

Waste Management Area(s):
Environmental Impacts and Plant Populations.

Doretha B. Foushee B.S., Shaw
University; M.S., N.C. Central University;
Ph.D., University of Maryland at College Park;
Professor

Waste Management Area(s) Viral
Diseases of Aquatic Animals and Environmental
Estrogens.

Thomas L. Jordan, B.A., Rockhurst College;
M.S., University of Wisconsin-Madison;
Ph.D., University of Wisconsin-Madison;
Associate Professor

Waste Management Area(s): Organic
Solvents and Microbial Ecosystems.

Bette McKnight, B.A., Barber-Scotio
College; M.A. N.C. Central University; Ph.D.
Meharry Medical College; Assistant Professor
Waste Management Area(s): Molecular
Biology and Epidemiology of Bacterial
Pathogens.

Joseph White, B.S., North Carolina
Central University; M.A., North Carolina
Central University-Durham; Ph.D.,
University of Illinois; Professor
Waste Management Area(s):
Environmental Effects and
Arthropod/Mammalian Populations.

WASTE MANAGEMENT INSTITUTE

North Carolina A&T State University

PARTICIPATING FACULTY AND WASTE MANAGEMENT AREA(S)

Joseph J. Whittaker, A.B., Talladega College; Ph.D., Meharry Medical College; Postdoctoral, Purdue University and Washington University; Associate Professor and Chairperson

Waste Management Area(s):
Environmental Regulation and Microbial Protein Synthesis.

Department of Chemistry

William K. Adeniyi, B.S., Hampton Institute; M.S. Loyola University (Chicago); Ph.D., Baylor University; Assistant Professor
Waste Management Area(s):
Environmental Contaminants.

Vallie Guthrie, B.S., North Carolina A&T State University; M.S., Fisk University; Ed.D., American University; Associate Professor
Waste Management Area(s): Precollege Outreach Programs.

Jothi V. Kumar, B.S., Annamola University; Ph.D., Kansas State; Associate Professor
Waste Management Area(s): Water Pollution.

Lynda M. Jordan, B.S., North Carolina A&T State; M.A., Atlanta University; Ph.D., Massachusetts Institute of Technology; Associate Professor
Waste Management Area(s):
Radioisotopes.

Abdul K. Mohammed, B.S. University of Benin-Nigeria; Ph.D., Louisiana State University; Assistant Professor
Waste Management Area(s): Radioactive Waste/Tracers; Heavy Metal Interactions.

Alex N. Williamson, B.S., Jackson State University; Ph.D., University of Illinois at Urbana; Associate Professor and Chairperson
Waste Management Area(s): Trace Metals.

Department of History

Dorothy S. Mason, A.B., University of North Carolina at Greensboro, M.A., University of Georgia; Ph.D., University of North Carolina at Chapel Hill, Professor
Waste Management Area(s): Waste Geography.

Peter V. Meyers, B.A., Wesleyan University; M.A., Ph.D., Rutgers University; Professor and Chairperson
Waste Management Area(s):
Environmental History.

Department of Physics

Sekazi K. Mtingwa, B.S., Massachusetts Institute of Technology; M.S. and Ph.D. Princeton University; Professor and Chairperson
Waste Management Area(s): Theoretical Analyses.

WASTE MANAGEMENT INSTITUTE

North Carolina A&T State University

PARTICIPATING FACULTY AND WASTE MANAGEMENT AREA(S)

Elvira S. Williams , B.S., North Carolina Central University; M.S., Ph.D., Howard University; Associate Professor
Waste Management Area(s): Experimental Physics.

Department of Psychology

Roy Smith , B.S., North Carolina A&T State University; Ph.D., University of Nebraska, Lincoln; Associate Professor and Chairperson
Waste Management Area(s): Industrial Waste Psychology.

Department of Sociology/Social Work

Robert Davis , B.A., Southern University; M.A., Atlanta University; Ph.D., Washington State Univ. Postdoctoral, University of Wisconsin, Madison; Professor
Waste Management Area(s): Sociological Theory of Toxic Waste Dumps.

Sarah Kirk , B.A., St. Augustine College; M.S.W., Atlanta University; M.S., University of Pittsburgh; Ph.D., Associate Professor and Chairperson
Waste Management Area(s): The Impact of the Environment on the Family.

Department of Business Administration

Chiekwe Anyansi-Archibong, B.S., M.B.A., Ph.D., University of Kansas; Associate Professor
Waste Management Area(s): Environmental Policy.

Willard Bagwell , B.S. University of North Carolina at Chapel Hill; M.B.A., Ph.D., Georgia

State University; Associate Professor
Waste Management Area(s): Actuarial.

Melvin N. Johnson, B.S., North Carolina A&T State University; M.A., Ball State University M.B.A., Indiana University D.B.A., Indiana University Professor and Chairperson
Waste Management Area(s): Resource Management and Environmental Economics.

Danny H. Pogue , B.A., Texas College; M.A., Texas Southern University; Ph.D., The Ohio State University; Professor and Assistant Dean

Waste Management Area(s): Hazardous Working Environment.

Issiah O. Ugboro, B.S., Utah State University; M.B.A., Ph.D., University of North Texas; Assistant Professor
Waste Management Area(s): Environmental Policy.

Department of Construction Management And Safety

Horlin Carter, Sr., B.A. Marshall University; M.S. Marshall University; Ph.D. Michigan State University
Waste Management Area(s): Safety Management.

Walter E. Dukes , B.S., Alcorn Agricultural and Mechanical College, M.S., Indiana State University; Ph.D., Purdue University; Professor and Chairperson
Waste Management Area(s): Safety Management

WASTE MANAGEMENT INSTITUTE

North Carolina A&T State University

PARTICIPATING FACULTY AND WASTE MANAGEMENT AREA(S)

Maxine R. Moore , B.S., Bennett College;
MSPH, University of N.C. at Chapel Hill;
Assistant Professor
Waste Management Area(s): Safety
Management.

Dilip T. Shah , B.E., Poona, India; M.S.,
Illinois State University; Ph.D., Texas A&M
University; Associate Professor
Waste Management Area(s): Safety
Management.

Department of Architectural Engineering

Peter Rojeski , Jr., P.E., B.S., Clarkson
College of Technology; M.S., Cornell
University; Ph.D. Cornell University;
Associate Professor
Waste Management Area(s): Energy and
the Environment.

Department of Chemical Engineering

Shamsuddin Ilias , B.S., Bangladesh
University of Eng. and Tech.; M.S. University
of Petro and Min. (Saudi Arabia); Ph.D.,
Queen's University; Assistant Professor
Waste Management Area(s):
Bioremediation; Water and Waste Water
Treatment .

Vinayak N. Kabadi , B. ChE., Bombay
University; M.S. S.U.N. Y at Buffalo; Ph.D.,
Pennsylvania State University; Associate
Professor
Waste Management Area(s): Solar
detoxification; Mineral Processing.

Franklin G. King , B.S., Pennsylvania State
University; M.S., Kansas State University;
M.Ed. Howard University; D.Sc., Stevens

Institute of Technology; Professor and
Chairman
Waste Management Area(s): Nuclear
Waste Disposal Site Characterization.

Keith Schimmel , B.S., Purdue University;
M.S., Ph.D., Northwestern University;
Assistant Professor
Waste Management Area(s):
Bioremediation of Waste Sites.

Gary B. Tatterson , B.S., University of
Pittsburgh; M.S. Ph.D., Ohio State University;
Professor
Waste Management Area(s): Sludge
Suspension.

Gary L. White , B.S. M.S., Brigham Young
University; Ph.D., Michigan State University;
Assistant Professor
Waste Management Area(s):
Supercritical Water Oxidation; Physical
Separations.

Yusuf G. Adewuyi , B.S., Ohio State
University; M.S.; Ph.D., University of Iowa;
Associate Professor
Waste Management Areas(s): Hazardous
Waste Destruction and Management; Solid
Waste Management.

Department of Civil Engineering

Kenneth H. Murray , B.S., M.S., Ph.D.,
Virginia Polytechnic Institute and State
University; Professor and Chairperson (P.E.)
Waste Management Area(s): Waste
Materials for Structural Applications.

Shoou-Yuh Chang , B.S., M.S., National
Taiwan University; M.S., University of North
Carolina at Chapel Hill; Ph.D., University of
Illinois at Urbana-Champaign; Professor

WASTE MANAGEMENT INSTITUTE

North Carolina A&T State University

PARTICIPATING FACULTY AND WASTE MANAGEMENT AREA(S)

Waste Management Area(s): Waste Water Treatment/Solid and hazardous waste disposal.

Richard E. Norris, B.S., Washington State University; M.S., D. Eng., University of California at Berkeley, Assistant Professor,
Waste Management Area(s): Debris Disposal; Recycling, and Design for Waste Reduction.

Emmanuel U. Nzewi, B.S., Michigan Tech University; Ph.D. Purdue University; Assistant Professor (P.E.)

Waste Management Area(s): Hazardous Waste Transportation/Routing; Waste Facilities Location.

M. Reza Salami, B.S., M.E., Virginia Polytechnic Institute and State University; Ph.D., University of Arizona; Associate Professor, (P.E.)

Waste Management Area(s): Underground Storage Design for Low and High Level Nuclear Wastes.

Gary S. Spring, B.S., M.S., Ph.D., University of Massachusetts at Amherst; Associate Professor (P.E.)

Waste Management Area(s): Hazardous Waste Transportation/Routing; Waste Facilities Location.

Department of Economics

Anwar Khan, B.A., M.A., University of Punjab; M.A., Ph.D., University of Wisconsin; Professor

Waste Management Area(s): Agricultural Resource Management.

Gregory Price, B.S., Morehouse; M.A.,

University of Wisconsin at Milwaukee; Ph.D. University of Wisconsin-Milwaukee; Assistant Professor

Waste Management Area(s): Resource Pricing and Optimization.

Michael Simmons, B.S., Arkansas AM&N; M.A., University of Wisconsin; Ph.D., Washington State University; Assistant Professor and Chairperson

Waste Management Area(s): Resource Management

Department of Agricultural Education

Daniel M. Lyons, B.S., M.S., North Carolina Agricultural & Technical State University; Ed.D., Virginia Polytechnic Institute and State University; Agricultural Extension Faculty

Waste Management Area(s): Environmental Education.

Francis O. Walson, B.S., North Carolina A&T State University; Ed.D., Virginia Polytechnic Institute and State University; Assistant Professor

Waste Management Area(s): Career Exploration and Environmental Education.

Agricultural Economics and Rural Sociology

William Amponsah, B.S. Berea College; M.S. University of Kentucky, Ph.D., Ohio State University, Assistant Professor

Waste Management Area(s): Welfare Economics.

Godfrey Ejimakor, B.S., North Carolina State University; M.S., North Carolina A&T; State University; Ph.D., Texas Tech.; Assistant Professor

WASTE MANAGEMENT INSTITUTE

North Carolina A&T State University

PARTICIPATING FACULTY AND WASTE MANAGEMENT AREA(S)

Waste Management Area(s):
Environmental/Resource Management.

Robin G. Henning, B.S., M.S., Ohio State University; Ph.D., Cornell University; Associate Professor

Waste Management Area(s):
Environmental Impact Analysis/Sustainable Agriculture

John O'Sullivan, B.A., Stanford University; M.S., Auburn University; Ph.D., University of California at Los Angeles; Agricultural Extension Faculty

Waste Management Area(s): Sustainable Agriculture.

Alton Thompson, B.S., North Carolina Central University; M.S., Ph.D., Ohio State University; Associate Professor

Waste Management Area(s): Perception of Waste Management Issues/Survey Research of Waste Management Issues.

Human Environment and Family Science

Johnson A. Kamalu, B.S., M.S., Tuskegee; Ph.D., Howard University; Assistant Professor

Waste Management Area(s): Food Safety.

Chung Woon Seo, B.S., M.S., Korea University; Ph.D., Florida State University; Professor

Waste Management Area(s): Waste Water Treatment by Agricultural Byproducts (Peanut Shells and Corncobs).

Bala Ram, B.S., M.S., Indian Institute of Technology at Madras; Ph.D., State University of New York at Buffalo, Associate Professor

Waste Management Area(s): Automated Materials Handling.

Sanjiv Sarin, B.S., M.S., Indian Institute of Technology at Delhi; Ph.D., State University of New York at Buffalo, Associate Professor

Waste Management Area(s): Tracking Hazardous Materials by AutoID; Mathematical Modelling for Storage and Transportation of Hazardous Materials, and Quality Control and Compliance to ISO 9000.

Silvanus J. Udoka, B.S., Weber State University; M.S., Ph.D., Oklahoma State University

Waste Management Area(s): Plastic and Rubber Waste Remedial Measures and Recycling.

School of Nursing

Maude Alston, R.N., Columbia Hospital; B.S.N., Medical College of Georgia; Ph.D., University of North Carolina at Greensboro; Assistant Professor

Waste Management Area(s):

Dorothy Burns, A.D.N., R.N., Brooklyn College; B.S.N., North Carolina A&T State University; M.S.N., University of North Carolina at Greensboro; Lecturer

Waste Management Area(s): Medical Terminology, Bio Disease/Care

VITA DATA

DR. G. A. UZOCHUKWU, PROFESSOR

N.C. A&T State University
Natural Resources and Environmental Design

CITIZENSHIP:

United States of America

EDUCATION:

B.S. (1979) Oklahoma State University

M.S. (1980) Oklahoma State University

Ph.D. (1983) University of Nebraska

Post-Doc (1984) Texas A&M University

ACADEMIC FIELD:

Soil, Earth, and Environmental Sciences

EXPERIENCE:

- July 1993 - Present (Professor)
- July 1989 - June 1993 (Associate Professor)
- January 1985 - June 1989 (Assistant Professor)

North Carolina A&T State University, Greensboro, NC.

Has responsibility for providing instruction in the disciplines of earth science, geology, mineralogy, soils, landuse and environmental sciences at both undergraduate and graduate levels. Research responsibility includes investigation of environmental implications of soil and mineral properties for better land use. Involved in interdisciplinary and multidisciplinary research with other scientists.

- January 1984 - December 1984 (Research Associate)

Texas A&M University, College Station, Texas. Developed a procedure for identification and study of manganese mineral properties by x-ray diffraction.

ADMINISTRATION:

- **1993 - Present: Director of NC A&T's Interdisciplinary Waste Management Institute**
- 1992 - Present: Director of NC A&T's Earth System Science (NASA) Project
- 1993 : Chair. of the Waste Management Institute's Planning Committee
- 1992 - Present: Director of NC A&T's Seismic Station

- 1985 - Present: Coordinator of Earth and Environmental Science Program
Developed the program.

CONSULTING SERVICES:

Media Environmental Consultant

Low Level Nuclear Waste Disposal Technical Consultant for Chatham County, North Carolina (1990)

PROFESSIONAL SOCIETIES:

American Society of Agronomy

Carolina Geological Society

Mineralogical Society of America

North Carolina Academy of Science

Soil Science Society of North Carolina

Soil Science Society of America

CERTIFICATION FOR PROFESSIONAL PRACTICE:

Certified Soils Specialist (NC)

BOARD/COMMITTEE MEMBERSHIPS:

Member of the Technical Review Board of the UNC System Water Resources Research Institute (1991 - Present)

Member of the Brightwood Elementary School Advisory Board (1993 - Present).

Member of the Student Manuscript Contest Committee (American Society of Agronomy, 1994-1996)

PUBLICATIONS:

Slope, N.B., D.T. Lewis, G.A. Uzochukwu, and S.L. Hartung. 1993. Soil Moisture and Clay Measurement of Volcaniclastic Soils of Western Nebraska. Great Plains Research. 3, No. 1. Journal of Natural and Social Sciences 94-107.

Uzochukwu, G.A. 1992. Exercises in Earth and Environmental Sciences. (J.T. Ice, ed.) McGraw-Hill Inc. New York. College Custom Series.

Uzochukwu, G.A. and D.T. Lewis. 1990. Volcanic Glass Influence on Selected Soil Properties in Western Nebraska. Soil Sci. Soc. Am. J. 54: 1058-1060

Dixon, J.B., D.C. Golden, G.A. Uzochukwu, and C. C. Chen. 1990. Soil Manganese Oxides. In Boodt et al. Soil Colloids and their Association in Aggregates. Plenum Press, New York: 141-163.

Uzochukwu, G.A. and D.T. Lewis. 1986. Chemical, Physical, and Mineralogical Properties of Mitchell and Tripp soils in the Nebraska Panhandle. The Agricultural

Research Division. University of Nebraska, Lincoln, Research Bulletin 307

Uzochukwu, G.A. and D.T. Dixon. 1986. Manganese Oxide Minerals in Nodules of Two Soils of Texas and Alabama. Soil Science Society of America Journal. 50: 1358-1363.

Uzochukwu, G.A. and D.T. Lewis. 1983. Classification of Two Soils in Medical Textured Sediments on Platte River Terraces in Western Nebraska. Proceedings of the Nebraska Academy of Sciences. Morrill Hall, The University of Nebraska, Lincoln, Nebraska.

Uzochukwu, G.A. 1983. Properties, Genesis and Classification of Soils on Two Geomorphic Surfaces in the North Platte River Valley in Western Nebraska. Ph.D. Dissertation. The University of Nebraska, Lincoln, Nebraska.

Uzochukwu, G.A. and F. Gray. 1981. The Effect of Slope Aspects on the morphological Physical and Chemical Properties of Soils of a Mountainous area of Eastern Oklahoma.

Proceedings of the Nebraska Academy of Sciences. Morrill Hall, The University of Nebraska, Lincoln, Nebraska.

MISCELLANEOUS PUBLICATIONS:

Uzochukwu, G.A. 1990. Physical Geology: A New Laboratory Approach. North Carolina A&T State University, Greensboro, North Carolina.

Uzochukwu, G.A. 1990. Physical Geology: A New Laboratory Approach. North Carolina A&T State University, Greensboro, North Carolina.

Uzochukwu, G.A. 1989. Exercises in Earth and Environmental Science. North Carolina A&T State University, Greensboro, North Carolina.

Uzochukwu, G.A. 1987. Teaching Aid for Interpretation and Use of North Carolina Soils. North Carolina A&T State University, Greensboro, North Carolina.

WORKSHOPS AND CONFERENCES:

Uzochukwu, G.A. 1992. Development of Predictive Models for Natural Resource Management Soil Survey Conference, Raleigh, NC.

Uzochukwu, G.A. 1992. Methods of Waste Site Selection and Disposal. Conference Proceedings, ET/WM Workshop. San Juan, PR.

Uzochukwu, G.A. 1992. Portrait of Soils at a Waste Site in North Carolina, Agronomy Abstracts. American Society of Agronomy.

Uzochukwu, G.A. 1991. Waste Sites and Soil Problems in North Carolina Agronomy Abstracts. ASA-SSSA, Madison, WI.

Uzochukwu, G.A. 1991 Problems Associated with the Selection of Waste Sites in North Carolina. Engineering and Technical Conference on Waste Management, San Juan, Puerto Rico.

Uzochukwu, G.A. 1990. Environmental Implication of Expanding Minerals at a Low Level Radioactive Waste Disposal Facility. Agronomy Abstracts, p. 322. American Society of Agronomy, Madison, Wisconsin.

Uzochukwu, G.A., M.R. Reddy, R.J. McCracken and J.M. Bradford. 1989. Mineralogy and Strength of Three Piedmont North Carolina Soils. Agronomy Abstracts, p. 322. American Society of Agronomy, Madison, Wisconsin.

Uzochukwu, G.A. 1988. Energy Waste Disposal in Geologic Repositories. Center for Energy Research and Training Workshop. North Carolina A&T State University, Greensboro, NC 27411

Uzochukwu, G.A., M.R. Reddy, and S.J. Dunn. 1988. Solution to the Problem of Coincidence of Two Manganese Mineral X-Ray Peaks. Agronomy Abstracts, p. 309, American Society of Agronomy Madison, Wisconsin.

Uzochukwu, G.A. 1987. Manganese Oxide Minerals in Two North Carolina Piedmont Soil Nodules. Agronomy Abstracts, p. 276. American Society of Agronomy, Madison, Wisconsin.

Dixon, J.B., D.C. Golden, G.A. Uzochukwu, and C.S. Chen. 1986. Soil Manganese Oxide Minerals. Soil Colloids, Structures and Associations in Soil Aggregates, NATO workshop. Ghent, Belgium, September 3-7, 1984. In cooperation with ISS Working Group Studies of the Nature and Properties of Soil Science Colloid Surfaces.

McCracken, R.J. and G.A. Uzochukwu. 1986. Soil Information Resources and Technologies for Solving Waste Disposal Problem. 1986. Conference on Environmental Technology, Chapel Hill, North Carolina.

Uzochukwu, G.A. 1986. Toxic Metals Accumulation in Soil Nodules. Agronomy Abstracts. p. 37. American Society of Agronomy, Madison, Wisconsin.

Uzochukwu, G.A. and G.B. Reddy. 1986. Heavy Metals Accumulation in Selected Forages of Piedmont Region of North Carolina Agronomy, Madison, Wisconsin.

Uzochukwu, G.A. and J.B. Dixon. 1984. Manganese Oxide Minerals in Concretion of Two Soils of Texas and Alabama. Agronomy Abstracts. p. 276. American Society of Agronomy, Madison, Wisconsin.

Uzochukwu, G.A. and D.T. Lewis. 1983. Genesis and Classification on Soils in Medium Textured Sediments on Platte River Terraces and Piedmont Surfaces in Western Nebraska. Agronomy Abstracts. p. 193. American Society of Agronomy, Madison, Wisconsin.

FUNDED PROGRAMS:

National Science Foundation (PI) \$18,000

Investigation of near surface and subsurface geologic condition

Industry Cluster (PI) \$500

Particle size distribution of geologic materials

DOE (Co-PI) \$99,000

Oak Ridge Assoc. Universities

Mineralogical characteristics of rock salts and clays

USDA (Co-PI) \$70,000

Evaluation of S.E. soil properties for water erosion prediction

NSF/UNC Chapel Hill (PI) \$51,000

Career Access in Earth Ocean, and Environmental Science

DOE (Co-PI) \$250,000

Academic Partnership Program in Environmental Technology and Waste Management

USDA (PI) \$152,166

Instructional Resources and Outreach Program

NASA (PI) \$284,832

Development of Predictive Models for Natural Resource Management

NSF/UNC-CH (PI) \$136,000

Career Access Program for Under-represented Minority Groups

USEPA (PI) \$6,500

Environmental Internship for undergraduate students

USDOE-SR (PI) \$262,070

Infrastructure Support for the Waste Management Institute at NCA&TSU

HONORS/AWARDS

1991 Amoco Foundation Teaching Excellence Award

Cited in the 1992 WHO'S WHO Environmental Registry for Achievement in Environmental Industry

Cited in the 1994 WHO's WHO Among America's Teachers

OTHER ACTIVITIES

Active in University Committees

Environmental Workforce Outreach Coordinator (DOE)

HBCU/MI Environmental Technology and Waste Mgmt. Internship Coordinator.