• Welcome:
  o To campus for professionals from metro Atlanta’s environmental firms.
  o To the new Ford Motor Company Environmental Science and Technology Building. So new we haven’t even officially cut the ribbon yet – May 16.
  o Will tell you more about this building and the complex of which it is a part in a few minutes.

• Personal background:
  o Civil engineer who specializes in geotechnical engineering.
  o Have consulted on many projects during my career that have had a very significant environmental component.
  o Now rewarding to be in a position to influence the way in which an institution, Georgia Tech, goes about its work.

• Sustainability at Georgia Tech:
  o Momentum for a comprehensive approach to sustainability at GT began more than a decade ago. 1990: surveyed faculty – 200 researchers characterized their work as “environmental.” At same time, GRA formed with environmental technology as one of its fields of focus.
  o 1992: $1 million grant from GE Foundation to create Center for Sustainable Technology.
  o When I got here in mid-90s, reworked vision statement: “Georgia Tech seeks to create an enriched, more prosperous and sustainable society for the citizens of Georgia, the nation and the world.”
  o 1996-97: Sustainability Task Force met monthly for 15 months. Recommended that sustainability become integral part of GT curriculum, research, operation of campus, and economic development outreach programs. Will talk a little about each of these 4 areas.

• Incorporating sustainability into curriculum
  o Most universities offer a major and/or minor, and a few electives for other interested students. GT incorporates sustainability into curriculum, beginning with basic courses all underclassmen take.
  o Goal: all students will see their chosen profession through the prism of sustainability and understand the environmental impact of the decisions their profession makes.

• Campus Master Plan: sustainability in campus operations
  o Environmental Science & Technology (ES&T) Building: designed to capture run-off rainwater; “green” HVAC system, especially AC – no chemicals that contribute to ozone production.
Technology Square Management Building: registered for LEED (Leadership in Energy and Environmental Design) certification; will be only 2nd building in Atlanta to be LEED certified. (Emory nipped in ahead of us with their newest building.)

LEED buildings meet prerequisites for sustainable design, construction and operation and are awarded additional points in 5 other areas:

- Sustainable site planning
- Water efficiency and conservation
- Energy efficiency and use of renewable energy
- “Green” materials; conservation of materials/resources
- Indoor environmental quality

GT’s Management Building:

- Demolition and construction waste (including asphalt from prior parking lots) was recycled. Trees moved and replanted.
- White roof reflects heat.
- Recycled steel, recaptured gypsum in wall board, recycled carpet; flyash from power plant waste in concrete.
- Efficient building “envelope” features air barrier system.
- High-efficiency heating and cooling with no chemicals that contribute to ozone.
- Interior: “green” carpet, low-emitting paints and finishes, non-urea-formaldehyde binders. Copiers, janitor stations in separate, specially ventilated rooms.
- Recycling stations on each floor for ongoing recycling.
- Close to MARTA, bike stands, shower and changing areas.

Strategic plan: research that promotes sustainability in the broader world

- $340 million research operation; #2 in engineering research, #3 in research with and for private industry.
- Realized that new frontiers in research in the creases and gaps between traditional disciplines.
- Life Sciences and Technology Complex: creates “research neighborhoods” where faculty and students from different disciplines who work on the same type of problems can interact.
- ES&T Building: civil/environmental engineering, chemical engineering, chemistry, environmental biology, earth and atmospheric sciences.
- Environmental research:
  - Skidaway Institute of Oceanography (SkIO).
  - “Demanufacturing” and “remanufacturing”: designing products that break down into recyclable components at the end of their life, and developing ways to reuse those components.
  - Center for Innovative Fuel Cell and Battery Technologies: involved in 10-year, $500-million effort to develop innovative, inexpensive fuel cells for mainstream market.
  - Research into “brown cloud” over Asia
• Research into gas hydrates under sea floor (potential fuel source if retrievable, but also problem for oil drilling and for global warming if seas warm to the point where they melt).

• Air quality monitoring technology developed at GT in use around the world.

• Next generation of ozone monitoring equipment: NEXLASER makes ozone monitoring affordable, continuous, and available in real time over Internet.

• Over $30 million in contracts specifically for environmental research. Much of other research has environmental implications.

• Sustainability in **economic development outreach.**
  o ES&T Building: ATDC wet-lab incubator
  o Skidaway Institute of Oceanography: developing nearby ATDC incubator and business park.
  o EDI helps Georgia companies become more energy efficient and develop “green” strategies without compromising their ability to earn a profit.

• Important for engineers and scientists to contribute to policy discussions and decisions about the environment.
  o Air and water flow across many different political jurisdictions, and society asks politicians, who have little expertise, to make decisions about them.
  o From global conferences in Rio and Kyoto to our own “tri-state water wars” between Ga, Ala and Fla, it is clear that political solutions are very difficult. They invariably ask somebody to give up something, and nobody wants to volunteer.
  o Place for scientists and engineers at the public policy table:
    • Scientific data and computer simulations that provide a sound basis for environmental decisions.
    • Technology that enables conservation and preservation without sacrificing economic well-being.
  o Atlanta Mayor’s Clean Water Advisory Panel
    • Scientists and engineers from around nation.
    • Broadened what was initially perceived as problem with aging sewers to a long-term water sustainability plan.
    • GT to partner with city in research initiative.

• Other GT faculty active in policy arena:
  • Michael Chang: four-year study of regional air pollution in Columbus, Macon and Augusta along Fall Line will recommend strategies to local governments for air improvement.
  • College of Architecture: green-space acquisition support system for City of Atlanta.
  • Michael Farmer, School of Public Policy: resource in “tri-state water wars.”
  • Aris Georgakakos: designing water management system for Nile River Basin: gathers scientific data and uses it in computer simulations to see ramifications of decisions about water use by nations along the river.
• In the past we have tended to talk about preserving the Earth or the environment as if it were something apart from ourselves as humans. Now coming to realize that protecting the environment is really about preserving ourselves. We cannot destroy the planet Earth, but we can make it intolerable for human life, at which point homo sapiens will simply join the long parade of species that are vanishing from the planet.

• Preserving and conserving our environment and natural resources cannot be regarded a competing interest in our professions or our lives, but rather must be considered the playing field upon which all other interests intersect. At Georgia Tech we try to imbue everything we do – education, research, campus operations, and community outreach with a sense of sustainability and environmental responsibility.