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The Business of Sustainability
My Internship with Great Forest Inc.

Andrea Brady

Environmental Studies Internship

Professor van Buren

December 11, 2009

This past semester, I was fortunate enough to work with a wonderful, thriving environmental consulting firm here in New York. Great Forest Inc. was founded in 1989, “a time when the word ‘sustainability’ didn’t exist,” by an Australian native named Richard Fuller who wanted to provide the commercial sector with sustainability consulting and project management expertise (Fuller). Today, Great Forest publicizes that it “has worked with more than half of all commercial office space and hotels in Manhattan and over 1,500 buildings across the country” for clients who want their businesses to be more “green” (Home page). Even Fordham University has used the services of Great Forest (“Clients”). The mission of Great Forest is to “Improve Environmental Performance [and] Reduce Costs” (Home page). In order to fulfill its mission and achieve synergy between corporate success and environmental betterment, Great Forest offers six key services: sustainability assessments; waste and recycling consulting; waste brokering; energy solutions; ISO 14001 and 9001 programs; and LEED-EB Consulting.

The first service offered by Great Forest, sustainability assessments, consists of our consultants performing a walkthrough of a client’s site and then advising the client what changes need to be made in order to improve their site’s energy and water efficiency. This usually includes advising the client to switch to energy efficient light bulbs, change their recycling program, and install new aerators on their faucets (Fuller).

Waste and recycling consulting involves our consultants creating an initial waste assessment for the client and then working with the client to find a recycling system that will work best for their office or building. After our consultants help implement the personalized recycling system for the client, they then do quarterly follow-ups at the client’s site to make sure

that the site is not merely complying with local law, but that it is maximizing the amount waste that it recycles.

Waste brokering involves our consultants working with outside vendors who will subcontract our client's waste removal and recycled materials. The purpose of waste brokering is to make sure that our clients get the best deal possible on their solid waste contract with the waste hauler.

The energy solutions which Great Forest offers involve another form of brokerage on our part. Our consultants first meet with a client who will determines some type of energy goal they want for their office or building. Our consultants then assess the client's site energy efficiency and offer solutions for efficiency improvement.

One way Great Forest benchmarks our clients' environmental performance is by adhering to the ISO 14001 and 9001 standards. ISO, or International Organization for Standardization, 14001 and 9001 are world-wide industrial and commercial standards. The ISO 14001 standards involve environmental management, to minimize harmful impact to the environment caused by a corporation. The ISO 9001 standards involve quality management, to meet regulatory requirements and customer satisfaction ("ISO Standards").

Another way Great Forest uses to benchmarks our clients' environmental performance is by adopting LEED, or "Leadership in Energy and Environmental Design," guidelines. LEED guidelines and certification are a crucial force in Great Forest's work, so the LEED system deserves proper explanation:

LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy

savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts. Developed by the U.S. Green Building Council, LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions”(“LEED Intro”).

Our consultants guide our clients through the LEED process from beginning to end. The LEED certification process is a very in-depth one which involves cooperation with the outside engineers, building managers, property managers, and even custodial workers to contribute offer their knowledge and compliance. The LEED system which Great Forest uses is “LEED-EB” which measures the environmental performance of existing buildings. The five categories of environmental performance which LEED-EB measures are: Sustainable Sites, Water efficiency Energy & Atmosphere, Materials & Resources, and Indoor Environmental Quality (“Existing Buildings”). All of Great Forest’s current sustainability consultants are certified LEED professionals, meaning that they have been deemed by the U.S. Green Building Council as extremely qualified for evaluating and accomplishing environmental efficiency in commercial properties. As LEED certified professionals, Great Forest’s consultants know the best strategies for making sure that businesses can attain the highest level of LEED certification, which is determined by an extensive point system (See Appendix A).

At Great Forest, it was my job to aid our sustainability directors and consultants with any consulting and office tasks they needed. Throughout my four months there, I performed a variety of tasks so that the Great Forest staff’s day-to-day work would go smoothly. One task I which often did was inputting and updating the monthly energy use of all of our clients’ facilities via the “EPA’s Portfolio Manager” on energystar.gov. The purpose of recording this energy data is

to “benchmark” the energy use of our clients’ buildings, to monitor the clients’ progress in reducing their use, and to help them receive recognition from the EPA (“Portfolio Manager”). If our clients or any other businesses are able reduce their overall energy use by 10% or more, they could receive the exclusive title of “Energy Star Leader” from the EPA, which results in a heightened respect from both their clients and competitors (“Leaders”).

A second task which I performed was comparing the cost of different recycling programs and waste haulers for our clients. Under New York City’s Local Law 87, it is mandatory for city businesses to recycle. As waste brokers, Great Forest provides waste haulers with the types of materials our client request to have removed and then we compare the prices and services of the multiple bids which we later receive from the haulers. This helps enables our clients to save costs while complying with city law.

Another task which I occasionally did was creating carbon footprints for our clients. The purpose of calculating a carbon footprint for clients is to inform them of the current amount of carbon dioxide and other greenhouse gases which result from their business’ daily, monthly, or yearly operations (See Appendix B). Carbon footprinting is the most commonly used metric tool that organizations use to measure sustainability (Melaver and Mueller 87).

Another one of my tasks at Great Forest was recording various types of information from the LEED-Online web-site for our consultants, usually for their upcoming client status meetings. As mentioned previously, LEED provides an official framework for businesses who are attempting to be more environmentally sustainable. The LEED-Online website which we use monitors the “attempted” and “awarded” credits for each of our project sites and then determines which level of LEED certification the site will receive. My summaries of LEED conclusions were important for both Great Forest’s consultants and their clients because these summaries

helped them understand where they made strides and where they needed to improve in order for the client's site to gain LEED certification.

A final task which I did involved researching laws, facts, and products which pertained to our clients' operations. One example of this research included citing the specifics of a recent city law which requires certain property owners to provide a space for tenants to store their bicycles, for the purpose of promoting emission-free transportation. Another example of this research included compiling facts about the different types of waste disposal in order to persuade our clients to implement more in-depth recycling programs. Yet another example included comparing and contrasting the price, performance, and lifespan of biodegradable, degradable, and compostable trash bags. The various research which I performed responded to any questions which Great Forest's consultant or clients might have had and supplied them with cited evidence.

In my opinion, Great Forest expedites environmental progress by making it simpler for businesses to become "green." According to authors of *Green to Gold*, Daniel Esty and Andrew Winston, "adding an environmental dimension opens up new opportunities but adds another layer of complexity to the management challenge. Gaining an edge means learning new skills, operating in new ways, and working through some hard trade-offs" (23). These obstacles that business face are the reason why companies like ours exist and why they have such a great potential for success. Great Forest has become a successful business in my opinion because it is aware that many businesses which want to "go green," may not have the knowledge or management resources to do so. As a brokering consulting firm, Great Forest serves as a representative for its clients to help these clients achieve economically-affordable and environmentally-sustainable results. In my opinion, Great Forest's makes its clients' lives easier

in three ways. First, Great Forest consolidates and outlines all the necessary steps which our clients must undertake to become more sustainable. Second, Great Forest researches the costs of these steps and works to find the most competitive prices by requesting bidding contracts from multiple vendors. Third, Great Forest monitors our clients' progress to keep them on track of their self-imposed goals. I believe that if environmental consultants like Great Forest did not exist, fewer companies would achieve successful sustainability and efficiency results. These undertakings which Great Forest completes save its clients time and money and makes the choice to become sustainable more appealing for all businesses.

This past semester in my Environmental Politics class, I learned that there are three necessary steps for any successful environmental policy campaign. While Great Forest's work is not involved in the political campaign process, its work has absolutely shaped an environmental campaign. The first step which I learned is necessary for a campaign is "defining your issue." As mentioned before, Great Forest was founded because at the time there was not a critical awareness of environmental sustainability in the corporate sector. Its founder, Richard Fuller, thought that it was a crucial issue that businesses were not seriously concerned about their effects on the environment. By starting Great Forest, Fuller chose to make this an awareness issue. The second step for a successful campaign is "identifying who you want or need to influence." This paper should have already made it clear that Great Forest is focused on collaborating with the commercial sector for the purpose of achieving comprehensive sustainability. The third and final step is "identifying goals and benchmarks." By following LEED and EPA guidelines and by performing follow-up site evaluations, Great Forest has defined solid benchmarks for each client's site, regardless of the site's size or number of employees. Through this process, Great Forest has been able to achieve its ultimate goal of improving environmental performance while

reducing costs (Home page). Great Forest's environmental campaign raised the environmental standard for businesses. Great Forest has been responsible for the implementation of specialized waste removal and recycling programs in one-third of Manhattan office buildings (Fuller). This included a movement over the past decade which informed commercial building managers and tenants of the environmental hazards and fines associated with improper disposal of e-waste, ballasts, fluorescent tubes, batteries, and other mercury filled materials (Fuller). I believe that Great Forest's campaign for more efficient recycling of not only common waste, such as paper, plastic, and metal, but also hazardous waste, has been a great benefit for our environment. A typical municipal solid waste landfill generates methane and carbon dioxide emissions at a rate of approximately 0.15 cubic feet per pound of waste per year. These emissions "can pose serious safety risks in nearby structures when the gas accumulates at concentrated levels" (NYSDEC). Great Forest's work is crucial in preventing potentially re-usable waste from piling up in these landfills and harming our environment. Great Forest has raised the bar for businesses to become more sustainable by going above and beyond what local governments require.

I believe that my work over the past four months at Great Forest has contributed to the betterment of my environment. My preliminary energy use analyses and data pricing tabulations, while sometimes very basic, helped Great Forest's consultants become more prepared for their clients. My baseline analyses also saved the consultants time and energy while they focused on their own individual areas of expertise. Based on conversations with these consultants, I know that my work helped them become more efficient in responding to clients' needs.

By providing each of each of its clients with a personalized sustainability strategy, Great Forest's consultants are able to maximize the remediation of these clients' environmentally detrimental business practices. The substantial amount of carbon emissions and waste that many

businesses generate are compromising our environment's capacity to endure. "When we pollute and overuse nature's systems and trash nature's capacity to meet our needs, then we inevitably produce poverty, disease, starvation, and ill-health" (Cook 22). The harmful environmental effects of one business' practice may seem insignificant, but when the harmful practices of businesses are viewed collectively, we see the bigger picture. I believe that Great Forest should begin to focus more on publicizing the grander-scale problems that result from corporate unawareness. Great Forest is well-aware of these grand-scale problems since its non-profit partner, the Blacksmith Institute, also founded by Richard Fuller, is solely focused on eradicating the human health hazards caused by pollution ("Our Strategy"). If Great Forest works to publicize the large-scale relationship between human pollution and its harmful effects on our ecological system, I'm sure that more businesses, and households, will take the issue to heart and re-evaluate their current routines.

In the book, "Environmentalism and the New Logic of Business," the authors claim that there are three principles of capitalism which can help us understand the relationship between business and the environment. These are: "the principle of effects, which states that all of our actions have some environmental effects, and the effects of our actions of the environment can be both global and local; the principle of connectedness, which states that human life is biologically dependent on other forms of life and on ecosystems as a whole, including the nonliving aspects of ecosystems; and the principle of responsibility, which states that human beings have a moral responsibility for the effects of their actions" (32). Great Forest has made a positive impact on the environment through its belief that this type of connectedness between business and the environment is possible. Great Forest's goal is to work on behalf of businesses that practice the value of "corporate social responsibility" and to educate the businesses which

have yet to understand this value by proving that it can be profitable (“Sustainability”).

Interning at Great Forest helped me personally understand the connectedness of business and the environment as well as the idea that a business does not have to be non-profit to serve a greater good. Great Forest itself, is a for profit business, which seeks to rectify environmental issues. I was so pleased to be able to intern with a business that aims to raise environmental standards and to make its community better. My internship at Great Forest absolutely solidified my desire to pursue an environmentally-focused career.

I hope that in the future Great Forest will make the appropriate changes to enhance its performance as a corporate sustainability intermediary. On a smaller scale, I suggest that Great Forest remain up-to-date on newer metrics systems and national environmental standards. I know that our current “Sustainability Metrics” database only allows us to review one building at a time. I would hope that in the future we can create a database which will allow us to benchmark each building’s sustainability progress with that of its peers. On a larger scale, I suggest that Great Forest aims to expand its operations by opening offices throughout the country. I am aware that in addition to Great Forest’s headquarters here in New York, that it also employs consultants in Philadelphia, Washington D.C., Los Angeles, San Francisco and Chicago. However, these Great Forest consultants do not have the structured office space and resources which the consultants here in New York have. I think it would be in Great Forest’s best interest to both expand its staff and to re-distribute its financial resources so that it can open more offices throughout the country. Great Forest can start to build a strong client support system in other cities now by working with companies here in New York which already have multiple office locations throughout the country. Environmental sustainability consulting is not limited to New York. Great Forest could capitalize on its current relationships with national companies so that it

may have a relatively smooth transition into other cities, where it can then offer consulting to other local businesses. I have full faith that Great Forest will be able to achieve my proposed goals. In a mere twenty year period, Great Forest went from an up-and-coming consulting firm to a driving force in corporate sustainability procedure. It is remarkable to think that Great Forest was able to become so prominent in such a short period of time. I myself am twenty years old and for me to think that a business like Great Forest, with its humble Harlem office and fairly small consulting staff, could achieve so much in this time period, gives me hope for the future of environmental businesses. Great Forest's achievements cause me to believe that other environmentally ethical businesses, in addition to environmental regulatory agencies and non-profits, will be able to change the way people perceive the results of their on the environment.

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Appendix A

LEED 2009 for Existing Buildings: Operations & Maintenance Project Checklist

Sustainable Sites 26 Possible Points

- Credit 1 LEED Certified Design and Construction 4
- Credit 2 Building Exterior and Hardscape Management Plan 1
- Credit 3 Integrated Pest Management, Erosion Control, and Landscape Management Plan 1
- Credit 4 Alternative Commuting Transportation 3-15
- Credit 5 Site Disturbance—Protect or Restore Open Habitat 1
- Credit 6 Stormwater Quantity Control 1
- Credit 7.1 Heat Island Reduction—Nonroof 1
- Credit 7.2 Heat Island Reduction—Roof 1
- Credit 8 Light Pollution Reduction 1

Water Efficiency 14 Possible Points

- Prerequisite 1 Minimum Indoor Plumbing Fixture and Fitting Efficiency Required
- Credit 1 Water Performance Measurement 1-2
- Credit 2 Additional Indoor Plumbing Fixture and Fitting Efficiency 1-5
- Credit 3 Water Efficient Landscaping 1-5
- Credit 4 Cooling Tower Water Management 1-2

Energy and Atmosphere 35 Possible Points

- Prerequisite 1 Energy Efficiency Best Management Practices—Planning, Documentation, and Opportunity Assessment Required
- Prerequisite 2 Minimum Energy Efficiency Performance Required
- Prerequisite 3 Fundamental Refrigerant Management Required
- Credit 1 Optimize Energy Efficiency Performance 1-18
- Credit 2.1 Existing Building Commissioning—Investigation and Analysis 2
- Credit 2.2 Existing Building Commissioning—Implementation 2
- Credit 2.3 Existing Building Commissioning—Ongoing Commissioning 2
- Credit 3.1 Performance Measurement—Building Automation System 1
- Credit 3.2 Performance Measurement—System Level Metering 1-2
- Credit 4 On-site and Off-site Renewable Energy 1-6
- Credit 5 Enhanced Refrigerant Management 1
- Credit 6 Emissions Reduction Reporting 1

Materials and Resources 10 Possible Points

- Prerequisite 1 Sustainable Purchasing Policy Required
- Prerequisite 2 Solid Waste Management Policy Required
- Credit 1 Sustainable Purchasing—Ongoing Consumables 1
- Credit 2 Sustainable Purchasing—Durable Goods 1-2
- Credit 3 Sustainable Purchasing—Facility Alterations and Additions 1
- Credit 4 Sustainable Purchasing—Reduced Mercury in Lamps 1
- Credit 5 Sustainable Purchasing—Food 1
- Credit 6 Solid Waste Management—Waste Stream Audit 1
- Credit 7 Solid Waste Management—Ongoing Consumables 1
- Credit 8 Solid Waste Management—Durable Goods 1
- Credit 9 Solid Waste Management—Facility Alterations and Additions 1

Indoor Environmental Quality 15 Possible Points

- Prerequisite 1 Minimum Indoor Air Quality Performance Required
- Prerequisite 2 Environmental Tobacco Smoke (ETS) Control Required
- Prerequisite 3 Green Cleaning Policy Required
- Credit 1.1 Indoor Air Quality Best Management Practices—Indoor Air Quality Management Program 1
- Credit 1.2 Indoor Air Quality Best Management Practices—Outdoor Air Delivery Monitoring 1
- Credit 1.3 Indoor Air Quality Best Management Practices—Increased Ventilation 1
- Credit 1.4 Indoor Air Quality Best Management Practices—Reduce Particulates in Air Distribution 1
- Credit 1.5 Indoor Air Quality Best Management Practices—Indoor Air Quality Management for Facility Alterations and Additions 1

- Credit 2.1 Occupant Comfort—Occupant Survey 1
- Credit 2.2 Controllability of Systems—Lighting 1
- Credit 2.3 Occupant Comfort—Thermal Comfort Monitoring 1
- Credit 2.4 Daylight and Views 1
- Credit 3.1 Green Cleaning—High Performance Cleaning Program 1
- Credit 3.2 Green Cleaning—Custodial Effectiveness Assessment 1
- Credit 3.3 Green Cleaning—Purchase of Sustainable Cleaning Products and Materials 1
- Credit 3.4 Green Cleaning—Sustainable Cleaning Equipment 1
- Credit 3.5 Green Cleaning—Indoor Chemical and Pollutant Source Control 1
- Credit 3.6 Green Cleaning—Indoor Integrated Pest Management 1

Innovation in Operations 6 Possible Points

- Credit 1 Innovation in Operations 1-4
- Credit 2 LEED Accredited Professional 1
- Credit 3 Documenting Sustainable Building Cost Impacts 1

Regional Priority 4 Possible Points

- Credit 1 Regional Priority 1-4

LEED 2009 for Existing Buildings: Operations & Maintenance

100 base points; 6 possible Innovation in Operations and 4 Regional Priority points

Certified: 40–49 points

Silver: 50–59 points

Gold: 60–79 points

Platinum: 80 points and above

Appendix B

Pounds of CO₂ produced for 1 carton of each item (Rounded to the nearest hundredth)				
	Pen	Paper Pad	Plastic Bag	Total lbs of CO₂ for all items
3 Months in a Warehouse	0.80	0.80	1.00	2.60
Incineration	22.9	29.0	25.4	77.3
Shipping	5.16	7.60	5.70	18.46

Warehouse:

Goods for Good's warehouse is located in Fairfield, NJ. Great Forest's Sustainability Metrics data for PVH's distribution center in Pennsylvania was used as a starting point to calculate kWh per SF in RFCE (RFCE includes PA, NJ, MD and DE).

The PVH Schuylkill Haven warehouse is approx. 288,612 SF. The electric usage data for December 2007 was 205,000 kWh. Data from this month was selected because it represents the highest maximum kWh/month used by PVH in 2007.

The kWh per SF was then calculated by dividing 205,000 kWh by 288,612 SF, which equals 0.71 kWh per SF.

Goods for Good uses approximately 4,500-5,000 SF to store 350 pallets. Using their minimum SF and the PVH example above, it was determined that Goods for Good's total kWh results in roughly $0.71\text{kwh} \times 4,500\text{SF} = 3,195$ kWh per month.

Storage for three months equals $3,195$ kWh $\times 3 = 9,585$ kWh.

According to the EPA, 1 kilowatt of electricity in NJ produces 0.73 lbs of CO₂. The total lbs of CO₂ for three months can be calculated by multiplying 0.73 by 9,585 kWh, which amounts to 6,997.05 lbs of CO₂.

Each pallet is roughly 12.8 SF (4,500 SF divided by 350 pallets) and it was assumed that each pallet could fit either:

- 25 cartons of pens
- 25 cartons of paper pads –or–
- 20 cartons of plastic bags

Therefore, the total lbs of CO₂ for each SF equals 6,997.05 lbs of CO₂ divided by 4,500 total SF, which equals 1.5549 lbs of CO₂/SF.

The total CO₂ per pallet was calculated by multiplying 1.5549 lbs CO₂ by 12.8 SF, which equals 19.9915714 lbs of CO₂.

This information was broken down by carton, per our assumptions for # of cartons per pallet:

Plastic Pens: 19.9915714 divided by 25 = 0.79966286 lbs of CO₂.

Plastic Bags: 19.9915714 divided by 20 = 0.99957857 lbs of CO₂.

Paper Pads: 19.9915714 divided by 25 = 0.79966286 lbs of CO₂.

Incineration:

According to the EPA, incinerating 1 gram of plastic will yield 1.21 grams of CO₂ and 1 gram of paper will amount to 1.036 grams of CO₂.

Goods for Good reported to Great Forest that each carton of pens weighs 19 lbs and each carton of plastic bags weighs 21 lbs.

One pound equals 453.59237 grams. Therefore:

Each carton of pens equals 8,618.3 grams and each carton of plastic bags equals 9,525.4 grams. In addition, information obtained from officesupplynow.com tells us at a 6”x 9” 70-sheet spiral bound pad weighs 158.7 grams and that each carton holds 80 pads. Thus, one carton of paper pads weighs 12,700.6 grams.

The total CO₂ emissions generated from incinerating each carton can be calculated by multiplying the weight of plastic pens and bags by 1.21, and the weight of paper by 1.36.

Plastic Pens: 8,618.3 grams x 1.21 = 10,428.14 grams (22.9 lbs) of CO₂

Plastic Bags: 9,525.4 grams x 1.21 = 11,525.73 grams (25.4 lbs) of CO₂

Paper Pads: 12,700.6 grams x 1.036 = 13,157.82 grams (29 lbs) of CO₂

Shipping:

According to Carbonfund.org, a 'ton-mile' is used to calculate shipping (i.e. a ton of freight traveling 1 mile) and the emissions factor for sea freight is 0.0887 lbs of CO₂ per ton-mile.

In order to calculate ton-miles we need to know: the total number of shipments (A), the average weight of shipments in lbs (B) and the average shipping distance in miles (C). The formula for ton-miles is [(A)(B)(C)] divided by 2204.

Assumptions:

Number of shipments (A) = 1

Average weight of shipments (B) = 19 lbs for a carton of pens
 21 lbs for a carton of plastic bags
 28 lbs for a carton of paper pads

Average shipping distance (C) = 6745.8498 nautical miles between NYC and Malawi

Ton-miles for pens = [(1)(19)(6745.8498)] divided by 2204 = 58.2

Ton-miles for plastic bags = [(1)(21)(6745.8498)] divided by 2204 = 64.3

Ton-miles for paper pads = [(1)(28)(6745.8498)] divided by 2204 = 85.7

Finally, we can calculate the total lbs of CO₂ by multiplying the ton-miles by the sea freight emissions factor of 0.0887:

Plastic Pens: $58.2 \times 0.0887 = 5.16$ lbs of CO₂ per carton

Plastic Bags = $64.3 \times 0.0887 = 5.70$ lbs of CO₂ per carton

Paper Pads = $85.7 \times 0.0887 = 7.60$ lbs of CO₂ per carton