

## **EXECUTIVE SUMMARY: California Clean Tech Open 2006**

Project: **WASTEWATER FORESTS: Carbon sequestration and Oxygen generation**  
Company: **ED BURTON Company (EBC)** [www.edburtoncompany.com](http://www.edburtoncompany.com)  
[ebc@saber.net](mailto:ebc@saber.net)

**222 Franklin Ave.**  
**Willits, CA 95490**  
**Tel. (707) 459-6219 Cell. (415) 290 4990**

Team Leader: **Ed Burton, M.S.**

Team Mates: **Reinhold Ziegler, B.S.**

### **Opening Statement:**

Global warming is more troubling than the rising price of gasoline. While we can always invent another form of non fossil fuel transportation, ask yourself: How can we repair the damage that we have done to this Planet and our Biosphere? Are there any solutions that can generate meaningful employment and long term value as we rebuild the land and the natural capital which is Planet Earth?

Our company has the ability to add value to land and grow our own wealth. We have solar powered pumps, eco-chamber filters, living machines and trees, and thousands of biological cultures in the soil and water ready to work with us. We have the experience and we have done the research. What we need now is seed funding and management help to deploy the business plan to make this the beginning of a world wide green transformation. The demand and the business opportunity is global and it is real.

### **Description of the Offering:**

**EBC Ed Burton Company**, has developed “living machine” bio-technologies and a land and business plan for utilizing waste water from municipalities to sub irrigate Wastewater Forests. This solution will produce large stands of trees which sequester carbon dioxide into biomass, producing shade and micro-climate buffers, while utilizing a waste product that the U.S. and the rest of the world communities don’t know what to do with. Data gathered from 25 years of research and development reveal the efficacy of these bio-technologies and the value proposition that: global communities can grow their own wealth, utilizing human derived wastewater.

### **Concept and Plan:**

The concept is a business plan and a set of procedures for a sustainable development that could be implemented all over the U.S. and the World. EBC Company is prepared to implement public-private partnerships through community based Limited Liability Companies (LLC) and Land Trusts. Our company plans to license, sell, or lease our proprietary technologies to these new entities. The end product is an agro-forestry preserve of high value trees. This will have an assessed future land value of over \$500,000 per acre in year 20 with no taxes due until timber harvest.

The technologies that have been developed to bring about these developments is a set of biological rafts, enclosures, and chambers. These living machines using solar energy

and phytoplankton and zooplankton to transform untreated or treated wastewater from a waste treatment plant, into nutrient rich water. Utilizing solar photovoltaic panels, this water is pumped to a network of subterranean “eco-chambers” which release these nutrients to the roots of hundreds and eventually thousands of redwood trees. The trees grow at an accelerated rate because they are growing hydroponically. (roots immersed in the nutrient solution)

### **What problem are we solving?**

We are taking human waste-water and transforming it into products (trees) while sequestering carbon dioxide (CO<sub>2</sub>) from the atmosphere and dissolved CO<sub>2</sub> in water, replacing it with oxygen, while making the land and water more healthy and productive. We are doing this as a hedge against global warming. Some studies suggest that oxygen depletion is as serious as CO<sub>2</sub> increase.

### **What are the strengths and weaknesses of this technology?**

Conventional wastewater treatment within towns and cities can consume as much as 50% of a municipality’s energy. A good part of this electrical energy goes to pumping, stirring and spraying into the air with the hope of oxidizing the water. In our system, a forest of trees represent nutrient pumps for growing biomass and a 3 dimensional branching system for evapotranspiring clean water into the air. (Typical evapotranspiration rates for a mature redwood tree is about 450 gallons per day)

Our research of “biomimicry” has shown us that biological systems are surprisingly robust and adaptive over man-made engineered solutions. The public needs to be aware of not flushing heavy toxins, like dioxins or chemicals down their toilets. This can disrupt the biological organisms in the living machines. Our trees however are capable of phyto-remediation and can imbed these toxins, in tiny amounts into the biomass.

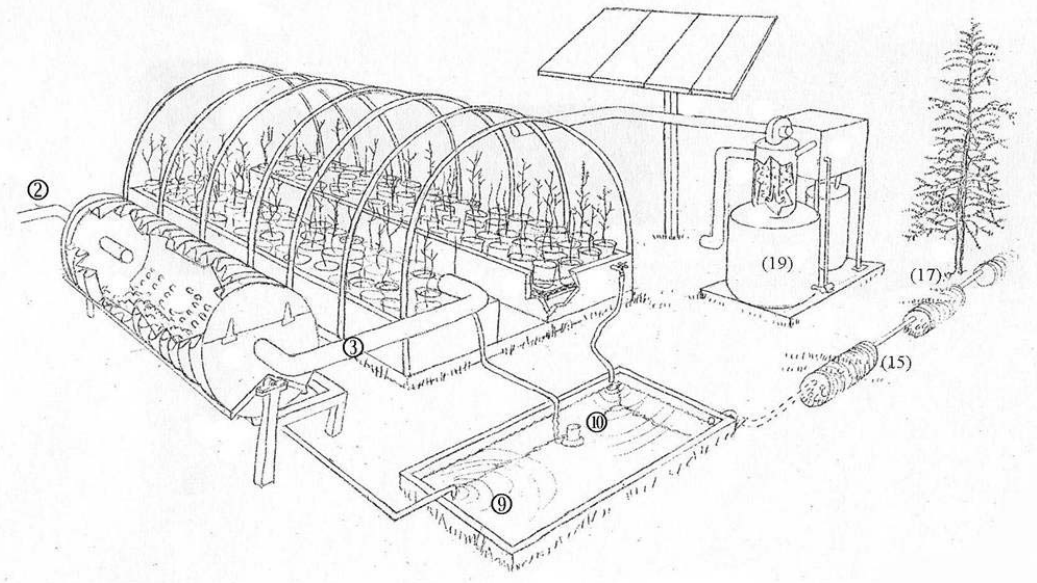
As any living system there should be continuous monitoring of the waste-stream with computerized monitoring and human operators.

### **What are the key underlying technologies?**

Water and nutrients are coming from an existing waste-treatment plant. Our biological systems are an adjunct to this existing infrastructure. Our key technologies include:

1. Solar Photovoltaic panels and Wind-Electric Systems.
2. Bioshelters Greenhouse
3. Aquatic basins for algae and fish ponds with the following action:  
The Algae Growing Pond absorbs dissolved CO<sub>2</sub> producing single celled algae which produces O<sub>2</sub> which is dissolved in the water. The algae and oxygen water is pumped up through a bed of redwood bark fiber where zooplankton eat the algae and breathe in some of the oxygen. The protein rich zooplankton returns to the algae pond and provides food for Koi Carp fish. Before returning to the algae pond the inch-deep oxygen and nutrient rich water is circulated by the base of the potted plants which grow hydroponically.

4. Pumps and Piping.
5. K-6 Eco-Chambers:
6. Electric J-barrow with Ground auger for transplanting.



The Burton Nutrient-Rich Water Processor.

The primary building system, GRIDBEAM™, is an open source technology. Biotechnologies are proprietary, patent pending and in some cases already patented.

**Feasibility:**

Our products and procedures have been undergoing active research and development for the last 25 years. There have been working demonstration projects of waste water forests constructed in Martinez, Sonoma State University and the private residence of Ed Burton.

With the help of registered sanitary engineers and scientists we have also proposed the Wastewater Forests through an EIR to the City of Santa Rosa, which generates 50 million gallons of wastewater per day. The City is now pumping their wastewater up to the geysers with the hope of recharging this geothermal source of energy. Total cost so far: \$ 180M. Return on investment: \$ 0.

All of our demonstration projects have produced valuable scientific data and good public acceptance. Any resistance comes from waste-water engineers themselves who have said:

*“Your system would cost several hundred thousand dollars to implement while conventional systems cost millions of dollars. I make 15% on a conventional system. There is not enough in it for me if I use your system. Besides, am a civil engineer not a biologist”*

Most environmental organizations, friends of the watershed, or friends of the river are in favor of Wastewater Forests. However, success will require that we:

1. establish a strategic partnership with cities and their waste and water utilities.
2. establish an educational program, an Internet site, and create a DVD that will state the problem and offer a solution, and that can be widely distributed.
3. Define the public/private partnership formats for community development organizations.

### **Market:**

We are coming out of an era where a gallon of gasoline cost less than a gallon of good drinking water. This has created many bad habits. A trip to the toilet utilizes 5 gallons of our drinking water. This multiplied 2 to 3 billion times per day and one gets the dimension of the problem.

The price of high quality spring water is going up. EVIAN ,which supposedly is glacier water, is now over \$ 7.00 per gallon.

If we decided as a world to stop global warming by planting millions of trees, there would not be enough freshwater on the Planet to do it. The answer - the only answer is to use Wastewater that has been properly treated by our living machines.

Our marketing response has come from city councils and communities who are engaged in their own “economic localization”. These communities see the sun, the wind, small hydro and biomass as renewable resources that need to be harvested. Wastewater is an underutilized resource for growing biomass. They need our technologies.

The second best marketing source comes from carbon traders who are looking to buy carbon credits. We are currently negotiating a master contract with [www.co2e.com](http://www.co2e.com) who are proposing to pay us \$ 2/ton for carbon dioxide that is sequestered by the trees. About 40% of a tree’s weight is carbon. The plan to plant thousands of acres of land with redwood trees and to be paid through greenhouse gas credits to sequester CO2 through the Kyoto Protocol and membership countries.

### **How do we reach this market and how fast?**

What is happening now is nothing short of a green and blue revolution. Every community is having to deal with landfill problems, how to deal with global warming, how to cogenerate electricity with the power grid utilizing roof-top solar and wind generators. What is the alternative to gasoline and the automobile? What to do with millions of gallons of wastewater is next, and fortunately, we have some very concrete answers and technological solutions!

A fast marketing campaign could be accomplished for about \$20,000 by producing a high quality DVD with a multi-language sound track and distributed to key decision makers. The DVD would show the key technologies and implementation of the forest plan.

### **Financials:**

If the land was provided to us by a municipality near a waste treatment plant. Then, not counting for labor, for \$25,000 per acre in expenses we could develop a redwood forest with 400 trees per acre, watered by K-6 Eco-Chambers and municipal wastewater which would create an assessed future value of \$ 350,000/acre in year 10. This land represents an agroforestry land trust bearing “living stock” “eco-lumber futures” a commodity that is better than money in the bank and that can be borrowed against without cutting down the asset. By the way, the asset is fully insured by insurance companies and is an Annuity that grows in value.

We have financial spreadsheets that have been perfected and are available for your inspection and verification.

**The Team:**

Team leader is **R. Edward Burton**, B.S. Forestry, M.S. Forest Engineering U.C. Berkeley is principal of Ed Burton Company. Mr. Burton is an eminent researcher of forestry products and aquatic environments and solutions for wastewater treatment some of which are in use world-wide. With over 23 patents and several highly successful enterprises under his belt, wastewater forestry represents a final achievement that pulls together over half a century of work.

**Reinhold Ziegler**, B.S. Environmental Design, Cal Poly, U.C. Berkeley, University of Hawaii is an ecological designer and renewable energy design engineer. Mr. Ziegler brings with him Bioneering experience from the Farallones Institute and his work with permaculture. His current focus is development of sustainable land trusts that incorporate renewable energy systems, innovative architecture, and energy farms and plantations that feature carbon sequestration and the production of oxygen..

The team operates in a research and development environment on a daily basis in Willits, California.

**Environmental and Societal Impact:**

Our company is like a 3 legged stool.

The first leg, represented by sustainability, makes sure that our projects become self-reliant and lead to self-sufficiency as a kind of proof of success.

The second leg, social justice, insures that our work also benefits the local community, our grand children, and society at large.

The third leg, financial performance, fulfills our commitment to our investors. It says that good performance needs to be rewarded with financial success.

