**Company Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Building Your Algae Farm**

Choose everything that you would like to buy for your algae farm with a **budget of $1000** (but real algae farms cost millions of dollars!). Try to maximize your algae production. You may invest in more than one option for each question.

Where will you build your farm?

|  |  |
| --- | --- |
| * West Coast
 | $700 |
| * East Coast
 | $400 |
| * Northern U.S.
 | $500 |
| * Southern U.S.
 | $600 |

What water source will you use?

* Freshwater $400
* Wastewater $100
* Seawater $200

What kind of reactor will you use?

* Open pond $100
* Closed reactor $300

What kind of algae will you grow?

* Diatoms $200
* Green algae $100

**Total Cost** (add up all the costs of the boxes you checked above) = **$**

**Where will you build your algae farm?**

Illustration by Barbara

Aulicino. Map from the article

“National Microalgae

Biofuel Production

Potential and Resource

Demand,” by Mark Wigmosta

et al. 2011.

*Water Resources Research.*

**Does this decide what water supply you will use?**

**What kind of reactor will you use?**

****

**Open pond reactors**

* Precipitation
* Evaporation (loss of water)
* Bacteria and predators get in
* Cheap



**Closed reactors**

* Expensive
* Easier to control
* No contamination
* Higher productivity
* Need to cool down
* Captures more light

**What kind of algae will you grow?**

****

**Green algae**

* Higher growth rates
* Smaller cells
* Less lipids per cell

**Diatoms**

* Require more nutrients (silica)
* Slower growth rates
* Larger cells
* More lipids per cell