**Lagoon Hut design exercise (Fluid Mechanics chapter)**

Instructions: Do your drawings on separate paper in dark, legible pencil or CAD. When you are done, turn in your work as an email attachment.

(100 points possible)

***“Design a mechanism to transport water from a Lagoon to your Hut”***

Your plane runs out of gas over the ocean on your way home from delivering emergency supplies to a remote village. You parachute out and wash up on a deserted island. You build a hut on a 50-foot-high hill for safety. The only source of fresh-water is a lagoon located 300 feet (and 50 feet down the hill) from your hut.

Using the “six simple machines”, design a mechanism which will transport 200 gallons per day from the lagoon to a stone-storage tank next to your hut. You must use “local materials”. The only man-made objects you have are a complete set of hand tools and numerous cans & bottles of various sizes, and things you can salvage from your airplane wreck.

Instructions: Carefully sketch out your proposed design, label everything, and describe how the system works.

Hints:

1. Your system can use levers, pulleys, wheels & axles, bamboo pipe, vine rope, carts on tracks, gears, propellers, rails, steam, cans & bottles, various kinds of pumps (show details!), suction power, and anything else you can make from local materials and/or the containers. (notice I didn’t place limits on ‘local materials’ – use your imagination, but don’t stretch it too much).
2. Lots of things can be used as the energy-source to transport the water (wind power, wave/tidal power, trees bending to and fro in the wind, steam power, rocks being lowered from a tree or rolling down a chute, bent branches, solar thermal power, fire, and on and on….).
3. You can’t just say, “From my hut I will direct my Drone to scoop up water from the lagoon…”. You need to use local materials.
4. You can’t move your hut or the lagoon.
5. Your system needs to be ‘hands-free’ once you set it in motion.