

The Hills of Green



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**Daunt to
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My hilltop looks wonderful in the spring when the grass is green and lush. But this time of year after the rains cease and the grass dries, the hillsides turn brown. Many years ago, the ranch pumped water through underground sprinklers, irrigating the surrounding pasture land. As a result, there was green grass around the houses. However, this took a lot of electrical energy to power the pump.

Even though purchasing electrical energy was much less expensive then, it was still costly. When the growing of green grass could be extended into the

dry summer months, more cows could benefit from the required irrigation. The cows and calves of the herd were able to utilize the green pasture, which offset the expense of pumping water into the sprinkler system.

Now, since I'm no longer in the cattle business as a commercial operation, the additional expense of purchasing electricity to pump water onto the dry hillsides to create green grass is not economically practical. I've been relying on gravity to irrigate only the pasture below the ditch for the past several years.

Using a system of small hand-dug ditches the water is released from a big ditch, and allowed to irrigate the ground. This keeps a small amount of grass green and growing,

creating nutritious feed for my limited herd of cows.

My oldest son fondly remembers when the commercial cattle ranch was in operation, and the pasture surrounding the houses was green all summer. In order to be able to sprinkle the hillside pastures above the ditch, my dad had to find an affordable method of lifting water.

His solution was to use electrical energy to power a pump which lifted water out of the ditch and up onto the hills. But the cost of electrical energy isn't economically feasible with only a small bunch of cows. Gas and diesel aren't practical either, even if an internal combustion engine powers a generator which creates electricity. Even if the internal combustion engine directly drives the pump, the cost of the fuel far exceeds the

value of the green grass.

My son wasn't going to be dissuaded from his dream of seeing the surrounding hills green again. He recalled from his younger years how wonderful the green looked, so irrigating the hillsides around the houses became a major project for him.

In previous years, I had considered the use of solar energy to run the pumps. Even though using sunlight to lift the water would certainly



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The solar array for the pump.

ly be more economically feasible, it still required a solar array, a pump capable of lifting a significant amount of water, and some method of distribution of the life-giving liquid onto the hills.

One fine day several months ago, a truck backed up to my garage and unloaded a large pallet. Everything piled on there was either in boxes, or securely wrapped with paper. My son explained, "This is everything we need to pump water onto the ground above the ditch and make the grass green again. It's a really efficient pump plus all the solar panels to power it." Then he hit me with the bomb. "I'm going to need you to put this together for me."

Since he lives in northern California, I was going to have to do some interesting construction and ultimately some even more interesting electrical work. Projects of this scope require serious planning and effort. But, he'd spent many weeks conferring with a company in the far northern end of California to design exactly what he wanted. When the design was complete, he had them ship all the pieces and

parts to me. His faith in his dad's electrical ability was gratifying, but slightly terrifying too. Could I really accomplish what he wanted done?

Over the past months, I cautiously explored the mysterious pallet. The boxes were opened and investigated. It began to recall one of my childhood memories. Even though I never owned one, I had friends whose parents had bought their son an Erector Set. I remember helping put together some amazing structures when I was visiting his house. The pallet of stuff delivered to my garage appeared to be nothing more than a Adult Erector Set.

There were hundreds of pieces and parts, exactly like in the days of my youth. There was also a master booklet showing how to put everything together, also similar to the set my friend owned. But this pile of pieces had something not required by the kids. It had and an all-important phone number. If I got stuck, or had questions, I could call the company.

The pipes for the rack to support the solar panels were soon cemented into the ground. Digging through the boxes

on the pallet, I carried some of the pieces to the site, and construction began. The instructions were excellent, and the pieces went to go together easily.

Working with the Grown-up's Erector Set wasn't terribly difficult and only required a couple calls to the company. Each time they were spectacular. Not only did they know what to tell me, they understood what I was doing, and were totally supportive. I was never surprised nor ran into a dead-end.

One day last week, I made the final electrical connections to the panels, hooked it all to the controller, and turned on the pump. When I discovered the pump shaft was rotating in the wrong direction, I called the company. I was told, "All you have to do is switch any two of the three wires leading to the pump."

When I threw the switch this time, the results were excellent. With the cap screwed back in place, the water flowed through the pipe and into a big storage tank. From there it will be allowed to flow by gravity to irrigate the hills which will certainly turn them green once again.



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With the wires properly connected, the pump spewed water out the open cap. As soon as the cap was screwed back in place, the water flowed obediently through the pipes.