

My "Green Project" began when my wife notified me that a gurgling sound could be heard every time the clothes washer emptied. Yep, my worst fears were confirmed -a damaged sewer line. To determine where the sewer line was obstructed I used a specially developed camera which included an above ground locator to pin point the exact location of the camera head. When I built my home, I mistakenly did not backfill properly and as a result the drain pipe severed at the foundation wall. *For you" do it yourselves" be sure to properly backfill when installing sewers. Place fine crushed stone on the underside of newly installed sewers especially where they pass through foundation walls.*

My home is all electric and the old heating system included a heat pump and as luck would have it, the pump was directly above the severed sewer line. According to manufacturer, the average service life of heat pumps is 15 years and my unit was 9 years past. Rather than take a chance on reusing the old system I investigated various options for a new home heating system and opted for a Geo Thermal type. My investigation determined that Geo Thermal heating is popular in other parts of the country but not so in Pennsylvania probably because this state is fortunate to have natural gas reserves and the cost of natural gas is lower in comparison. Even though a high efficiency natural gas furnace was my least cost option, I selected a Geo Thermal system for the following reasons;

- a 30% tax credit offered by the Government
- the energy usage is much lower
- the memory of my friends complaining of their home natural gas bills in winter.
- I think the price of natural gas is going to escalate.

The calculations for the design of my homes Geo Thermal system projected that three (3) below ground piping loops each 160 long were required to provide the necessary thermal heat transfer. I had 2 options available. Either drill 6 inch diameter holes vertically or dig trenches horizontally. In my situation I opted for trenches since we have a large yard and more importantly we had 40 old trees of locust and wild cherry and many were infested with ants. I decided to remove all the old trees as part of the project. The below ground piping system for the trench option is a high density plastic, ¾ inch ID shaped like a "slinky". This "slinky" piping was stretched over the length of the 3 trenches which were 4 foot wide and 6 feet deep. To improve heat transfer between the ground and the underground "slinky" piping system, I installed a low cost, fine stone dust product which is a waste generated in stone quarry operations. One ( 1) foot of stone dust was placed on the underside of the "slinky" and another foot on top.

Years ago this area of the country included beautiful elm trees which were prized for their shade. Unfortunately they were all destroyed by a blight but recently a new disease resistant elm has been developed. I planted five (5) of these new species elm trees where the old trees were located. The prime cherry wood was taken to a saw mill where it was cut into planks for use in future wood shop projects. The locust was sawed into fire wood and given to members of our Church community who burn wood. All the tree stumps and small diameter tree branches were pushed into a continuous pile across the backside of our property line which created a haven for the rabbits, ground hogs and birds.

Hopefully the special grass seed which I planted will be preferred by the deer over the vegetables in my garden.

Our average monthly heating bill is projected to be \$56/month and a side benefit to the Geo Thermal system is it preheats the water to our hot water tank. I measured the temperature of the water supply line leading into the house as well before the hot water tank. The water is preheated 37 degrees F which is a significant energy savings. You would be surprised of the percentage of your home operating cost the hot water tank represents.

If you're considering a new home heating system I suggest you consider Geo Thermal especially if the tax credit is offered in 2010 as well.

My geothermal heating system was installed by Levelgreen Plumbing and my comments relative to their performance are as follows;

1. During my technical evaluation they provided me with valuable technical information as well as the projected operating costs for the 2 systems which were under consideration.
2. Their technical and commercial representatives made at least 2 home visits to familiarize themselves with the details of the project as well answered a number of my questions. Before signing the contract they had a walk through and explained in detail what the plan included and what was to be expected.
3. The installation was conducted by various crews having experience in that facet of the project. The coordination between the work crews was impressive.
4. A commissioning specialist started the system and he provided me with temperatures taken at various locations throughout the system. This data convinced me that I selected an excellent technology.
5. When the project was completed the work area was cleaned by the workers and all garbage was taken off site. The installed system looks and is professionally done.

In brief, I am very satisfied with the geothermal heating system as well as the installation as provided

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