Habitat for Humanity and the Connecticut Geothermal Association
a world where everyone has a decent place to live
A Monthly Meeting of CGA
Back of house at time of purchase by Habitat for Humanity Northwest CT
Habitat for Humanity - Residential Retrofit Project
9 New High Street, North Canaan, Connecticut 06018

Ground Source Heating & Cooling
GeoExchange Borehole Site Plan

A Community Service Project by the
Connecticut Geothermal Association

Geothermal System Donors
and Volunteer Workers:
WaterFurnace International - Series 5 Heat Pump
Blake Equipment - Loop Pipe, Fittings, Water Heater
and B&D Flow Center
CT Valley Artisan Wells - Drilling 400' Borehole
Morris Industries, Inc. - 40' of 6" Steel Casing
Sims Drilling - Install Loop in Bore & Grout Bore
Preferred Pump - Grout and Silica Sand
A&B Cooling & Heating Corp. - Trench Loop,
Set up 3 ton Heat Pump & Start Check
Hydro-Dynamic Engineering - Flush & Purge Loop
and Donate and Install PG Antifreeze
Ground Energy Support - Geo Monitoring System
Nunnag Mechanical - Design & Aeroseal Ducts
Stafford Mechanical - Interior Piping
Geo Source Systems - Thermostats & V.I.P.
Litchfield Geothermal - Trench Supervision,
Coordination of Contractors, & Habitat Liaison.

Tape measured distances:
A to BT = 31'
B to BT = 57'
C to BT = 64'
A to BH-1 = 54'
B to BH-1 = 52'
A to mailbox = 102'
B-1 to EOPVmt = 22'
BT to BH-1 = 60' > 50'

1.4 acres or +

Call Before You Dig
(800) 922-4455
1/13/14 - 2/2/14
Scale 1" = 30'
Final Lawn Grade

4.5' deep trench

Soil

3" diameter concrete cores. HDPE sealed watertight.

Soil

Plastic ring

6" dia steel casing to ledge 40' estimated.

Bentonite Grout between HDPE and bore sides

Ledge rock

940 LF 1 1/4" High Density Poly Ethylene (HDPE) Pipe

HDPE Loop filled with 85% water & 15% biodegradable propylene glycol

U-bend

5' of Casing cut & removed

Piping to & from Heat Pump

Circulator Pump

Basement

Concrete Foundation

GEOTHERMAL CLOSED LOOP BOREHOLE CONSTRUCTION DETAIL
Floor plan with Loop to Basement
Tape measure shows future trench
Habitat Schedule for Geothermal Installation 2014
9 New High Street, North Canaan, Connecticut 06018

January | February | March | April | May | June

Building Permit
TAHD Permit
Groundbreaking Ceremony
Drill borehole
Loop & Grout
Excavate trench
Fuse and Core
Backfill
Seed and hay
Outside finished

Design Ducts
Install Ducts
Aeroseal Ducts
30 amp whip
NDH038 Heat Pump arrives
Circulator Pump arrives
Install Heat Pump
Install Circulator Pump
Interior Piping
Duct Plenum Connection
Installation Completion
Flush and Purge Loops
Add 15% Propylene Glycol
Verification of Installed Performance
Begin heating house
Inside finished

$1500 rebate application

$1500 rebate form
Dedication Ceremony
Drill Rig & Service Truck begin in February, 2014
Ground Breaking Ceremony 2/12/14
Town First Selectman (Mayor)
Habitat Manager Bill Conklin
Bill Conklin and 8 CGA Volunteers
Hutch drills 430 feet
Drilling proceeds though Snow Storm
1 ¼” High Density PolyEthylene U-bend donated by Blake Industries
Sima Well Drillers pump Bentonite Grout by Tremie Line
Tremie is removed as grout fills borehole. Grout donated by Preferred Pump.
Grouted and Capped Loop
Bentonite Grout sample
6” Steel Casing 130 feet to solid ledge, donated by Victory Steel
Considine Construction uses rock hammer in solid frost
Excavator begins trenching
5 foot Casing section removed
Loop ready for cutting and heat fusion
A&B Heating and Cooling fuses two 90 degree elbows from borehole to trench.
100 foot long trench from borehole to house about 4.5 feet deep.
Cored through foundation
Trench gets backfilled.
Tracer tape 12” below grade
Final grading
Inside partitions exposed.
Old oil burner is removed.
Ducts to go around existing wastewater plumbing pipe.
Saturday Volunteer Carpenters
A & B heating and cooling delivers 3 ton Series 5 heat pump
Heat Pump thanks to Jim Sansoucy, Territory Manager NE NY NJ for WaterFurnace International
Guy Wanegar of A & B Heating and Cooling, Past President CGA
Unit is set on table platform
Adam of A & B cores concrete
Loops pressure tested
Holding 100 psi
Thermal Conductivity Test is performed by Hydro Dynamic Engineering: John Sima
Nutmeg Mechanical design and fabrication: 1st Floor Red supply and Blue return ducts
Metal ductwork donated by Nutmeg Mechanical.
Floor is marked for supply register.
Local Carpenter Volunteer
# 3. Project Team Members - Geothermal for Habitat for Humanity March 2014

<table>
<thead>
<tr>
<th>Firm name</th>
<th>Address</th>
<th>Contact person</th>
<th>Email address</th>
<th>Project Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peter J Tavino Jr. PE PC</td>
<td>PO box 277 Litchfield, CT 06759</td>
<td>Peter Tavino PE, CSCE Member</td>
<td><a href="mailto:Pete@litchfieldGeothermal.com">Pete@litchfieldGeothermal.com</a> or <a href="mailto:PeterTavino@gmail.com">PeterTavino@gmail.com</a> or <a href="mailto:PeterJTJ@aol.com">PeterJTJ@aol.com</a></td>
<td>Contractor coordination, designer, trench inspection.</td>
</tr>
<tr>
<td>Habitat for Humanity NW CT</td>
<td>PO Box 1 Salisbury CT</td>
<td>Dawn Whalen &amp; Bill Conklin</td>
<td><a href="mailto:habitatforhumanitynwc@gmail.com">habitatforhumanitynwc@gmail.com</a></td>
<td>Owner</td>
</tr>
<tr>
<td>Connecticut Geothermal Association</td>
<td>P.O. Box 268, Rocky Hill, CT 06067</td>
<td>John Sima PE, President</td>
<td><a href="mailto:CTGeothermal@gmail.com">CTGeothermal@gmail.com</a> or <a href="mailto:info@geothermalconnecticut.org">info@geothermalconnecticut.org</a></td>
<td>Volunteer Association</td>
</tr>
<tr>
<td>Hydro-Dynamic Engineering, LLC</td>
<td>547 Shuttle Meadow Rd, Southington, CT 06489</td>
<td>John Sima PE</td>
<td><a href="mailto:johnsima@comcast.net">johnsima@comcast.net</a></td>
<td>Flush air from loop, add biodegradable propylene glycol antifreeze, perform thermal conductivity test</td>
</tr>
<tr>
<td>A &amp; B Cooling &amp; Heating, Corp.</td>
<td>PO 1356 South Windsor, CT 06074</td>
<td>Guy Wanegar</td>
<td><a href="mailto:abcoolingandheatin@yahoo.com">abcoolingandheatin@yahoo.com</a></td>
<td>Heat fuse, run trench loop into foundation. Set heat pump, with necessary connections up to start up.</td>
</tr>
<tr>
<td>WaterFurnace International</td>
<td>9000 Conservation Way, Fort Wayne, IN 46809</td>
<td>James Sansoucy</td>
<td><a href="mailto:jim.sansoucy@waterfurnace.com">jim.sansoucy@waterfurnace.com</a></td>
<td>Donate 3-ton horizontal Series Five water to air geothermal heat pump</td>
</tr>
<tr>
<td>Blake Equipment Company</td>
<td>4 New Park Rd East Windsor, CT 06088</td>
<td>Mark Henderson</td>
<td><a href="mailto:mark.henderson@blakeequip.com">mark.henderson@blakeequip.com</a></td>
<td>Donate the loop pipe in the borehole, the necessary fittings, the circulator flow pump &amp; a hot water tank.</td>
</tr>
<tr>
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<td>Contact Person</td>
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<td>Description</td>
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<tr>
<td>Nutmeg Mechanical Services, Inc.</td>
<td>130-3 Utopia Road Manchester, Connecticut</td>
<td>Steve Wierzbicki</td>
<td><a href="mailto:steve@nutmegmechanical.com">steve@nutmegmechanical.com</a></td>
<td>Design and aero-seal the supply and return air ducts.</td>
</tr>
<tr>
<td>Connecticut Valley Artesian Wells</td>
<td>58 Bond Street East Longmeadow, MA 01028</td>
<td>Joe Dilk</td>
<td><a href="mailto:Joe@ct-valley-arterianwell.com">Joe@ct-valley-arterianwell.com</a></td>
<td>Drill and case 423’ deep borehole</td>
</tr>
<tr>
<td>Sima Drilling Company</td>
<td>150 School House Road, Cheshire, CT 06410</td>
<td>Ray Sima</td>
<td><a href="mailto:simadrilling@necoxmail.com">simadrilling@necoxmail.com</a></td>
<td>Install loop and grout borehole</td>
</tr>
<tr>
<td>Preferred Pump, Morris Industries, Victory Steel</td>
<td>2201 Scott Ave., Fort Worth, TX 76103</td>
<td>Carlos Martinez</td>
<td><a href="mailto:cmartinez@morrispipe.com">cmartinez@morrispipe.com</a></td>
<td>Donated Materials: bentonite grout silica sand, steel casing</td>
</tr>
<tr>
<td>Geo Source Systems, LLC</td>
<td>21 South End Plaza, New Milford, CT 06776</td>
<td>Bill Seguin</td>
<td><a href="mailto:bill@geosourcesystems.com">bill@geosourcesystems.com</a></td>
<td>Installation of thermostats; Verification of Installed Performance</td>
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<tr>
<td>Stafford Mechanical Services Inc</td>
<td>4 Industrial Park Drive, Stafford Springs, CT 06076</td>
<td>Bob Polmatier</td>
<td><a href="mailto:bob@staffordmechanical.com">bob@staffordmechanical.com</a></td>
<td>interior plumbing &amp; duct work</td>
</tr>
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<td>Considine Construction</td>
<td>277 Ashley Falls Rd, Canaan, CT 06018</td>
<td>John Considine</td>
<td><a href="mailto:j.considine@snet.net">j.considine@snet.net</a></td>
<td>Excavate 100’ long trench &amp; backfill</td>
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<td>Ground Energy Support</td>
<td>2 Washington Street, Dover, NH 0382</td>
<td>Ruth &amp; Matt Davis</td>
<td><a href="mailto:rdavis@groundenergysupport.com">rdavis@groundenergysupport.com</a>, <a href="mailto:mtdavis@groundenergysupport.com">mtdavis@groundenergysupport.com</a></td>
<td>On line Monitoring</td>
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<tr>
<td>The Canaan Foundation</td>
<td>31 East High Street, East Hampton, CT 06424</td>
<td>Tom Schultz</td>
<td><a href="mailto:info@thecanaanfoundation.com">info@thecanaanfoundation.com</a></td>
<td>$1000 contribution toward duct materials. (Cash donations by CGA members toward drill fuel overruns too)</td>
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<tr>
<td>Wm. Perotti &amp; Sons Heating and Cooling</td>
<td>11 Furnace Hill Rd, East Canaan, CT 06024</td>
<td>Champ Perotti</td>
<td><a href="mailto:wperotti65@sbcglobal.net">wperotti65@sbcglobal.net</a></td>
<td>Duct installation and duct supplies</td>
</tr>
<tr>
<td>Emme, Inc.</td>
<td>Bristol, CT</td>
<td>Jon Brodeur</td>
<td><a href="mailto:jbrodeur@emme-inc.com">jbrodeur@emme-inc.com</a></td>
<td>Thermostat controls/damper</td>
</tr>
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Great Newspaper coverage.
Tradesmen to heat Habitat

Group to install geothermal system for latest project

BY RUTH EPSTEIN

CANAN — Some family will eventually have a warm, cozy home thanks to the green initiative of tradesmen.

The Connecticut Geothermal Association, wanting to get on the ground of helping Habitat for Humanity of Northwest Connecticut, has decided to install a geothermal heating and cooling system into the association’s latest project in High Street without a charge.

TO APPLY

Applications for 2013 Habitat for Humanity of Northwest Connecticut’s building committee, oversees Wednesday’s ceremony in Canaan. The Connecticut Geothermal Association donated a geothermal heating and cooling system for the house that Habitat for Humanity’s next project.

Bill Cawkin of Winsted, chairman of Habitat for Humanity of Northwest Connecticut’s building committee, oversaw Wednesday’s ceremony in Canaan. The Connecticut Geothermal Association donated a geothermal heating and cooling system for the house that Habitat for Humanity’s next project.

Members of the Habitat chapter, the association and community members gathered at the site Wednesday in sub-zero temperatures to hold a groundbreaking ceremony.

We were looking for a worthy cause and this is the best cause I know, said John Hines, speaking for the association. It’s a real community effort.

The project will be completed by a volunteer organization made up of heating and ventilation contractors who are working to help themselves and people save money.

This house on New High Street in Canaan is the latest project undertaken by Habitat for Humanity of Northwest Connecticut. A geothermal heating and cooling system was donated by the Connecticut Geothermal Association for the house.

This house on New High Street in Canaan is the latest project undertaken by Habitat for Humanity of Northwest Connecticut. A geothermal heating and cooling system was donated by the Connecticut Geothermal Association for the house.

The newspaper reported that a volunteer organization is made up of heating and ventilation contractors who are working to help themselves and people save money.

Litchfield County Times and Waterbury Republican American Newspaper full length feature articles and color pictures.
Aqua Turf Club, site of Connecticut Society of Civil Engineers Awards Dinner
CGA advertises in CSCE Awards Program, thanks to WaterFurnace International
American Society of Civil Engineers
President welcomes attendees
George Massey, Bill Seguin, Bill Conklin, Guy Wanegar, Peter Tavino
Seated: Jim Sansoucy, Mark Henderson, Ray Sima & John Sima
CGA display at May Awards Dinner
Wooden Plaque for Environmental Achievement in Civil Engineering (ACE) Award of Merit
Peter Tavino and Habitat for Humanity
NWCT Executive Director Dawn Whalen
Spring, 2014, borehole is covered
Plywood ready for duct registers
Champ Perotti begins installing ducts
Supply ducts to serve first floor above
Return Air Boot Fittings.
Return (left) and supply (right) plenums attached to the Series 5
1st floor supply and return complete.
Blown in insulation on the job. (Related but not Geothermal Volunteers)
Paid Worker cuts fabric to fill partitions.
Ceiling to be R48 above plastic sheathing. 2 x 6 walls have no moisture barrier.
Sheet rocking by other volunteers
Separate duct supply for basement
Good Wall Insulation + Ducts
Next step is to hook up circulator pump. System should be good to go for this winter!
Many thanks to everyone involved with Habitat for Humanity Northwest Connecticut and,

Special thanks to the very active and successful members of the Connecticut Geothermal Association.