

ADVANCED GEOTHERMAL TECHNOLOGY

by ECR Industries, Inc. makers of

The Great Aire Comfort System™

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Mr. Jerry Farrell Jr.
Commissioner
Department of Consumer Protection
Room 103
State Office Building
165 Capitol Avenue
Hartford, CT 06106

April 22, 2008

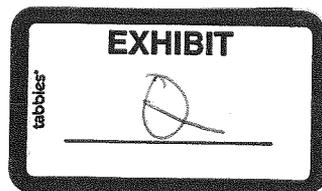
Re: Intent to Amend the CT Well Drilling Regulations

Dear Mr. Farrell:

I would like to submit this summary as part of a power point presentation on the Field Installation Process that we use at Advance Geothermal Technology. I am the Field Manager and I take great pride in our Installation Process. We have had our drilling equipment and trained people since 1990 and have drilled in many states, including Connecticut. We have very stringent Quality Control procedures to ensure our systems are installed safely, properly, cost effectively, and in accordance with all environmental regulations.

Our employees are in a continued value added educational process that prepares our company staff with advanced technical training to ensure that our system is second to none. This presentation is for informative purposes to show that installing Direct Exchange (DX) Geothermal Systems is specialized and unique. A well driller, mechanic, or plumber is not a qualified DX system installer. It requires specialized training and knowledge. The following attachment is a summary to coincide with the power point presentation.

I hope that the presentation will indicate the need to have regulations drafted with the help of the DX Geothermal Industry and that each type of system should have its own applicable regulations. Thank you for your time and if you would need any additional information, please contact me at your convenience.



Sincerely,

Charles Wynosky
Field Manager

w/ attachments:

Attachment 1

Advanced Geothermal Installation Process

- **One Call & Permitting**

- Every state has its own name for this national service. In Connecticut it is “Call before you dig”. This service requests all of the applicable utilities to locate and mark their utility lines at the respective property.
- When an order comes in a search to each state, county, and local agencies are contacted for their permitting requirements. After the proper permits are secured, the job is scheduled.

- **Assessing the Area**

- When arriving at the property location an assessment is completed to physically locate all the utilities. The property owner is also interviewed to determine if there are any non public utility services installed, such as overhead or underground electric, phone, septic systems or drain fields that would not be located by “Call before you dig”.

- **Completing a Location Form**

- A form is completed indicating the location of all the utilities, house, driveway, drill location, and later the pit and drill holes. The owner acknowledges the locations and is given a copy.

- **Marking the Field**

- From the information gathered and system ordered, a drill pattern is determined and marked.

- **Drilling the Field**

- The drill rig is moved into place and the holes are drilled.

- **Earth Taps are Installed**

- The Earth Taps (loops) are installed after each hole is drilled.

- **Drill Log**

- A log is completed and made part of the jobs permanent record. Some of the information recorded is the date, customer, address, contact numbers, driller and helper, hole number, location, depth to water, material strata encountered, depths, circumstances encountered, drill issues, hour meter readings, visitors, etc.

- **Trench & Pit Excavation**

- Starting at the house a trench is excavated to the pit. The operator and helper are aware of the utility locations and watch for any potential unexposed obstacles. When the pit area is reached, the excavation proceeds very carefully around the Earth Taps (loops) and the pit is completed.

- **Installing the Manifolds**

- The earth taps are cleaned, inspected, prepared, and connected to the appropriate manifolds. The entire system is purged with nitrogen and then each connection is brazed and visually inspected using a mirror where necessary.

- **Installing the Line Sets**

- The insulated line sets are then installed from the manifolds to the house. An anode for cathodic protection is connected to the line set, the system is purged with nitrogen and then brazed and visually inspected.

- **Pressure Testing**

- The entire system is pressurized to 450 PSI. Each joint is touched, soaped, and submerged to check for leaks. The system is pressure monitored for at least 90 minutes.

- **Grouting the holes and encapsulating the Manifolds and Line sets**

- The holes are then grouted and the manifolds / line sets are covered with sand. Caution Tape is then laid in the trench and pit as a precaution for future excavation. There is no need for indicator tape as the copper tubing is detectable.

- **Installing a Stand Pipe and Flooding the sand in the pit**
 - A polyethylene stand pipe is installed to act as a locator for the field and the sand is flushed to ensure settlement.

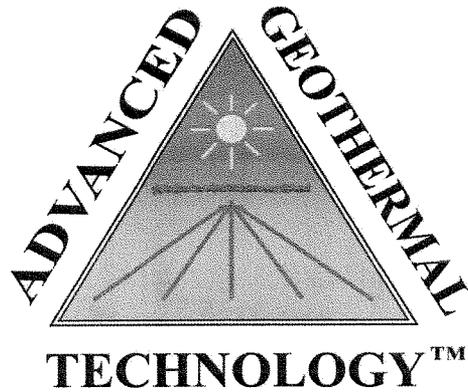
- **Backfill & Grading**
 - The site is then carefully backfilled and graded making sure there is no possible damage to the system. The area is allowed to settle naturally.

- **Removing the Pressure Gages**
 - After all of the field work is complete the gages are checked to ensure the system pressure test passed our Quality Control standards. The gages are removed and the system will remain pressurized with nitrogen until the HVAC installation crew installs the remaining system components.

Attachment 2

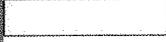
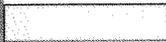
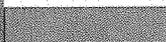
Power Point Presentation

The Installation Process

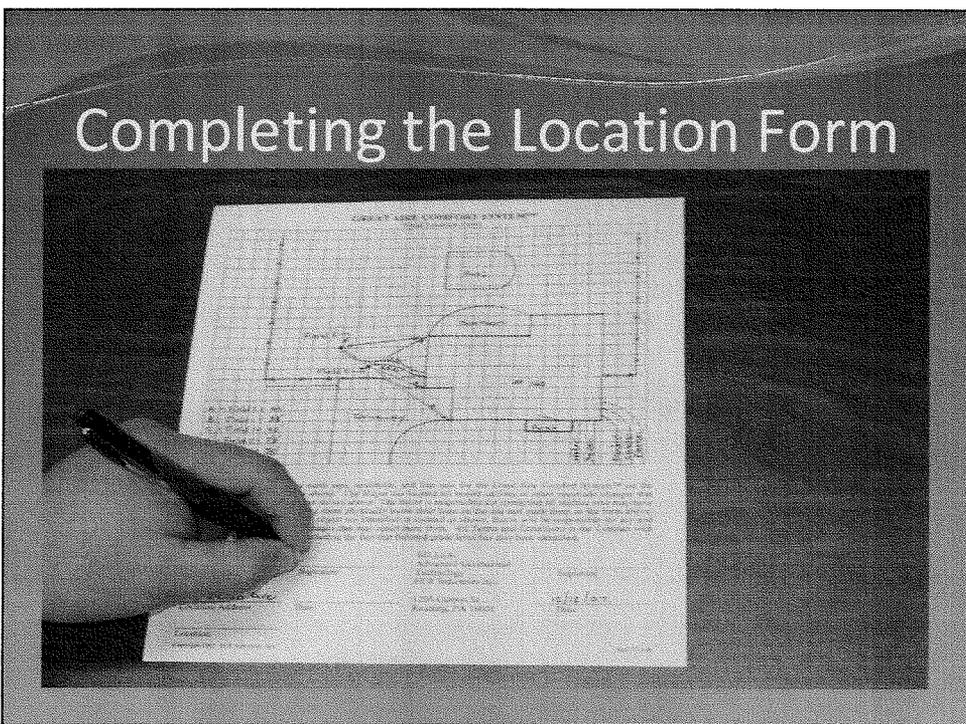
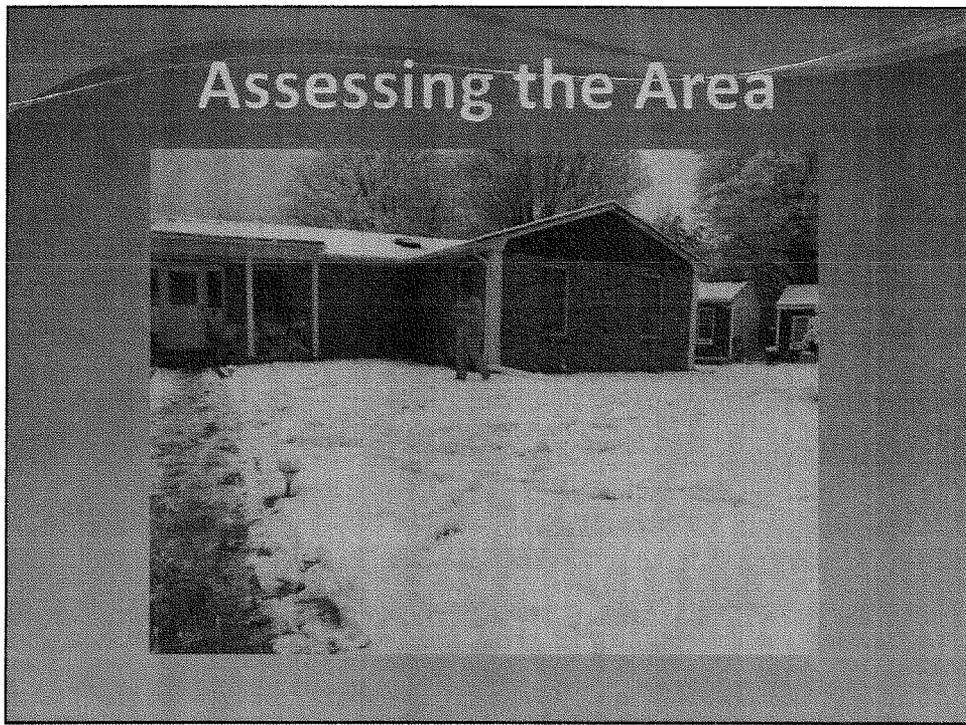


ONE CALL

State Law requires 3 business days notice .

	WHITE - Proposed Excavation
	PINK - Temporary Survey Markings
	RED - Electric Power Lines, Cables, Conduit and Lighting Cables
	YELLOW - Gas, Oil, Steam, Petroleum or Gaseous Materials
	ORANGE - Communication, Alarm or Signal Lines, Cables or Conduits
	BLUE - Potable Water
	PURPLE - Reclaimed Water, Irrigation and Slurry Lines
	GREEN - Sewers and Drain Lines

Check State & Local Permit Requirements



Marking the Field



Drill Rig at Work

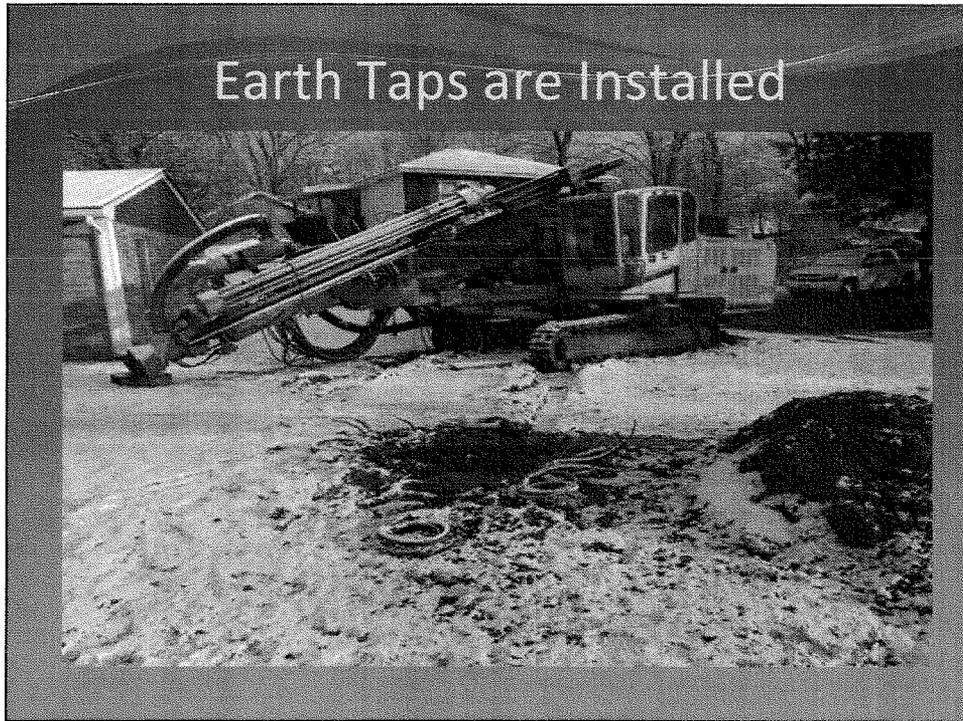


Drilling Close Up



First Taps In





Drilling Log

Drilling Log 2

Project	Doe, John		Drilling Contractor	ECR Industries, Inc.	
Date	1/9/2008		Drillers Name	Charlie	
Location	160 Clover Road Anytown, PA 19974		Drill Equipment	IR 670	
Name	Charlie/Tony		Hammer Model		
Arrival Time	9:15		Air Compressor		
Leave Time	17:00		Type of Bit	3-1/2" retrac bit w/ T45 Steel	
Mileage	158 RT				

Site No.	Direction	Start Time	Finish Time	Drill Time	Water Depth	Hole Depth	Length ET Out	Notes
Field #1								
7	NE	9:15	9:56					5508 Hrs. Added 2 gal Hydraulic Fluid, 1 qt Compressor Fluid, 4 oz Rock Drill Oil, filled w fuel 3/4 tank
8	NNE	10:45	11:44	49		70		ETap
Field #2								
1	NW	12:00	12:40	40		70		0-6 overburden, 5-70 dry red rock-dusty, installed 70' ETap
2	N	12:40	13:24	44		70		0-6 overburden, 5-70 dry red rock-dusty, installed 70' ETap
3	NNE	13:24	14:16	61		70		0-6 overburden, 5-70 dry red rock-dusty, installed 70' ETap
4	E	14:15	15:00	48		70		0-6 overburden, 5-70 dry red rock-dusty, installed 70' ETap
5	ESE	15:03	15:38	32		70		0-6 overburden, 5-70 dry red rock-dusty, installed 70' ETap
6	S	15:38	16:00	25	22	40		0-4 overburden, 4-40 rock, 22' lots of water, installed 40' ETap
7	SSW	16:00	16:30	30	20	40		0-4 overburden, 4-40 rock, 20' lots of water, installed 40' ETap
		16:30	17:00					Moved drill, prepared for shipment
Drilling Time			4:47					
Total Hours			7:45					

Also log outages for equipment maintenance, coffee breaks, lunch, etc.

Date	Drilling Hours	Hours
1/8/2008	4:17	6:45
1/9/2008	4:47	7:45
Total	9:04	14:30

Trench Excavation



Trench Half Way Complete



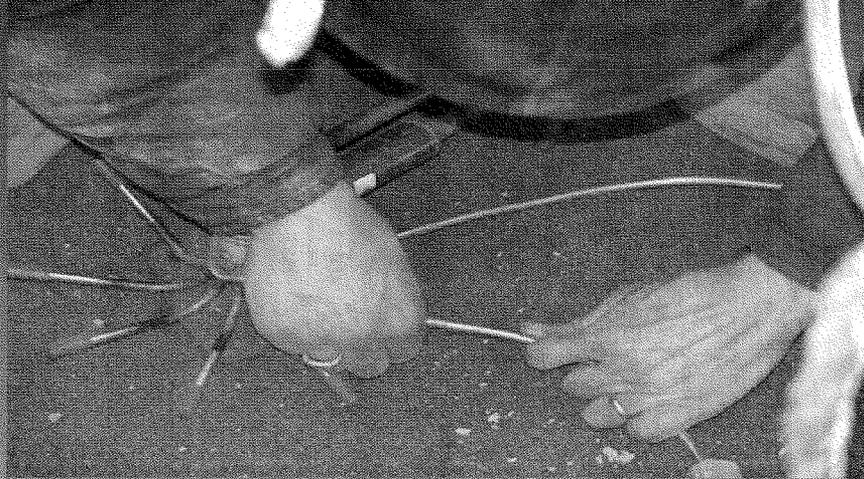
Pit Excavation



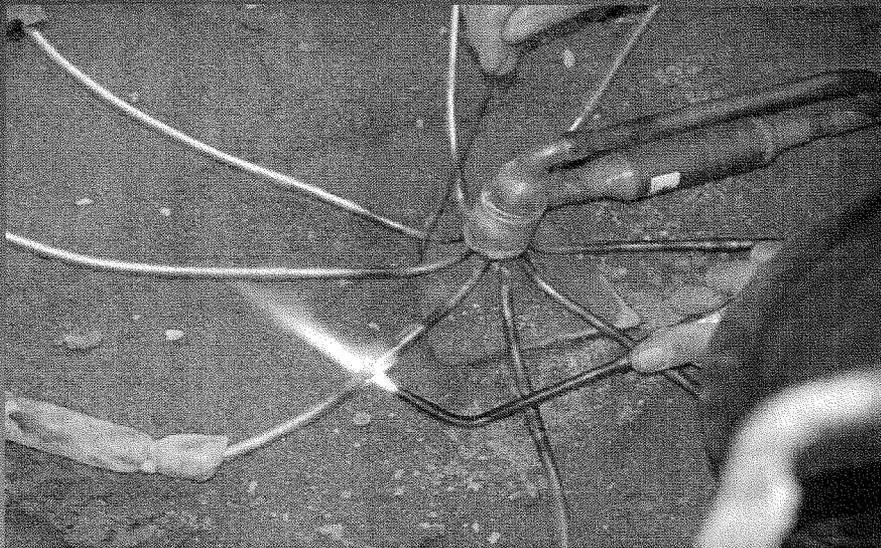
Earth Taps – Pit is Ready



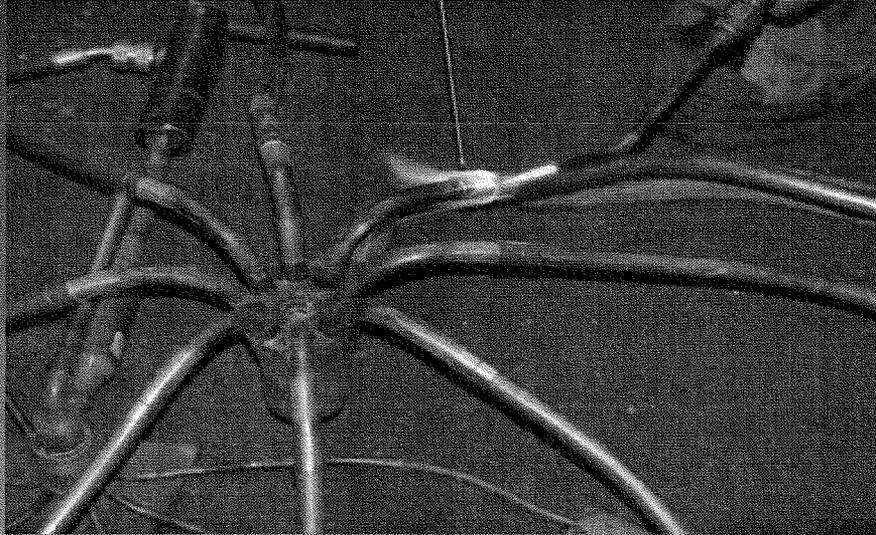
Installing the Manifolds Connecting the Liquid Lines



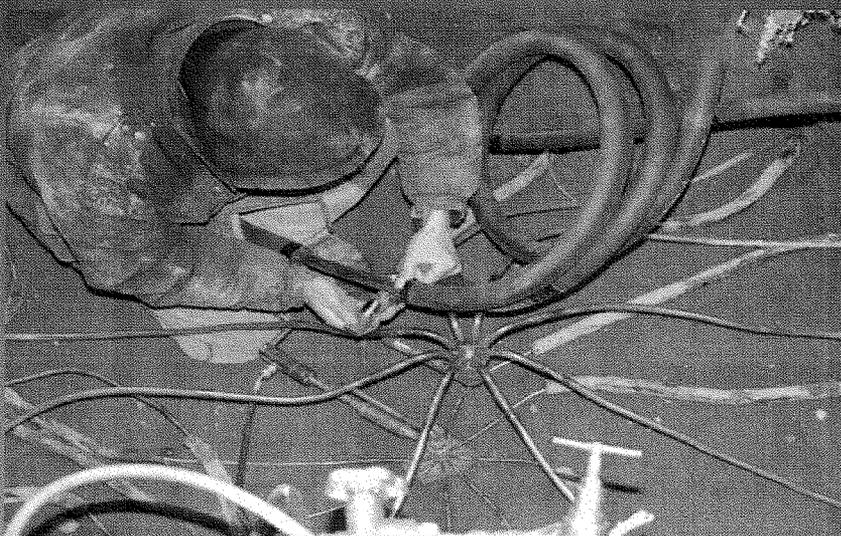
Brazing the Liquid Lines to the Manifold



Brazing the Gas Lines to the Manifold



Installing the Linesets



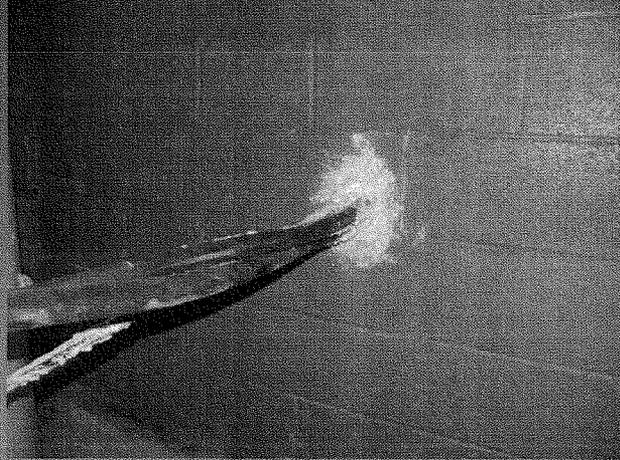
Installing the Linesets and anode



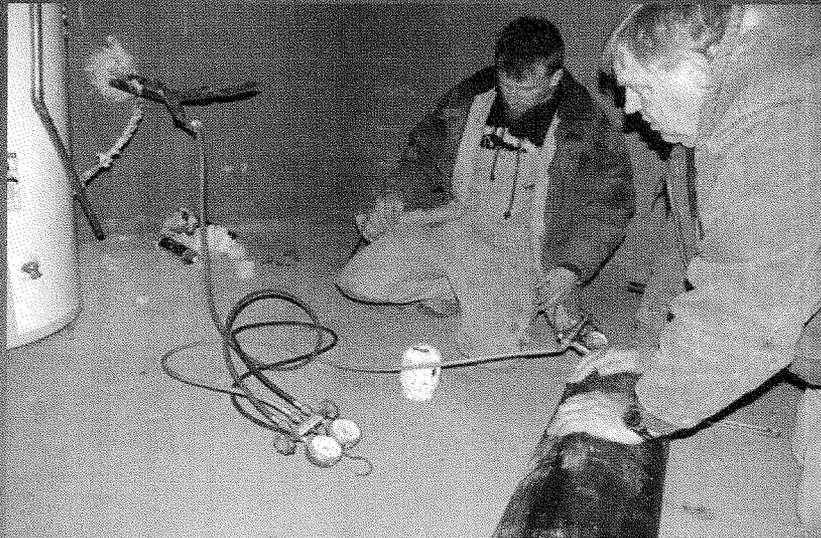
Drilling Through the Foundation



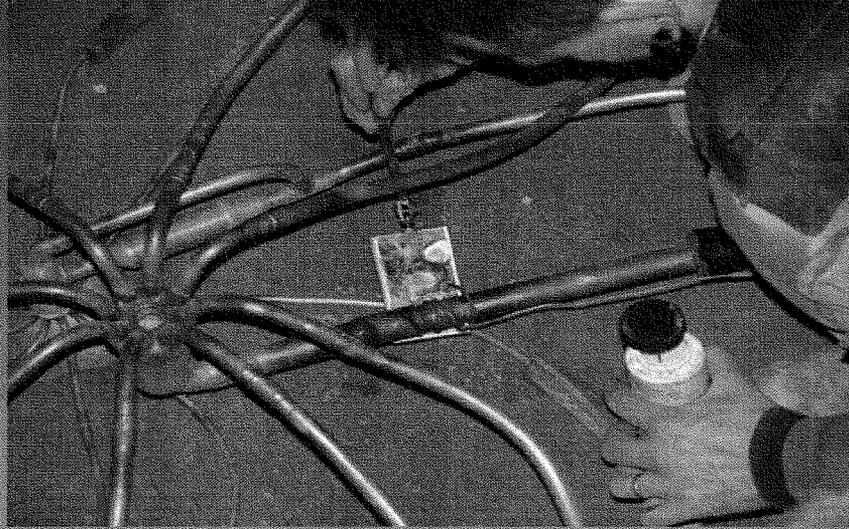
Linesets Through the Foundation



Pressure Testing the Field



Bubble Testing the Braises



Adding Sand to the Pit



Grouting Around the Earth Taps



Installing the Stand Pipe after Float Test



Backfilling Pit



Finish Grading



Outside before Seeding



Installing the Compressor



