

C 1 8794

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

FILL IN THIS FORM COMPLETELY PLEASE TYPE

COUNTY NUMBER A 522941

ST/GO USE ONLY DATE RECEIVED MM DD YY 8 13

DATE WELL COMPLETED MM DD YY 11/18/07

Depth of Well 22 400 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" H0-95-0621

OWNER BLUKHER VLADIMIR STREET OR RFD 4055 Manor Ln TOWN Ellwood City SUBDIVISION SECTION LOT

WELL LOG table with columns: DESCRIPTION, FEET (FROM, TO), check if water bearing. Includes entries for Top Soil, Brown Shale, Brown M'ca, Gray M'ca, Brown M'ca, Gray M'ca, opening, Gray M'ca.

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED YES NO Y N

CIRCLE APPROPRIATE LETTER A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT...

DRILLERS LIC. NO. 1 M D 040 DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION) LIC. NO. 1 J S D 038

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD WELL HAS BEEN GROUTED (Circle Appropriate Box) Y N TYPE OF GROUTING MATERIAL (Circle one) CEMENT CM BENTONITE CLAY BC NO. OF BAGS 36 NO. OF POUNDS 3600 GALLONS OF WATER 216 DEPTH OF GROUT SEAL (to nearest foot) from 0 ft. to 65 ft.

CASING RECORD casing types insert appropriate code below MAIN CASING TYPE ST 6 Nominal diameter top (main) casing (nearest inch)! 63 Total depth of main casing (nearest foot) 80

OTHER CASING (if used) diameter inch depth (feet) from to

SCREEN RECORD screen type or open hole insert appropriate code below ST BR HO PL OT

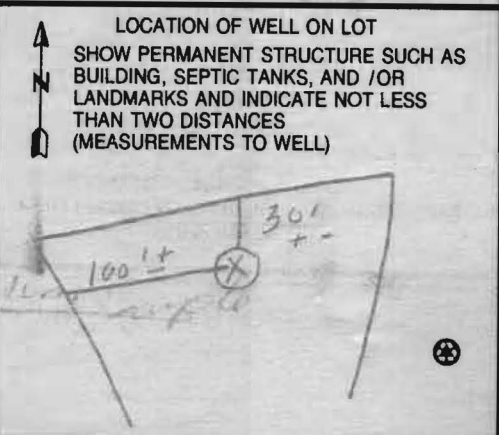
DEPTH (nearest ft.) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER) T (E.R.O.S.) W Q TELESCOPE CASING LOG INDICATOR OTHER DATA

PUMPING TEST HOURS PUMPED (nearest hour) 3 PUMPING RATE (gal. per min.) 20 METHOD USED TO MEASURE PUMPING RATE Bucket WATER LEVEL (distance from land surface) BEFORE PUMPING 92 ft. WHEN PUMPING 82 ft. TYPE OF PUMP USED (for test) S submersible

PUMP INSTALLED DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS. TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. CAPACITY: GALLONS PER MINUTE (to nearest gallon) 31 35 PUMP HORSE POWER 37 41 PUMP COLUMN LENGTH (nearest ft.) 43 47 CASING HEIGHT (circle appropriate box and enter casing height) + above 49 LAND SURFACE - below 2 (nearest foot) 50 51



B 1 7178

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND APPLICATION FOR PERMIT TO DRILL WELL

STATE PERMIT NUMBER

Ho-95-0621 fill in this form completely

525665 please type

Date Received (APA) 12/14/2006

OWNER INFORMATION

BLYUKHER VLADIMIR 4655 MANOR LANE ELLICOTT CITY, MD 21042

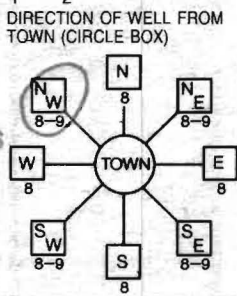
LOCATION OF WELL

Howard COUNTY 23 SUBDIVISION Columbia NEAREST TOWN 4655 Manor Lane

DRILLER INFORMATION

George F. Easterday MWD# 040 L. Franklin Easterday, Inc. 9265 Brown Church Rd., MT. Airy, Md. 21771

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



4655 Manor Lane NEAR WHAT ROAD ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX) DISTANCE FROM ROAD 250 ENTER FT OR MI 38 39 TAX MAP: 29 BLK: 5 PARCEL 7

WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.) 5 AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) 500

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION) INDUSTRIAL, COMMERCIAL, DEWATERING PUBLIC WATER SUPPLY WELL TEST, OBSERVATION, MONITORING GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER HEALTH DEPARTMENT APPROVAL

Howard COUNTY NAME 13 A522941 COUNTY NO. STATE SIGNATURE DATE ISSUED 12/28/06 CO SIGNATURE EXP. DATE 12/28/07 NORTH GRID 513 000 EAST GRID 0831 000

APPROXIMATE DEPTH OF WELL 398 FEET APPROXIMATE DIAMETER OF WELL 8 INCH NEAREST

METHOD OF DRILLING (circle one)

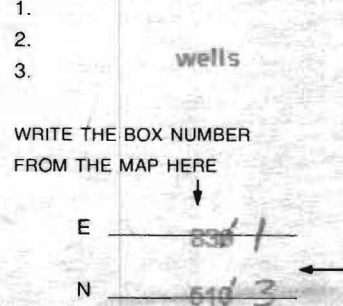
BORED (or Augered) JETTED Jetted & DRIVEN AIR-ROTary AIR-PERcussion ROTARY (Hydraulic Rotary) CABLE REVerse-ROTary DRive-POINT

REPLACEMENT OR DEEPEINED WELLS (CIRCLE APPROPRIATE BOX)

- THIS WELL WILL NOT REPLACE AN EXISTING WELL THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS THIS WELL WILL DEEPEIN AN EXISTING WELL PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPEINED (IF AVAILABLE) 41

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER



DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION 1501

1/22/07 Radium Sample Collected During Yield Test (BB)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER G PERMIT No. HO-95-0621

SPECIAL CONDITIONS

NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED Must Abandon and Seal Ex Well Cedar Lane Radium Sample COLUMBIA

**HOWARD COUNTY HEALTH DEPARTMENT
BUREAU OF ENVIRONMENTAL HEALTH
WELL & SEPTIC PROGRAM
TEL: (410)313-1771 FAX: (410)313-2648**

Information Form for the Installation of the Well Pump, Pitless Adapter, and Supply Piping

NOTE: The installer is responsible for requesting an inspection prior to 9 am on the day of the desired inspection. No work is to be covered until approved by the Health Department. All installations must comply with the National Standard Plumbing Code (NSPC, as amended locally) and COMAR 26.04.04 (MD Well Construction Regulations). Submission of a complete form is required prior to Use and Occupancy approval.

Company Name: MARK Brew Plumbing Telephone #: 301 854 0009
Address: PO BOX 78
FRINTON MD 20777

(Must circle one) Licensed Plumber Licensed Well Driller Licensed Well Pump Installer
License # and name of individual responsible for the field installation:
Name (Print): MARK BREW License# MD ST. 68954
***A licensed individual must perform the actual installation. Apprentices must be under the supervision of a licensed journeyman or master plumber, pump installer or well driller. Licenses may be subjected to field verification. Unlicensed individuals may be reported to the appropriate licensing agency.**

Name of Property Owner: Madame Elyse Telephone #: 443-612-8549
Subdivision: _____ Lot #: _____ Well Tag #: HO -
Site Address: 4655 Manor Lane
Fallcott City MD 21042

<u>Submersible Pump Data</u>	<u>Pitless Adapter</u>	<u>Well Cap and Electric Conduit</u>
Make: <u>Grundfos</u>	Make: _____	Two piece watertight cap: <u>YES</u>
Model #: <u>N/A</u>	Model#: _____	Screened, vented well cap: <u>YES</u>
Pump Capacity <u>1.7</u> GPM	Depth: <u>40"</u> (36" min)	Cap secured to casing: <u>YES</u>
Well Yield: _____ GPM	NSF/WSC approved: <u>YES</u>	Conduit min 18" B.G.: <u>YES</u>
Depth of well encountered at time of pump installation: <u>200</u> (feet)		Conduit secured to well cap: <u>YES</u>
If pump capacity exceeds well yield, a low water cut off switch is required by NSPC 1990 Section 17.8.4		
<u>Torque arrestors, Cable guards</u> or other acceptable method used- Must circle one		
Safety rope, if used, attached to brass rope adapter or other acceptable method <u>inside of well casing</u> ✓		

<u>Piping to house</u>	<u>House Connection</u>
Type: <u>Poly</u>	PVC sleeve to undisturbed soil at wall penetration: <u>YES</u>
PSI: <u>160</u> (160 psi min)	Length of sleeve (5' minimum from foundation): <u>4</u>
Depth of supply line: <u>40"</u> (36" min)	Sleeve sealed properly: ✓

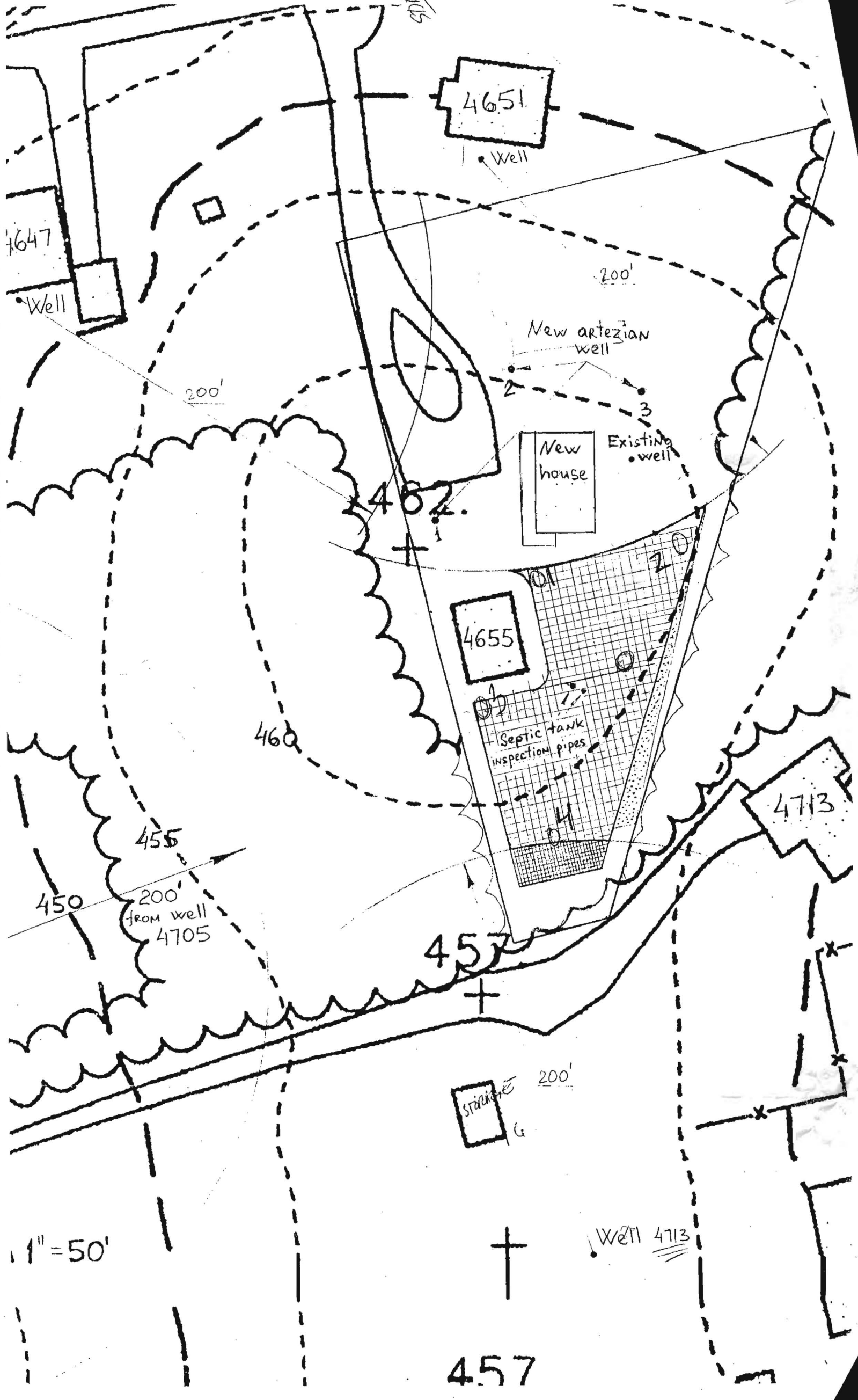
The water supply line is required to be at least ten feet from the septic tank, pump chamber, sewage piping, distribution box, drainfields, and sewage reserve area. If this cannot be accomplished, contact this office for approval prior to installation.

Signature of company representative responsible for installation: Mark Brew date: 5-10-11

For Health Department Use Only - Not to be completed by Installer

Date Insp. Requested: _____ Date Insp. Approved: 5/12/11 Inspector: BB

Inspection Data: Pitless adapter watertight & water supply line at least 36" below grade	✓
Two piece cap installed and attached to casing securely	✓
Elec. conduit extends at least 18" below grade/attached to cap properly	✓
Safety rope not outside of well cap/casing	✓
Correct well tag attached properly and casing 8" above finished grade	✓
Water supply line sleeved adequately at house connection	✓
Adequate grout observed below pitless adapter	✓



4651

4647

New artesian well

200'

200'

New house

Existing well

4652

4655

Septic tank inspection pipes

4713

460

455

450

200' from well 4705

457

Storage

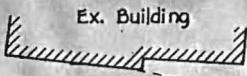
200'

1" = 50'

Well 4713

457

EKB2



Ex. Well
Top Elev. 453.18

N 76°06'39" E 249.60'
10' B.R.L.

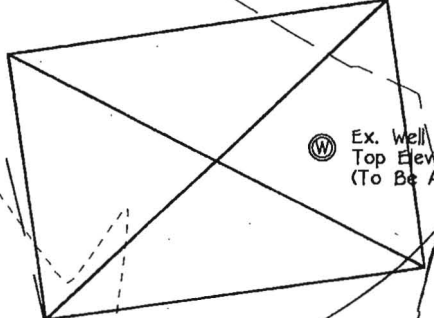
well sites 12/28/02
OK
(KW)

staked by
FCC Inc

PARCEL
DUANE F. ALEXANDER AND
LIBER 4747,
SAVE AND
a) Liber 17
b) Liber 18
c) Liber 19C
d) Liber 19

1. [Hatched symbol] OF 8,952 DEPARTM DISPOSAL RESTRICT EASEMENT TO A PUI SHALL HA PRIVATE SEWERAG
2. ADJUSTM WITHOUT
3. THE LOT WIDTH AN DEPARTM
4. EXISTING OF THE F INFORMAT
5. ALL HOU REGULAT.
6. ALL WEL THE DEVE TO BUILD DELAY" IF SIGNATUR
7. TOPOGRA INTERVAL
8. BOUNDAR
9. DEED RE
10. EXISTING APPROV. BE RAZI
11. EXISTING APPROVAL FOR EXIS
12. EXISTING
13. UNEQUAL

Ex. Well
Top Elev. 461.23
(To Be Abandoned)



ASED.

nder my direct
lef.
11/10/02
Date

7/10/02



Ex. Building
To Be
Razed

N 13°27'45" E 270.94'

462.53
461.82
462.29
461.62
30

8,952 SQ. FT.

N 15°23'06" E 230.57'

SOIL
EKB2
CHB2

- NOTES:
- * Hydr
 - ** May
 - † Gene



Proposed
F# 4651
4647

New Wells

Electric

MANOR

4651
Well

4647
Well

4705
Well

462

457

4113

416

439

413

Well

W



Bureau of Environmental Health
7178 Columbia Gateway Drive Columbia, MD 21046
(410) 313-2640 Fax (410) 313-2648
TDD (410) 313-2323 Toll Free 1-866-313-6300
Website: www.hchealth.org

Peter Beilenson, M.D., M.P.H., Health Officer

May 18, 2011

Homeowner
4655 Manor Lane
Ellicott City, MD 21042

RE 4655 Manor Lane
BP #: B10001111
Well Tag: HO-95-0621

Dear Sir:

This is to advise you that the septic system for the above referenced property has been installed and inspected. **Final approval of the septic system was granted on 10/05/2010. Final approval of the well line connection to the dwelling was approved on 05/12/2011.**

The water sample results indicate that the water samples submitted for testing were free of coliform and fecal coliform bacteria at the time of sampling and are bacteriologically safe for drinking. The water sample results were found to be in compliance with COMAR water quality standards.

Elevated turbidity levels may be caused by natural occurring iron in the water supply. An iron sample was taken on 05/16/2011. Results show a level of 0.45 mg/L. A sediment filter has been installed and a post treated sample was taken on 05/05/2011 which showed a turbidity result of 4.6 NTU's which is below the targeted value of 10 NTU'S.

Gross Alpha and Beta samples were collected on 01/22/2007. Results showed a Gross Alpha level of **8.7 +/- 1.6 pCi/L** and **Gross Beta** level of **6.0 +/- 1.2 pCi/L**. The **Gross Alpha** was below the maximum contaminant level (MCL) of 15 pCi/L, while the Gross Beta was below the MCL of 50pCi/L. Future well water supply appears safe for all uses.

Enclosed with this certificate, is a copy of the septic permit and the as-built along with important information regarding the use and maintenance of your septic system. Please read through carefully and thoroughly. Any questions regarding your well and/or septic, please call this office for guidance 410-313-1771.

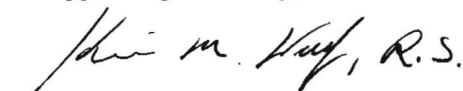
INTERIM CERTIFICATE OF POTABILITY

This certifies that the initial sampling requirements of COMAR 26.04.04 "Well Regulations" have been met for the water supply system installed under well permit #HO-95-0741. Although the submitted sample results are in compliance with COMAR standards, the Health Department does not guarantee water supplies. Based upon satisfactory investigation and evaluation, the Howard County Health Department as authorized by the Maryland Department of the Environment accepts this well system as required by COMAR 26.04.04.

This certificate may become final upon completion of the second bacteriological test, which is to be taken by the county health department within six months of receipt of this letter. **Please contact (410) 313-1773 to schedule a final water sample appointment. Currently, there is no charge for this final sampling.**

Date of Water Samples: 05/05/2011, & 05/16/2011
Date of Radium Samples: 01/22/2007
Date of Well Completion: 01/18/2007

Approving Authority,



Kevin M. Wolf, R.E.H.S./R.S.
Environmental Sanitarian
Well & Septic Program

cc: Building Inspector's Office
Community Hygiene Program
File

FOUNTAIN VALLEY ANALYTICAL LABORATORY, INC.

1413 Old Taneytown Rd. Westminster, MD (410) 848-1014 (410) 876-4554 FAX (410) 848-0298

REPORT OF ANALYSIS

Laboratory ID #: 79494 Account #: 13914
Reference: Vladimir Blyukher Company: CASH ACCOUNT
Location: 4655 Manor Lane Requested By: Vladimir Blyukher
Ellicott City, MD 21042 Source: Well Water
Date/ Time Collected: 5/16/2011 1000 Site: Pressure Tank
Date/Time Rec'd: 5/16/2011 1316 Treatment: Prior to Sediment Filter
Chlorine ppm: Free: ND Total: ND pH: 6.3
Collected By: J.Yeager 6176JY Well #: HO-95-0621

PARAMETERS	RESULTS	UNITS	REFERENCE	METHOD	DATE/TIME/ANALYST
Iron	0.45	mg/L	0.3	FR, 45 (126)	5/17/2011 / 1150 / CWM

~~test~~
may require Iron removal treatment (i.e. H₂O softener)

NOTES

- 1 mg/L = milligrams per liter (also, parts per million)
- 2 Results less than or within the reference range are considered satisfactory and within potable water limits at the time of sampling.
- 3 ND:None Detected
- 4 Visual well check: Sealed, vented cap
- 5 pH and Chlorine level tested on site

Reason for Test : Use & Occupancy retest

Building Permit # : B-10001111

Date Reported: 5/17/2011

FOUNTAIN VALLEY ANALYTICAL LABORATORY, INC.

1413 Old Taneytown Rd. Westminster, MD (410) 848-1014 (410) 876-4554 FAX (410) 848-0298

REPORT OF ANALYSIS

Laboratory ID #: 79336.1 Account #: 13914
Reference: Vladimir Blyukher Company: CASH ACCOUNT
Location: 4655 Manor Lane Requested By: Vladimir Blyukher
Ellicott City, MD 21042 Source: Well Water
Date/ Time Collected: 5/5/2011 1006 Site: Pressure Tank
Date/Time Rec'd: 5/5/2011 1228 Treatment: Prior to Sediment Filter
Chlorine ppm: Free: ND Total: ND pH: 6.6
Collected By: J. Yeager 6176JY Well #: HO-95-0621

PARAMETERS	RESULTS	UNITS	REFERENCE	METHOD	DATE/TIME/ANALYST
Turbidity	12.5	NTU	<10	SM18 2130B	5/5/2011 / 1616 / KME

Need
Testing for
Iron (.3 ppm)
Manganese

NOTES

- 1 NTU = Nephelometric Turbidity Units
- 2 Results less than or within the reference range are considered satisfactory and within potable water limits at the time of sampling.
- 3 ND: None Detected
- 4 Visual well check: Sealed, vented cap
- 5 pH and Chlorine level tested on site

Reason for Test : Use & Occupancy
Building Permit # : B-10001111

Date Reported: 5/6/2011

FOUNTAIN VALLEY ANALYTICAL LABORATORY, INC.

1413 Old Taneytown Rd. Westminster, MD (410) 848-1014 (410) 876-4554 FAX (410) 848-0298

REPORT OF ANALYSIS

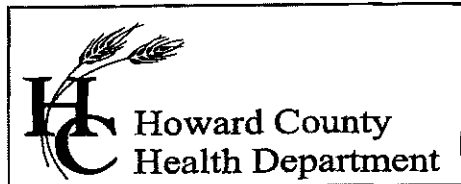
Laboratory ID #: 79336 Account #: 13914
 Reference: Vladimir Blyukher Company: CASH ACCOUNT
 Location: 4655 Manor Lane Requested By: Vladimir Blyukher
 Ellicott City, MD 21042 Source: Well Water
 Date/ Time Collected: 5/5/2011 1000 Site: Kitchen Sink Tap
 Date/Time Rec'd: 5/5/2011 1228 Treatment: Sediment Filter
 Chlorine ppm: Free: ND Total: ND pH: 6.6
 Collected By: J.Yeager 6176JY Well #: HO-95-0621

PARAMETERS	RESULTS	UNITS	REFERENCE	METHOD	DATE/TIME/ANALYST
Bacteria, Coliform, Total, MPN	<1.0	MPN/ 100 ml	<1.0	SM18 9223	5/6/2011 / 0930 / KME
Bacteria, E. coli, MPN	<1.0	MPN/ 100 ml	<1.0	SM18 9223	5/6/2011 / 0930 / KME
Nitrate	<1.0	mg/L	10	601	5/6/2011 / 1145 / CCH
Turbidity	4.60	NTU	<10	SM18 2130B	5/5/2011 / 1616 / KME
Sand	NS	mg/L	5	Visual/Gravimetric	5/5/2011 / 1616 / KME

NOTES

- 1 mg/L = milligrams per liter (also, parts per million)
 - 2 MPN/ 100 ml = Most Probable Number [of viable bacteria] per 100 ml of sample.
 - 3 NS = None Seen (NS indicates less than 5 mg/L)
 - 4 NTU = Nephelometric Turbidity Units
 - 5 Results less than or within the reference range are considered satisfactory and within potable water limits at the time of sampling.
 - 6 ND:None Detected
 - 7 Visual well check: Sealed, vented cap
 - 8 pH and Chlorine level tested on site
- Reason for Test : Use & Occupancy
 Building Permit # : B-10001111

Date Reported: 5/6/2011



Bureau of Environmental Health
7178 Columbia Gateway Drive, Columbia, MD 21046
(410) 313-2640 Fax (410) 313-2648
TDD (410) 313-2323 Toll Free 1-866-313-6300
website: www.hchealth.org

Penny E. Borenstein, M.D., M.P.H., Health Officer

February 5, 2007

Mr. Vladimir Blyukher and Ms. Anzhelika Artamoshyna
4655 Manor Lane
Ellicott City, MD 21042

Dear Mr. Blyukher and Ms. Artamoshyna,

Testing was performed on January 22, 2007 and samples submitted to GPL Laboratories to assess the possible presence of **Gross Alpha** and **Gross Beta** in your well water supply. **Gross Alpha** and **Gross Beta** measure the total alpha and beta activity in a water supply. These naturally occurring radioactive nuclides have been demonstrated to be present in a certain type of geologic formation known as the Baltimore Gneiss which exists in your area of the County. In turn, this information can be used to determine if additional testing and/or the need for treatment to address this concern is necessary.

Results from this screening revealed a **Gross Alpha** of 8.7 ± 1.6 picocuries/liter (pCi/L); while the **Gross Beta** level was 6.0 ± 1.2 pCi/L. The **Gross Alpha** result was below the maximum contaminant level (MCL) of 15 pCi/L, while the **Gross Beta** level was below the target value of 50 pCi/L (roughly equivalent to the MCL of 4 millirems/year). At the time of testing and with respect to these parameters, your well water supply is safe for all uses.

A copy of the test results is enclosed for your information. Please call this office at (410) 313 - 1773 if you have any further questions.

Sincerely,


Bert Nixon, Deputy Director
Bureau of Environmental Health

cc: Eric Dougherty, MDE, Water Mgmt., Groundwater

Send Report To:

State of Maryland
 DHMH - Laboratories Administration
 Division of Environmental Chemistry
RADIATION LABORATORY

Vladimir Blyukher
Anzhelika Artamoshina
E.C. 21042

201 W. Preston Street, Baltimore, Maryland 21201
 John M. DeBoy, Dr. P.H., Director

#02 - 218283

LABORATORY ANALYSIS REQUEST

BB950621

45107

Sample Bottle No. A: *7* No. B: _____ Field Blank Bottle No. A: _____ No. B: _____

Plant/Site Name: _____ County: _____

Sample Source: *4655 Manor Lane* Location: *HO-95-0621*
 (well no., lab sink, sample tap, etc.)

County: Plant No.

CHECK (one per box)

Drinking Water
 Landfill
 Stream
 Other

Community
 Non-community
 Private
 Other

Source (raw water)
 Distribution (treated)
 MCL

Emergency
 Routine
 Recheck
 Special

Collector: *Brian Baker*

Telephone No: *x2643*

Date Collected: *1/22/2007*

Time Collected: *2:30* a.m. *2:30* p.m.

Nitric Acid Preserved: Yes No

Iced: Yes No

Submitters Code: Federal Project: Field Data: _____

Remarks: *Sample Taken During Yield Test* ^{pH} Chlorine

✓	Test	EPA Code	Laboratory No.	Results (pCi/L)	Date Reported
✓	Gross Alpha	4000	<i>701118-005</i>	<i>8.7 ± 1.6</i>	<i>1/25/07</i>
✓	Gross Beta	4100		<i>6.0 ± 1.2</i>	
	Radon-222 Bottle A	4004			
	Radon-222 Bottle B	4004			
	Field Blank A	4004			
	Field Blank B	4004			
	Tritium				
	Ra - 226	4020			
	Ra - 228	4030			
	Total Uranium	4006			

Date Received: _____ / _____ / _____

Supervisor: _____

Analytical Summary Report

Client Name:	Howard County Health Department	Client Sample ID:	BB950621
Receipt Date/Time:	1/23/2007	Lab Sample ID:	701118-005-005-1/1
Prepared Date/Time:	1/24/2007	Sample Matrix:	WATER
Analysis Date/Time:	1/25/2007 12:57:00 PM	Analytical Method:	ALPHA/BETA BY METHOD 900.0

Isotope	Result	Uncertainty 2σ	MDA	Q
Gross Alpha	8.67 pCi/L	± 1.56 pCi/L	0.698 pCi/L	
Gross Beta	5.94 pCi/L	± 1.16 pCi/L	1.686 pCi/L	



Bureau of Environmental Health
7178 Columbia Gateway Drive, Columbia, MD 21046-2147
(410) 313-2640 Fax (410) 313-2648
TDD (410) 313-2323 Toll Free 1-866-313-6300
website: www.hchealth.org

Peter L. Beilenson, M.D., M.P.H., Health Officer

July 29, 2008

MEMORANDUM

TO: Vladimir Blyukher
Anzhelika Artamoshyna
4655 Manor Lane
Ellicott City, Maryland 21042

FROM: Stuart F. Oster, R.S.
Bureau of Environmental Health
Well and Septic Program

RE: 4655 Manor Lane
Ellicott City, Maryland 21042
1.185 Acre
Map 29, Grid 5, Parcel 107

This is to advise that the Howard County Health Department recommends issuance of the demolition permit for the above referenced property. The new well (HO-95-0621) will be utilized for the replacement house. By accepting this recommendation, the builder/owner agrees with the following conditions set forth by the Health Department:

An existing shallow well (No tag) can be used as an interim well, but must properly abandoned be a licensed well driller before applying for new construction building permit. Both wells require protective devices placed around them to prevent any damage. These precautions should remain in place during the demolition and construction phases. The well (HO-95-0621) can be connected to the new house.

The existing septic system tank and drywell will need to be properly abandoned; i.e. pumped, collapsed and filled in with clean fill. A new 10,000 Sq. Ft. septic reserve area has been established.

A new septic permit will need to be obtained as well as a well inspection will be required for final approval when reconnecting to the new house. Additionally, applicable water tests for issuance of an ICOP will be needed.

Cc: File

June 27th, 2008

4655 Manor Lane,
Ellicott City, MD 21042

Howard County Health Department
Water and Sewerage Program
7178 Columbia Gateway Drive
Columbia, MD 21046-2132

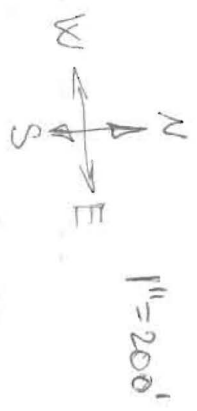
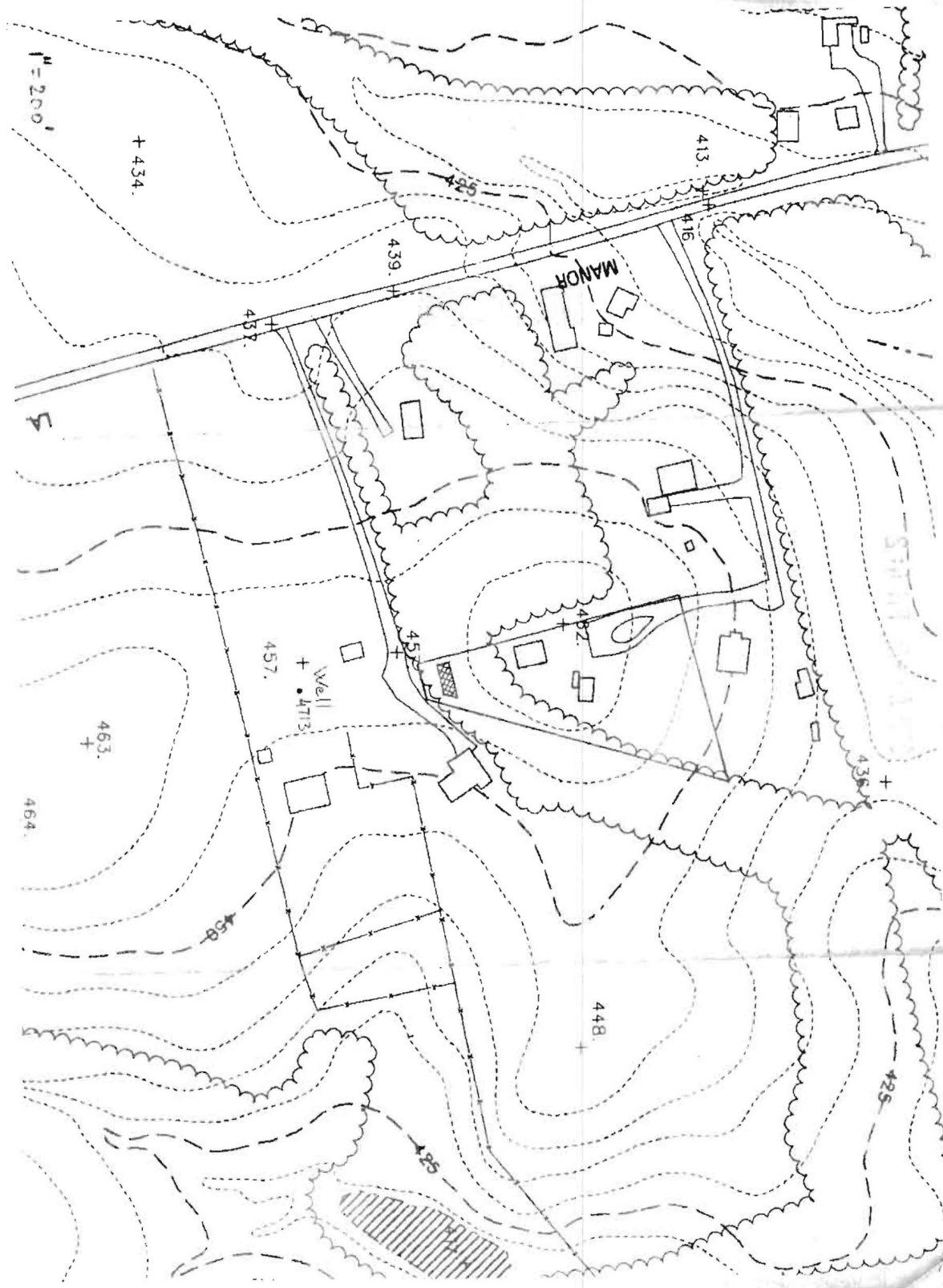
To Whom It May Concern:

This is a letter requesting an approval of disconnect of services for Well and Septic on 4655 Manor Lane, Ellicott City, MD 21042 in order to get a demolition permit.

Vladimir Blyuker,
(443) 929-9511

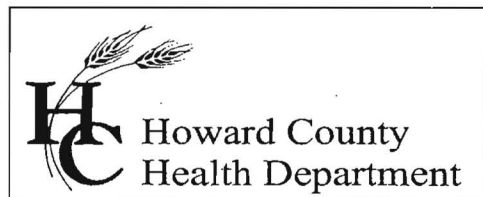


7/14/08 Spoke to Angela, told he we need
well abandonment report before demo
letter (50)



1" = 200'

1" = 200'



Bureau of Environmental Health
7178 Columbia Gateway Drive, Columbia, MD 21046
(410) 313-2640 Fax (410) 313-2648
TDD (410) 313-2323 Toll Free 1-866-313-6300
website: www.hchealth.org

Penny E. Borenstein, M.D., M.P.H., Health Officer

June 12, 2006

Mr. Vladimir Blyukher
4655 Manor Lane
Ellicott City, MD 21042

RE: 4655 Manor Lane

Dear Mr. Blyuker:

This is to advise you that the existing house on the referenced property will need to be removed prior to building permit approval of your ^{new} proposed home. Due to this structure having access to a septic system and a water supply, it is considered a livable space and is required to have an individual septic area. The property, however, is limited in the area available for sewage disposal and cannot support a sewage disposal area for both the existing and proposed homes. A demolition permit will need to be obtained from the Department of Inspections, Licenses, and Permits.

↓
for the existing house

If you have any questions regarding this matter, please contact me at the above address or by calling (410) 313-1771.

Sincerely,

Sara Fegel
Well and Septic Program
Development Coordination Section

SF
Enclosures
Cc: File

 WATER WELL ABANDONMENT-SEALING REPORT FORM

SUBMIT COPIES OF COMPLETED FORM TO:

- * COUNTY ENVIRONMENT AGENCY (contact MDE, WMA if address needed)
- * WELL OWNER
- * MDE, WATER MANAGEMENT ADMINISTRATION, WELL PROGRAM

DATE WELL ABANDONED: 4/5/10 (month/day/year)

12/21/2010
O.K. BB - - -
HO - 95 - 0621

* PERMIT NUMBER OF ABANDONED WELL (if any)

* PERMIT NUMBER OF REPLACEMENT WELL

* PERSON ABANDONING WELL: Richard A. Crummitt

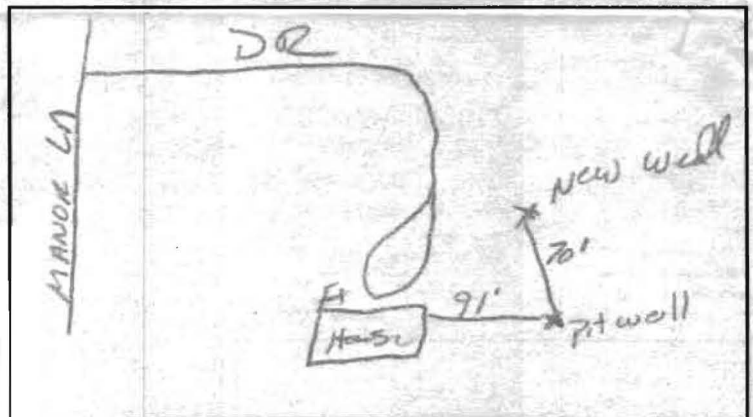
WELL DRILLERS LICENSE NUMBER: WR0014

CIRCLE: MWD/MSD/MGD

* OWNER'S NAME: VLADIMIR Blyukher

SITE LOCATION MAP

* WELL LOCATION:
 COUNTY: HOWARD
 NEAREST TOWN: ELLICOTT CITY
 TAX MAP _____ BLOCK _____ PARCEL _____
 SUBDIVISION: _____
 SECTION: _____ LOT: _____
 NEAREST ROAD: 4655 MANOR LANE



* TYPE OF WELL BEING ABANDONED:

- DRILLED JETTED
- BORED/AUGERED HAND DUG
- OTHER (specify) _____

* USE CODE:

- DOMESTIC MUNICIPAL/PUBLIC
- IRRIGATION INDUSTRIAL
- TEST/OBSERVATION GEOTHERMAL

* TYPE OF CASING:

- STEEL PLASTIC
- CONCRETE OTHER (specify) _____

* SIZE OF CASING: 6 INCHES IN DIAMETER

* DEPTH OF WELL: 62 FEET DEEP

* WAS ANY CASING REMOVED? YES NO
 if yes, length removed, in feet: _____

* WAS CASING RIPPED OR PERFORATED? YES NO

LOG OF SEALING MATERIAL

MATERIAL	FEET	
	FROM	TO
Bentonite well pit	62	7
	7	0
VOLUME OF MATERIAL USED		
5 Bags of Bentonite		

SIGNATURE-MASTER WELL DRILLER OR SUPERVISING SANITARIAN
George F. Easton

LICENSE # 040

CIRCLE ONE MWD/MSD/MGD

DATE 4-12-10



MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101

Martin O'Malley
Governor

Robert M. Summers, Ph.D.
Acting Secretary

Anthony G. Brown
Lieutenant Governor

December 15, 2010

VLADIMIR BLYUKHER
4655 MANOR LANE
ELLCOTT CITY, MD 21042

RE: State Water Appropriation
Permit No. HO2010G001(01)
First Permit

Dear Permittee:

Enclosed is your State Water Appropriation Permit. The permittee is responsible for complying with all permit conditions. Accordingly, you are advised to carefully read the Permit and become thoroughly familiar with its requirements. PLEASE NOTE THAT IF THE WATER IS NOT PUT TO USE WITHIN TWO (2) YEARS, THE PERMIT WILL EXPIRE.

PLEASE NOTE THE CONDITION ON YOUR PERMIT REQUIRING WATER USED FOR A HEAT PUMP SYSTEM TO BE RETURNED TO THE AQUIFER FROM WHICH IT WAS WITHDRAWN.

If you have any questions, please contact this office at (410) 537-3590.

Sincerely,

NORMAN H. LAZARUS
Water Supply Program

cc: HOWARD COUNTY HEALTH DEPARTMENT

STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

WATER APPROPRIATION AND USE PERMIT

PERMIT NUMBER: HO2010G001(01)

EFFECTIVE DATE: DECEMBER 1, 2010

EXPIRATION DATE: DECEMBER 1, 2022

FIRST APPROPRIATION: DECEMBER 1, 2010



VLADIMIR BLYUKHER

HEREINAFTER REFERRED TO AS THE "PERMITTEE", IS AUTHORIZED BY THE WATER MANAGEMENT ADMINISTRATION, HEREINAFTER REFERRED TO AS THE "ADMINISTRATION" PURSUANT TO THE PROVISIONS OF TITLE 5 OF THE ENVIRONMENT ARTICLE, ANNOTATED CODE OF MARYLAND (2007 REPLACEMENT VOLUME) AS AMENDED, TO APPROPRIATE AND USE WATERS OF THE STATE SUBJECT TO THE FOLLOWING CONDITIONS:

1. ALLOCATION - THE WATER WITHDRAWAL GRANTED BY THIS PERMIT IS LIMITED TO:
A DAILY AVERAGE OF 6,000 GALLONS ON A YEARLY BASIS AND
A DAILY AVERAGE OF 9,000 GALLONS FOR THE MONTH OF MAXIMUM USE.
2. USE - THE WATER IS TO BE USED FOR A GEOTHERMAL HEAT PUMP SYSTEM.
3. SOURCE - THE WATER SHALL BE TAKEN FROM ONE WELL IN THE LOWER PELITIC SCHIST WISSAHICKON.
4. LOCATION - THE POINT(S) OF WITHDRAWAL SHALL BE LOCATED AT 4655 MANOR LANE, ELLICOTT CITY, HOWARD COUNTY, MARYLAND.

CONTINUED ON PAGE 2


RECEIVED
HOWARD COUNTY DEPARTMENT OF ENVIRONMENT
011 JA 11 AM 9:11

5. RIGHT OF ENTRY - THE PERMITTEE SHALL ALLOW AUTHORIZED REPRESENTATIVES OF THE ADMINISTRATION ACCESS TO THE PERMITTEE'S FACILITY TO CONDUCT INSPECTIONS AND EVALUATIONS NECESSARY TO ASSURE COMPLIANCE WITH THE CONDITIONS OF THIS PERMIT. THE PERMITTEE SHALL PROVIDE SUCH ASSISTANCE AS MAY BE NECESSARY TO EFFECTIVELY AND SAFELY CONDUCT SUCH INSPECTIONS AND EVALUATIONS.
6. PERMIT REVIEW - THE PERMITTEE WILL BE QUERIED EVERY THREE YEARS (TRIENNIAL REVIEW) REGARDING WATER USE UNDER THE TERMS AND CONDITIONS OF THIS PERMIT. FAILURE TO RETURN THE TRIENNIAL REVIEW QUERY WILL RESULT IN SUSPENSION OR REVOCATION OF THIS PERMIT.
7. PERMIT RENEWAL - THIS PERMIT WILL EXPIRE ON THE DATE INDICATED ON THE FIRST PAGE OF THIS PERMIT. IN ORDER TO RENEW THE PERMIT THE PERMITTEE SHALL FILE A RENEWAL APPLICATION WITH THE ADMINISTRATION NO LATER THAN 45 DAYS PRIOR TO THE EXPIRATION.
8. PERMIT SUSPENSION OR REVOCATION - THIS PERMIT MAY BE SUSPENDED OR REVOKED BY THE ADMINISTRATION UPON VIOLATION OF THE CONDITIONS OF THIS PERMIT, OR UPON VIOLATION OF ANY REGULATION PROMULGATED PURSUANT TO TITLE 5 OF THE ENVIRONMENT ARTICLE, ANNOTATED CODE OF MARYLAND (2007 REPLACEMENT VOLUME) AS AMENDED.
9. CHANGE OF OPERATIONS - ANY ANTICIPATED CHANGE IN APPROPRIATION WHICH MAY RESULT IN A NEW OR DIFFERENT USE, QUANTITY, SOURCE, OR PLACE OF USE OF WATER SHALL BE REPORTED TO THE ADMINISTRATION BY THE PERMITTEE BY SUBMISSION OF A NEW APPLICATION.
10. ADDITIONAL PERMIT CONDITIONS - THE ADMINISTRATION MAY AT ANYTIME (INCLUDING TRIENNIAL PERMIT REVIEW OR WHEN A CHANGE APPLICATION IS SUBMITTED) REVISE ANY CONDITION OF THIS PERMIT OR ADD ADDITIONAL CONDITIONS CONCERNING THE CHARACTER, AMOUNT, MEANS AND MANNER OF THE APPROPRIATION OR USE, WHICH MAY BE NECESSARY TO PROPERLY PROTECT, CONTROL AND MANAGE THE WATER RESOURCES OF THE STATE. CONDITION REVISIONS AND ADDITIONS WILL BE ACCOMPLISHED BY ISSUANCE OF A REVISED PERMIT.

11. NON-TRANSFERRABLE - THIS PERMIT IS NON-TRANSFERRABLE. A NEW OWNER MAY ACQUIRE AUTHORIZATION TO CONTINUE THIS APPROPRIATION BY FILING A NEW APPLICATION WITH THE ADMINISTRATION. AUTHORIZATION WILL BE ACCOMPLISHED BY ISSUANCE OF A NEW PERMIT.
12. RETURN TO AQUIFER - THE WATER WITHDRAWN AND USED FOR GROUNDWATER HEAT PUMP OR HEAT EXCHANGE PURPOSES SHALL BE RETURNED TO THE AQUIFER FROM WHICH IT IS WITHDRAWN.
13. *****
* INITIATION OF WITHDRAWAL - THE PERMITTEE SHALL NOTIFY THE*
* ADMINISTRATION BY CERTIFIED MAIL WHEN WITHDRAWALS FOR THE*
* USES SPECIFIED IN THIS PERMIT HAVE BEEN INITIATED. THIS *
* PERMIT SHALL EXPIRE IF WATER WITHDRAWAL IS NOT COMMENCED *
* WITHIN TWO YEARS AFTER THE EFFECTIVE DATE OF THIS PERMIT *
* EXCEPT THAT UPON WRITTEN REQUEST TO THE ADMINISTRATION *
* PRIOR TO THE EXPIRATION OF THE TWO YEAR PERIOD, THE TIME *
* LIMIT MAY BE EXTENDED FOR GOOD CAUSE, AT THE DISCRETION *
* OF THE ADMINISTRATION. *

14. WATER LEVEL MEASUREMENTS - FOR ALL THE APPLICANT'S WELLS FOUR (4) INCHES IN DIAMETER OR LARGER, PUMPING EQUIPMENT SHALL BE INSTALLED SO THAT WATER LEVELS CAN BE MEASURED DURING PUMPING AND NONPUMPING PERIODS WITHOUT DISMANTLING ANY EQUIPMENT. ANY OPENING FOR TAPE MEASUREMENTS OF WATER LEVELS SHALL HAVE A MINIMUM INSIDE DIAMETER OF 0.5 INCHES AND BE SEALED BY A REMOVABLE CAP OR PLUG. THE PERMITTEE SHALL PROVIDE A TAP FOR TAKING RAW WATER SAMPLES BEFORE WATER ENTERS A TREATMENT FACILITY, PRESSURE TANK, OR STORAGE TANK.

BY AUTHORITY OF THE DIRECTOR
WATER MANAGEMENT ADMINISTRATION

 12/15/10

for John W. Grace, Chief
SOURCE PROTECTION AND APPROPRIATION DIV
MSM

RECEIVED
WARD COUNTY
ENVIRONMENTAL

2011 JAN 11 AM 9:11

PERMIT NO.: HO2010G001(01) ACTID: 201080124 December 15, 2010

APPLICANT: VLADIMIR BLYUKHER
REMARKS: GWHP- STANDING COLUMN WELL
PROJECT DESC: VLADIMIR BLYUKHER
GWHP
WATER TYPE: F REPORT CODE: N
AQUIFER TEST: N WQ ANALYSIS: N

ADC MAP: 15 C 1
MD GRIDS: NORTH 513000 EAST 0830000
TAX MAP NO.: 29 BLOCK NO.: 5 PARCEL: 107 SBDN BLOCK: LOT:

CO GEO-HYDRO MAP: L USGS TOPO:

SUB-BASIN: 02-13-11-05 STREAM CODE: AQUIFER CODE: 300P

WATER USE:	CODE 1	CODE 2	CODE 3	CODE 4
	314 100.0	0.0	0.0	0.0

INTAKES: INTAKE ID N GRID E GRID USE PERCENT

CARBON COPIES:

SUPPLEMENTAL/RELATED (S/R):

SECONDARY NAMES:



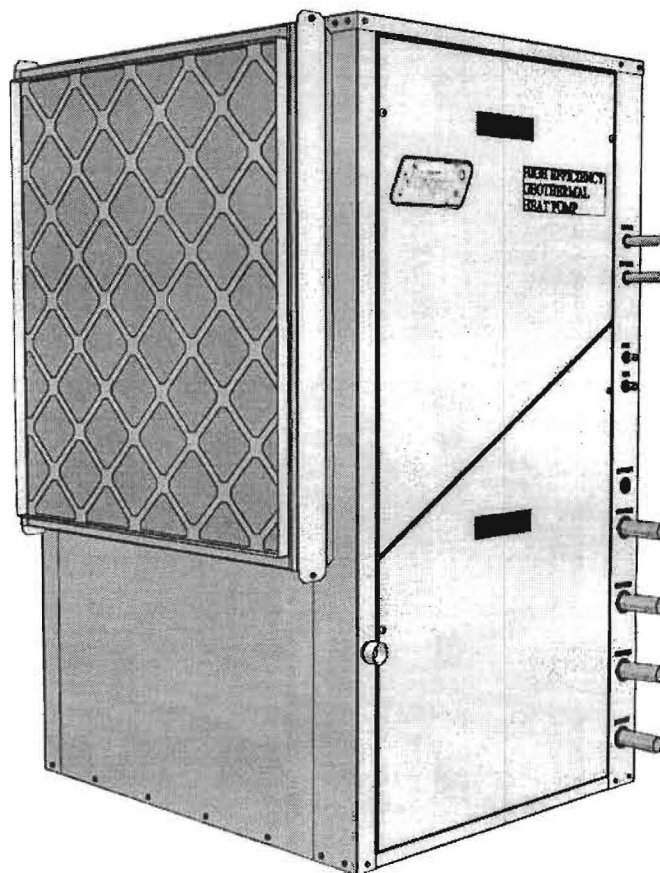
MARITIME GEOTHERMAL LTD.



Installation and Service Manual

NORDIC® TF-Series
Two-Stage R410a
Model Sizes 45-75 (3-6 Ton)

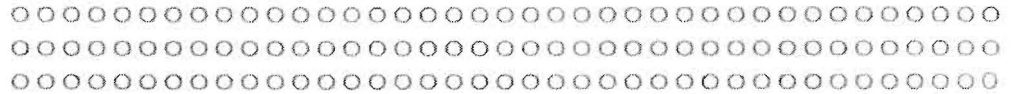
Triple Function Geothermal Heat Pumps



Maritime Geothermal Ltd.
P.O. Box 2555
Petitcodiac, N.B. E4Z 6H4

Email: info@nordicghp.com
Web: www.nordicghp.com
Document Number: 000626MAN-02

Coil Selector



Turbo-Flow™ Coaxial Coils

Turbo-Flow™ coaxial coils use our Tru-Twist® inner tubes to create turbulent flow and provide more heat transfer surface in a compact package. More BTU's per dollar make our coils the industry standard for residential and commercial heating and cooling. Water-cooled, water-source and earth-coupled equipment manufacturers worldwide turn to Turbotec's high efficiency condensers and evaporators.

- Heat Pump/ Chiller/ Evaporator Coils/ Water-Cooled Condensers
- Marine Application Coils
- Ice Machine Coils
- Double-Wall Refrigerant Desuperheaters

Pool-Safe™ Swimming Pool Heat Pump Coils

Turbotec Titanium and plastic tube heat exchangers, manufactured to precise standards, have raised the bar when it comes to the swimming pool heat pump industry. Pool-Safe™ is the clear choice for top swimming pool heat pump manufacturers. In fact, our tubing and coils provide solutions to many of the world's leading original equipment manufacturers for pool care applications, including residential and commercial applications. Our breakthrough titanium coaxial heat exchange tubing is perfect for corrosive and erosive environments including pool and spa water applications. Ideal for new and replacement applications, titanium tubing is impervious to harsh and potentially corrosive chemicals found in demanding environments.

Pool-Safe™ heat exchangers are designed to withstand the effects of chlorides and other chemicals found in pool water making it the logical choice for swimming pool and spa applications.

Model Number Configurator

Sample Model Number

B	T	S	S	C	- 48 -	ES 5S TJ WB
<i>Coil Usage/ Class</i>	<i>Coil Construction</i>	<i>Shape of Coil</i>	<i>Jacket/Outer Tube Material</i>	<i>Twisted Tube Material</i>	<i>Nominal Heat Exchange Rating in Thousands of BTU's</i>	<i>Assembly Options</i>
B -Cond. & Evap.	T -Tube-in Tube Unit	H -Helical	C -Copper	C -Copper		ES -Enhanced Surface
C -Condenser		O -Other	K -Stainless Steel	K -Stainless Steel		xS -Number of Flutes
E -Evaporator		S -Spiral/Slim	S -Carbon Steel	N -Cupronickel		TJ -Tight Jacket
D -Desuperheater		T -Trombone	V -Plastic	S -Carbon Steel		WB -With Brackets
		U -U-shape		T -Titanium		xH -Wrap Direction
				Fxx * Double Wall Assembly		

* xx represents materials for each wall

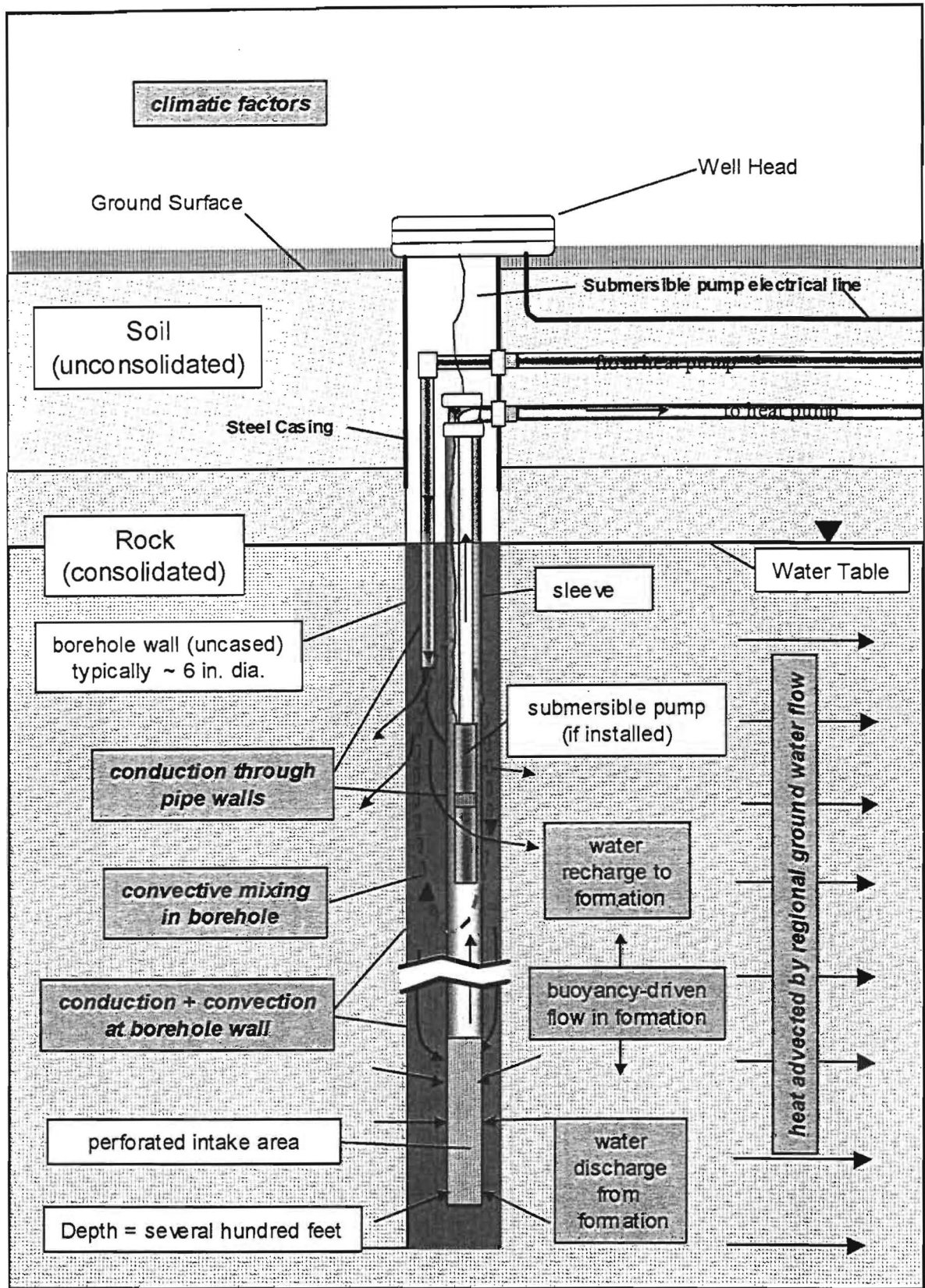
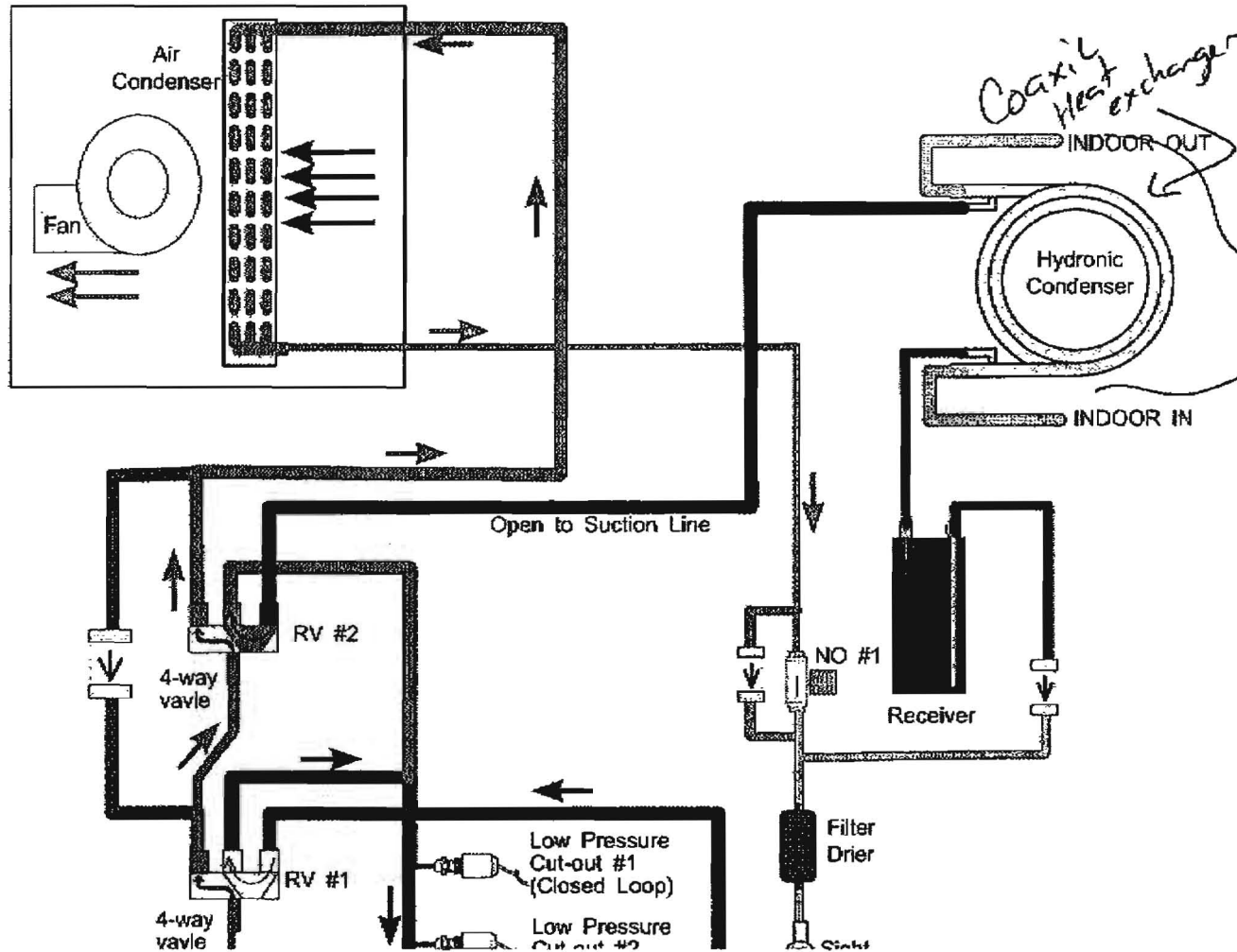


Figure 1 A schematic of a typical standing column well (<http://www.hvac>.

LS

osed-loop heat exchangers in geothermal heat pump applications are offer
with a heat transfer due to groundwater movement through the surroundi

TF(H)-SERIES REFRIGRATION CIRCUIT - AIR HEATING MODE



Copperwicks!
~~Copperwicks~~
 material

Ground water connections to coaxial heat exchanger

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NORDIC® TF-Series Two-Stage R410a Model Sizes 45-75 (3-6 Ton)

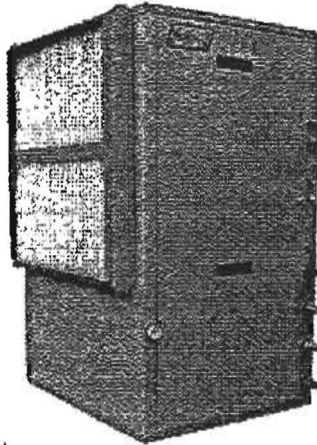
Heating, Cooling and Hydronic Heating
Water Well or Groundloop
Copeland Ultratech® Two-stage compressor
Variable Speed ECM fan
Domestic Hot Water
Have it all in One Machine!

Triple function heat pumps are a combination R and W series heat pump
Heating and cooling is provided via an air duct system controlled from a central thermostat.

Whenever the thermostat is satisfied the unit can automatically switch to hot water mode to supply heat to an in-floor heating system, swimming pool or any other hot water requirement.

A separate heat exchanger provides potable hot water during any run time operation

Triple Function heat pumps are the solution for a home that requires in-floor heating in part or all of the structure while also requiring ducted cooling throughout the building



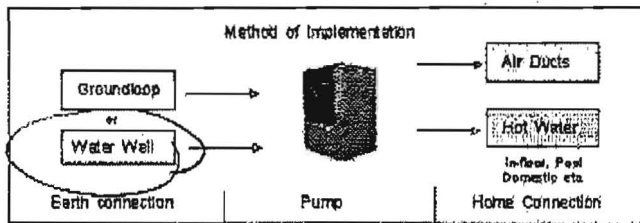
Product Features



TF Brochure



TF Manual



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NORDIC WARRANTY



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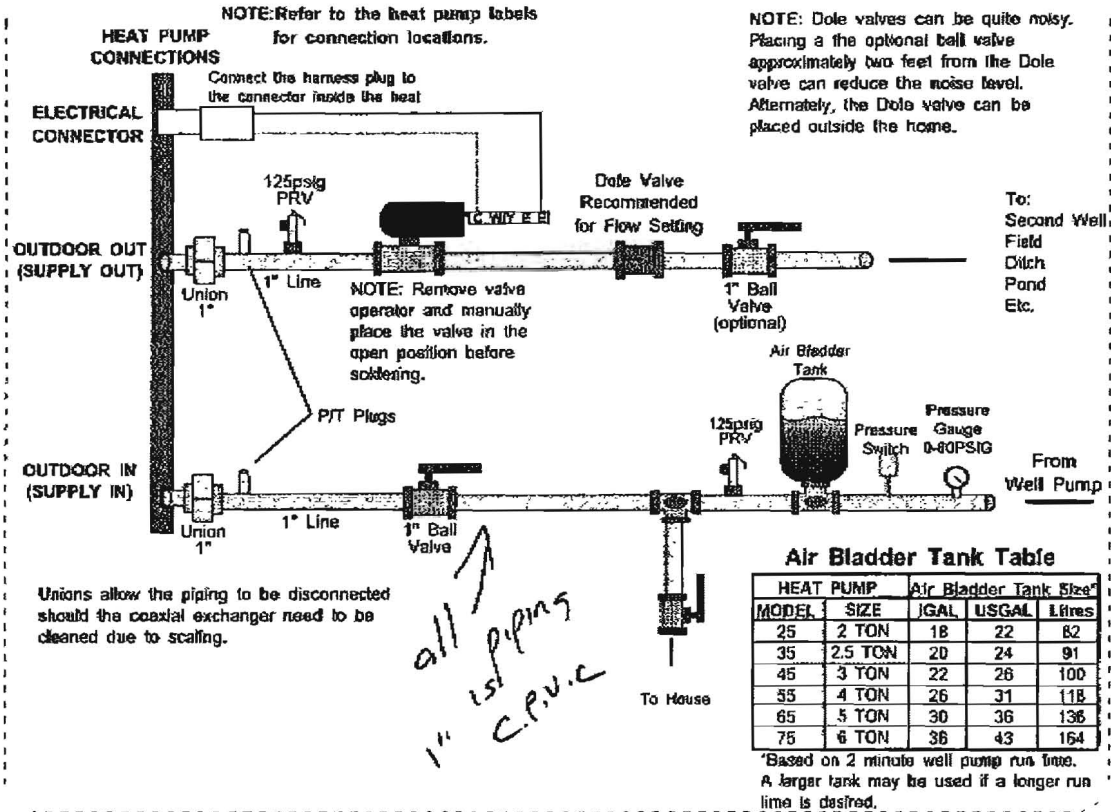
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P O Box 2555, Pettitcodiac, NB, Canada, E4Z 6H4 Tel 1-806-756-8135

the pipe that connects to the pipe that carries the water. The pump shuts off and the water valve closes.

Typical Ground Water Installation for Size 25-75 Heat Pumps

TACO 24VAC EBV (Electronic Ball Valve)



TACO 24VAC Slow Close Water Valve

Connect the harness plug to the connector inside the heat pump.



NOTE: Ensure the

Generic 24VAC Solenoid Water Valve

Connect the harness plug to the connector inside the heat pump.



Manufacturing reliable, competitively priced heat pumps that meet all consumer expectations and exceed industry guidelines.

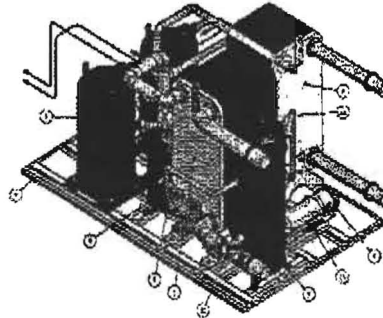
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Engineering Excellence

Maritime Geothermal Ltd. is dedicated to producing the highest quality geothermal heat pumps available today. Our emphasis is focused on manufacturing a product that is at the pinnacle of energy efficient with a very long life for the consumer while maintaining ease of access for the service technician.

Each unit is computer designed in 3D by our mechanical engineers using the latest version of AutoCAD Inventor®. CSA certified components are selected from the most respected and reliable suppliers and engineered into an ergonomic high efficiency design second to none in the industry.

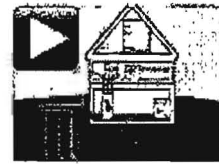
Once on paper, the design is critiqued by our electrical and mechanical engineering departments as well as representatives from our quality control.



PROJECTS

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WATCH VIDEOS



NORDIC WARRANTY



NORDIC LINE CD

Request a CD, it's Free!



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P.O. Box 2555, Petticoatville, NB, Canada, E4Z 6H4 Tel: 1-808-756-8135

FACT SHEET NEW JUDICIAL REVIEW PROCESS

Legislation passed by the 2009 General Assembly changes procedures for certain permits issued by the Department, including water appropriation permits. The new judicial review procedures take effect on January 1, 2010 and will apply to final permit decisions issued on and after January 1, 2010.

Under pre-existing procedures, permit applicants and third parties with standing under Maryland law could challenge the issuance of a permit or the conditions of a permit through a request for a "contested case" adjudicatory hearing conducted by the Office of Administrative Hearings. Effective January 1, 2010, the "contested case" process no longer applies to final decisions on applications for these permits. Rather, permits can be challenged through a request for direct judicial review in the Circuit Court for the county where the activity authorized by the permit will occur. Applicants, and persons who meet standing requirements under federal law and who participated in a public comment process by submitting written or oral comments (where an opportunity for public comment was provided), may seek judicial review. Judicial review will be based on the administrative record for the permit compiled by the Department and limited to issues raised in the public comment process (unless no public comment process was provided, in which case the review will be limited to issues that are connected to the permit).

Who Has Standing?

Anyone who meets the threshold standing requirements under federal law and is either the applicant or someone who participated in the public participation process through the submission of written or oral comments, as provided in Environment Article § 5-204, Annotated Code of Maryland. The three traditional criteria for establishing standing under federal law are injury, causation, and redressability, although how each criterion is applied is highly fact-specific and varies from case to case. Further, an association has standing under federal law to bring suit on behalf of its members when its members would otherwise have standing to sue in their own right, the interests at stake are related to the organization's purpose, and neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit.

What is the Procedure for Seeking Judicial Review?

Petitions for judicial review of a final determination or permit decision subject to judicial review must be filed in accordance with § 1-605 of the Environment Article no later than 30 days following publication by the Department of a notice of final determination or final permit decision and must be filed in the circuit court of the county where the permit application states that the proposed activity will occur. Petitions for judicial review must conform to the applicable Maryland Rules of Civil Procedure (Title 7, Chapter 200).

To review the legislation follow the link below:

http://mlis.state.md.us/2009rs/chapters_noln/Ch_650_sb1065T.pdf

For a complete list of permits that these procedures apply to follow the link below:

http://www.mde.state.md.us/ResearchCenter/laws_regs/jrproc.asp



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FREQUENTLY ASKED QUESTIONS

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Accessories
Indoor Air Quality
Pool Heaters

Knowledge Center

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How You Benefit
How It Works
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New Construction
Tax Credits
Event Locator
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The Conservation Way
Green Initiative
IAQ Journal
FAQ
Glossary of Terms

WaterFurnace Owners

Customer Testimonials
Owner's Manual
Product Registration
WaterFurnace Merchandise

[More Information > FAQs](#)

In The Loop

- Do I need separate earth loops for heating and cooling?
- Does the underground pipe system really work?
- What types of loops are available?
- What is an open loop system?
- How much groundwater does an open loop system require?
- What do I do with the discharge water?
- Are there any laws that apply to open loop installations?
- Does an open loop system cause environmental damage?
- Can I reclaim heat from my septic system disposal field?
- What problems can be caused by poor water quality?
- What is a closed loop system?
- What if I don't have room for a horizontal loop?
- How long will the loop pipe last?
- How deep and long will my trenches be?
- How are the pipe sections of the loop joined?
- Will an earth loop affect my lawn or landscape?
- I have a pond nearby. Can I put a loop in it?
- Can I install an earth loop myself?

Do I need separate earth loops for heating and cooling?

No. The same loop works for both. To switch heating to cooling, or vice versa, the flow of heat is simply reversed.

Does the underground pipe system really work?

The buried pipe, or earth loop, was an important technical advancement in heat pump technology. The idea of burying pipe in the ground to gather heat energy originated in the 1940s. New heat pump designs and more durable pipe materials have been combined to make geothermal heat pumps the most efficient heating and cooling systems available.

What types of loops are available?

There are two main types: open and closed.

What is an open loop system?

An open loop system uses groundwater from an ordinary well as a heat source. The groundwater is pumped into the heat pump unit, where heat is extracted and the water is disposed of in an environmentally safe manner. Because groundwater is a relatively constant temperature year-round, wells are an excellent heat source.

How much groundwater does an open loop system require?

WaterFurnace : Frequently Asked Questions

Page 2 of 4

The water requirement of a specific model is usually expressed in gallons per minute (g.p.m.) and is listed in the unit's specifications. Generally, the average system will use 1.5 g.p.m. per ton of capacity while operating, but the amount of water required depends on the size of the unit and the manufacturer's specifications. Your contractor should be able to provide this information. Your well and pump combination should be large enough to supply the water needed by the heat pump in addition to your domestic water requirements. You probably will need to enlarge your pressure tank or modify your plumbing to supply adequate water to the heat pump.

What do I do with the discharge water?

There are a number of ways to dispose of water after it has passed through the heat pump. The open discharge method is the easiest and least expensive. Open discharge simply involves releasing the water into a stream, river, lake, pond, ditch or drainage tile. Obviously, one of these alternatives must be readily available and have the capacity to accept the amount of water used by the heat pump before open discharge is feasible. A second means of water discharge is the return well. A return well is a second well bore that returns the water to the ground aquifer. A return well must have enough capacity to dispose of the water passed through the heat pump. A new return well should be installed by a qualified well driller. Likewise, a professional should test the capacity of an existing well before it is used as a return.

Are there any laws that apply to open loop installations?

All or part of the installation may be subject to local ordinances, codes, covenants or licensing requirements. Check with local authorities to determine if any restrictions apply in your area.

Does an open loop system cause environmental damage?

No. The system is pollution-free. The heat pump merely removes or adds heat to the water. No pollutants are added. The only change in the water returned to the environment is a slight increase or decrease in temperature.

Can I reclaim heat from my septic system disposal field?

No. An earth loop will reach temperatures below freezing during extreme conditions and may freeze your septic system. Such usage is banned in many areas.

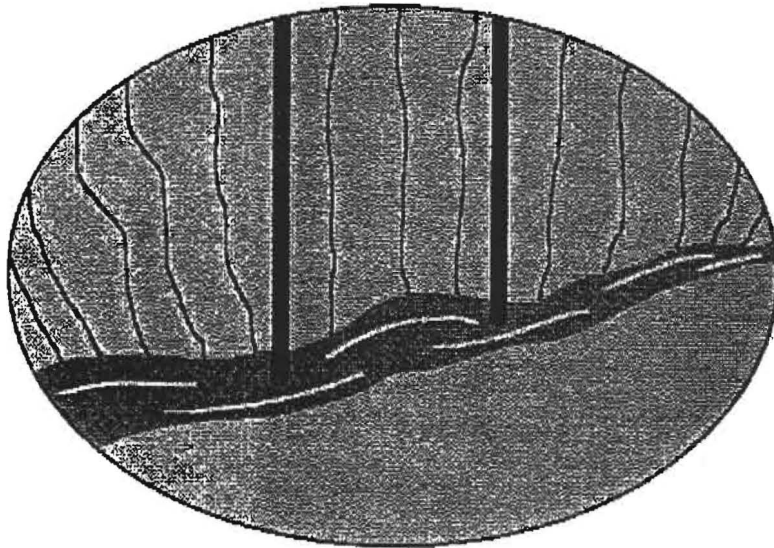
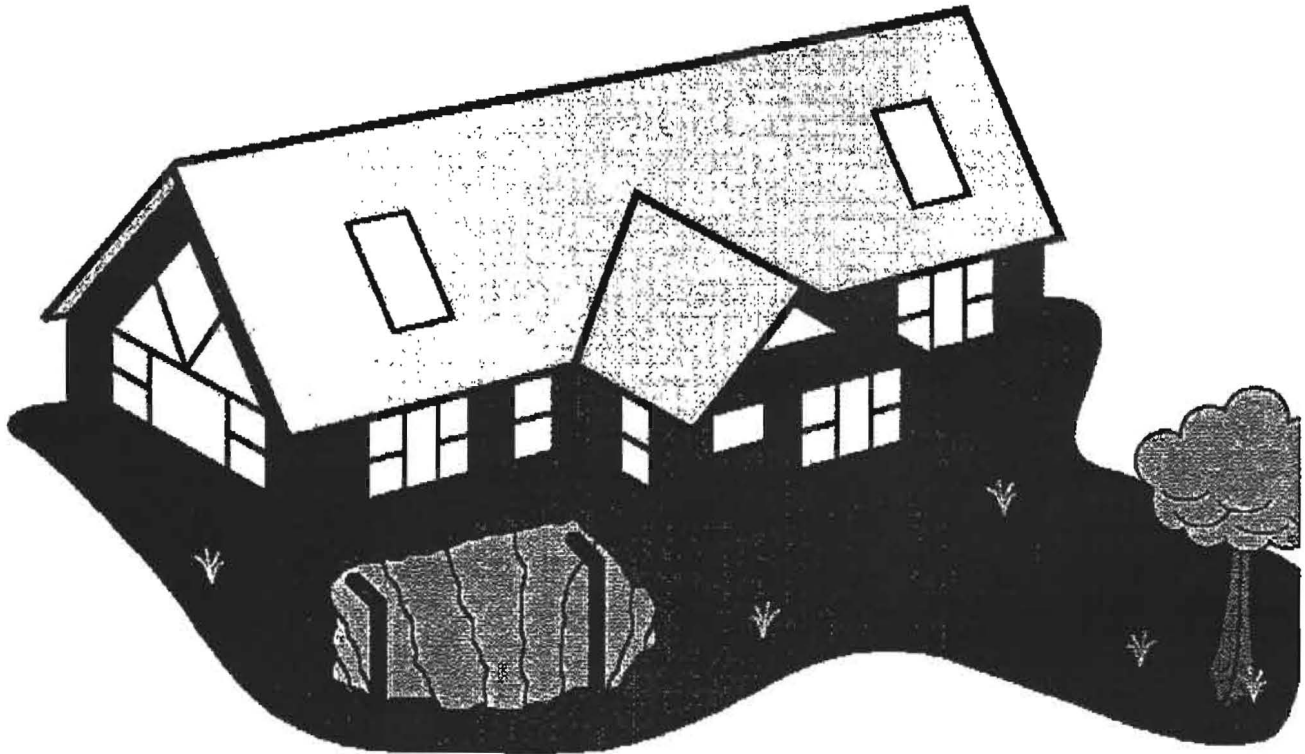
What problems can be caused by poor water quality?

Poor water quality can cause serious problems in open loop systems. Your water should be tested for hardness, acidity and iron content before a heat pump is installed. Your contractor or equipment manufacturer can tell you what level of water is acceptable. Mineral deposits can build up inside the heat pump's heat exchanger. Sometimes a periodic cleaning with a mild acid solution is all that's needed to remove the build-up.

Impurities, particularly iron, can eventually clog a return well. If your water has high iron content, make sure that the discharge water is not aerated before it's injected into a return well.

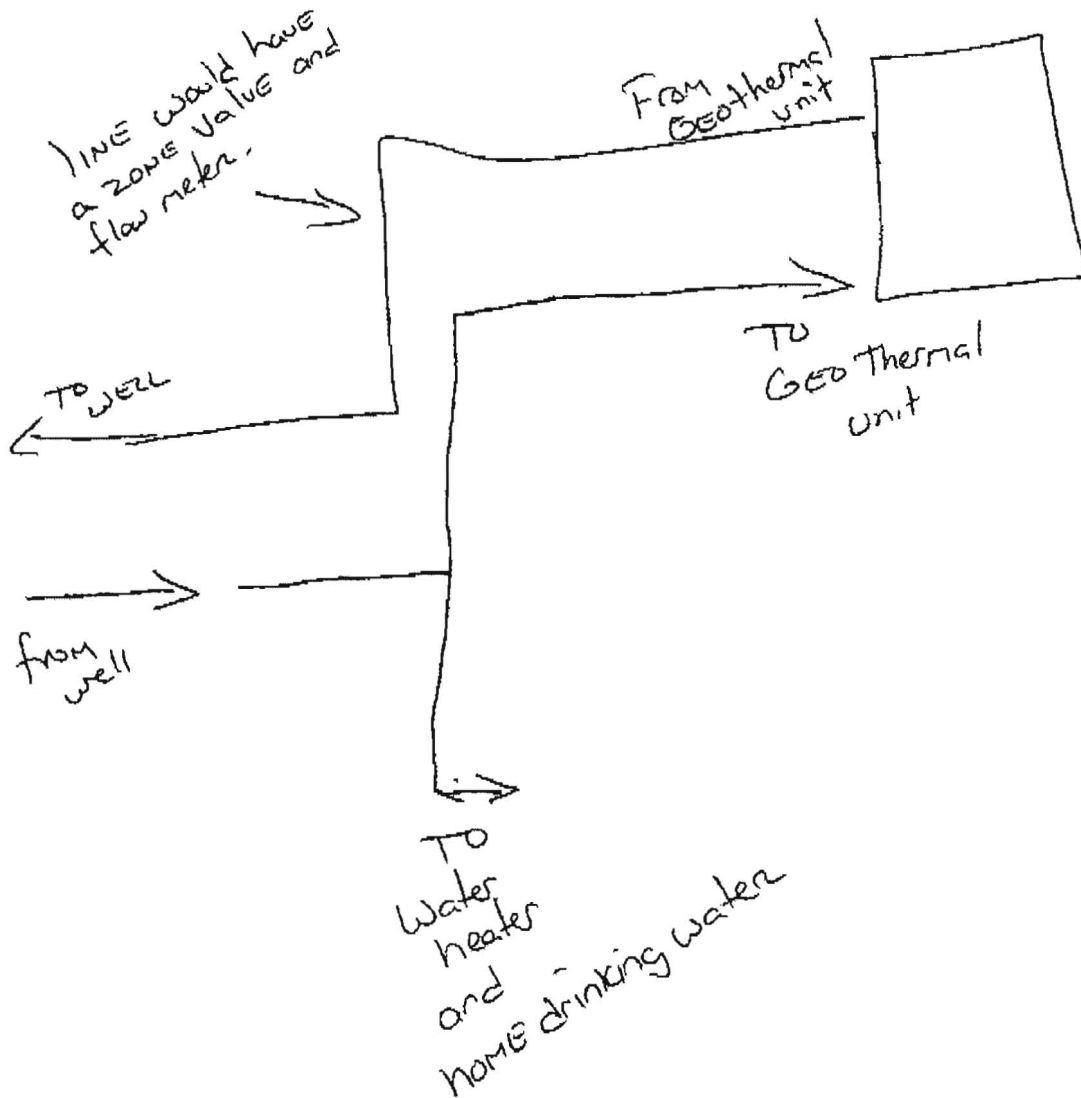
What is a closed loop system?

A closed loop system uses a continuous loop of buried polyethylene pipe. The pipe is connected to the indoor heat pump to form a sealed, underground loop through which an environmentally friendly antifreeze-and-water solution is circulated. A closed loop system constantly re-circulates its heat-transferring solution in pressurized pipe, unlike an open loop system that consumes water from a well. Most closed loops are trenched horizontally in areas adjacent to the building. However, where



WaterFurnace : Frequently Asked Questions

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SAVAGE STONE, LLC

SAVAGE, MARYLAND

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BILLING INQUIRIES

301-953-7650

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TICKET #00388094

STATION 88

DATE 09/28/10 TIME 08:53:24

CUSTOMER WHIEXC
WHITWORTH EXCAVATING
12680 CLARKSVILLE RD
CLARKSVILLE, MD 21029

JOB MANORL : MANOR LANE #4655
P.O. # PROJECT #:
RT. 1S., RT. 32W., EXIT RT. 10B MAKE A RIGHT
L. ON MANOR LANE, 3/4 MILE R. SIDE LOOK
MARK BREW PLUMBING SIGN MAKE RIGHT
ALAN 410-365-6590

TRUCK 128C LICENSE 0 AXLES
DRIVER: PLUMMER & SON GEORGE

GROSS	SCALE B	69120 lb
TARE	IN (STORED)	25320 lb
NET		43800 lb
NET		21.90 t

	Loads	Tons
DAILY	3	64.57
TOTAL	3	64.57
TIME IN 08:53:24		TIME OUT 08:53:24

NAT'L 0022 : MD #2 STONE
HAUL ZONE HC03

WEIGHMASTER _____
Gail Harrison

RECEIVED BY Mark Ford

THANK YOU! PLEASE CHECK YOUR TICKETS ! HAVE A NICE DAY!