

C1 36215

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND WELL COMPLETION REPORT FILL IN THIS FORM COMPLETELY PLEASE TYPE

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

1 2 3 6 (THIS NUMBER IS TO BE PUNCHED IN COLUMNS 3-6 ON ALL CARDS)

COUNTY NUMBER

ST/CO USE ONLY DATE RECEIVED MM DD YY 16

DATE WELL COMPLETED MM DD YY 1-19-16

Depth of Well 22 320 26

PERMIT NO. FROM "PERMIT TO DRILL WELL" 2/17/16 SC 140-15-0198

OWNER Date: The Markus + Angela WELL SITE ADDRESS 1415 Northbrook Ct first name TOWN Ellicott City MD SUBDIVISION The Willows SECTION LOT 16

WELL LOG

Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

Table with columns: DESCRIPTION (Use additional sheets if needed), FEET (FROM, TO), check if water bearing. Rows include Topsoil, Brn Soil, Red Brn Clay, Hard Brn weathered Rock, Gray Rock w/ Brown Rock + water, Med Gray Rock.

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box) YES Y NO N TYPE OF GROUTING MATERIAL (Circle one) CEMENT CM BENTONITE CLAY BC NO. OF BAGS 24 NO. OF POUNDS 1200 GALLONS OF WATER 600 DEPTH OF GROUT SEAL (to nearest foot) from 0 ft. to 320 ft.

CASING RECORD

MAIN CASING TYPE Nominal diameter top (main) casing (nearest inch)! Total depth of main casing (nearest foot) 60 61 63 64 66 70

OTHER CASING (if used)

Table with columns: E A C H C A S I N G, diameter inch, depth (feet) from to

SCREEN RECORD

screen type or open hole (insert appropriate code below) ST STEEL BR BRASS PL PLASTIC HO OPEN HOLE OT OTHER

C 2

DEPTH (nearest ft.)

Table with columns: E A C H S R E E N, SLOT SIZE 1 2 3, DIAMETER OF SCREEN (NEAREST INCH) from to

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

C 3

PUMPING TEST

HOURS PUMPED (nearest hour) 8 9 PUMPING RATE (gal. per min.) 11 15 METHOD USED TO MEASURE PUMPING RATE WATER LEVEL (distance from land surface) BEFORE PUMPING 17 20 ft. WHEN PUMPING 22 25 ft. TYPE OF PUMP USED (for test) A air P piston T turbine C centrifugal R rotary O other J jet 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 - below LAND SURFACE (nearest foot) 49 50 51

LATITUDE 39.24880 LONGITUDE 76.85566 (DEFAULT COORD. WGS 84)

Pursuant to §10-624 of the State Govt. Article of the Maryland Code personal info. requested on this form is used in processing this form pursuant to COMAR 26.04.04. Failure to provide the info. may result in this form not being processed.

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED YES Y NO N

CIRCLE APPROPRIATE LETTER A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED E ELECTRIC LOG OBTAINED P TEST WELL CONVERTED TO PRODUCTION WELL

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 W D 553

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. 1 W & D 497

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

B 1

45622

SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND APPLICATION FOR PERMIT TO DRILL WELL

STATE PERMIT NUMBER

10-15-0198

557495 please type

fill in this form completely

Date Received (APA) 12/23/15

OWNER INFORMATION

8 MM DD YY 13

Dale TLE Markus + Angela
9815 Northbrook Court
Ellicott City MD 21042

B 3

LOCATION OF WELL

Howard
8 COUNTY 21
The Willows
23 SUBDIVISION 42
SECTION 44 46 LOT 48 50
Ellicott City
52 NEAREST TOWN 71

DRILLER INFORMATION

John Hess MW D 553
Allied Environmental Svcs
20 Box 129 Annapolis Junction MD 20701
John Hess 12/22/15

B 4

SOURCES OF DRILLING WATER

1. Public
2.
3.

9815 Northbrook Ct
11 STREET ADDRESS 30
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)
NORTH
WEST EAST
SOUTH
34 40 37
DISTANCE FROM ROAD FT 38 39
ENTER FT OR MI
TAX MAP: 30 BLK: 2 PARCEL 401

B 2

WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.) 8 12
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) 14 20

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
I INDUSTRIAL, COMMERCIAL, DEWATERING
P PUBLIC WATER SUPPLY WELL
T TEST, OBSERVATION, MONITORING
O OPEN LOOP GEOTHERMAL
C CLOSED LOOP GEOTHERMAL 2 loops

NOT TO BE FILLED IN BY DRILLER HEALTH DEPARTMENT APPROVAL

Howard 13 COUNTY NAME COUNTY NO.
STATE SIGNATURE INSERT S 41
DATE ISSUED 1/7/16 CO SIGNATURE EXP. DATE 1/7/17

APPROXIMATE DEPTH OF WELL 320 FEET
APPROXIMATE DIAMETER OF WELL 6 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 DEEPEMED WELLS (CIRCLE APPROPRIATE BOX)

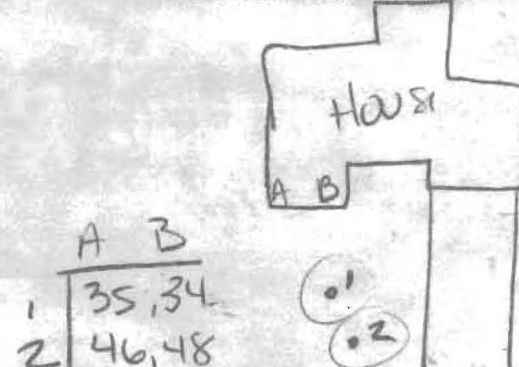
- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
D THIS WELL WILL DEEPEM AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPEMED (IF AVAILABLE) 41

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

APPROP. PERMIT NUMBER G
PERMIT No. 10-15-0198

PROPOSED LOCATION OF WELL ON LOT SHOW PERMANENT STRUCTURES SUCH AS BUILDINGS, SEPTIC SYSTEM, ROADS AND/OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCE MEASUREMENTS TO WELL



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SPECIAL CONDITIONS

NOTE: APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

Norwalk CT

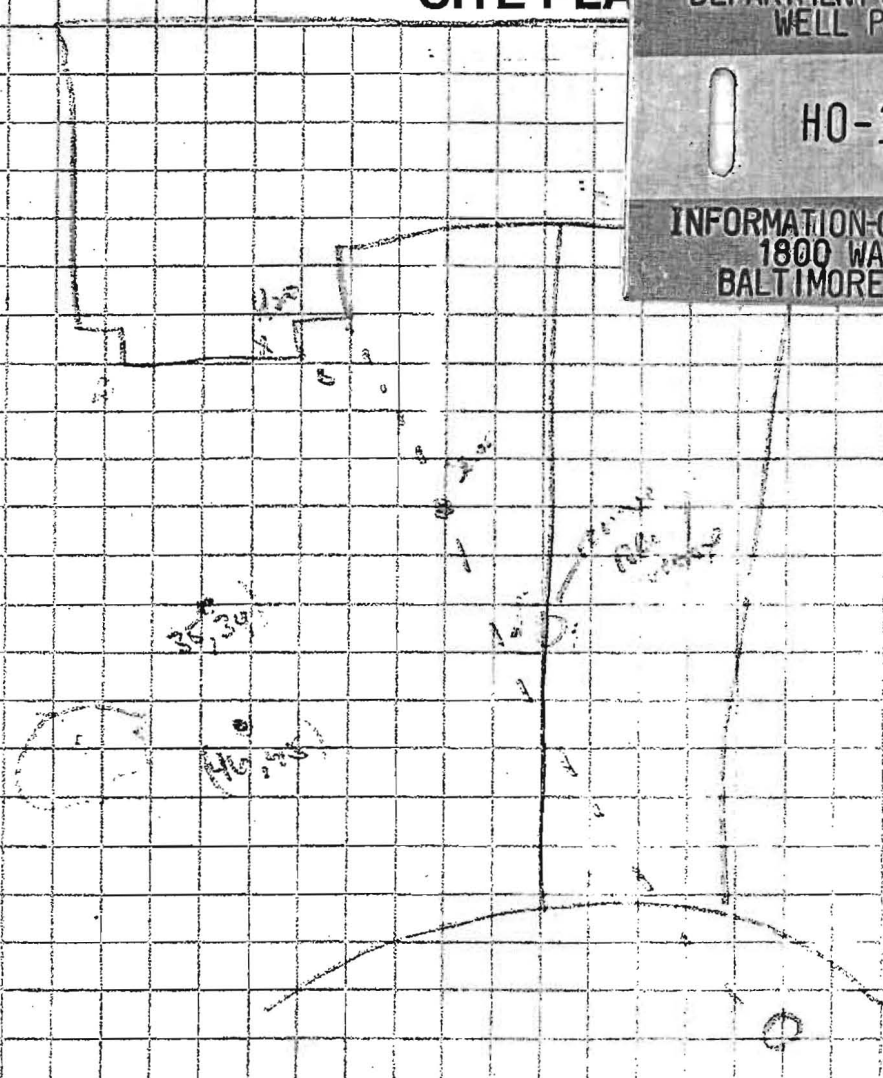


# SITE PLAN

DO NOT REMOVE THIS TAG  
DEPARTMENT OF THE ENVIRONMENT  
WELL PERMIT NUMBER

H0-15-0198

INFORMATION-GIVE NUMBER AND WRITE  
1800 WASHINGTON BLVD  
BALTIMORE MARYLAND, 21230



Well sites  
approved  
1/7/16 SC

Sediment Control Protocol: cutting / mulch

Distance From House: 34'  
From Septic: NA  
From Sewer: 10'  
From Property Line: 10'  
From Street: 40'

Trees Nearby: yes - 10' tall  
Utility Issues: none  
Mats Needed: yes  
Access For H/U: yes  
Neighboring Tags: no

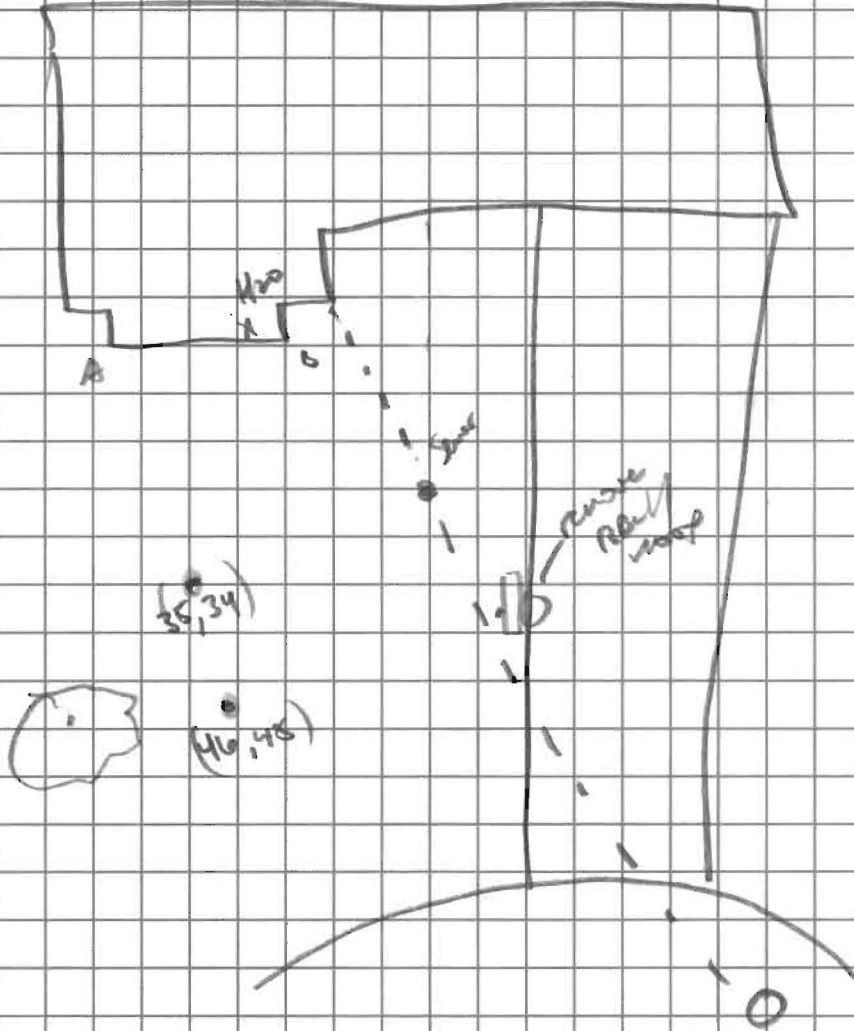
Comments: note 1100 - 1200 + 1300 - 1400

Person Completing Form: \_\_\_\_\_

Northbrook CT



### SITE PLAN



Sediment Control Protocol: silt bag / water trucks

Distance From House: 34'  
 From Septic: NA  
 From Sewer: 10'  
 From Property Line: 10'  
 From Street: 40'

Trees Nearby: yes - no OH: 100  
 Utility Issues: MARK sewer + gas  
 Mats Needed: yes  
 Access For H/U: NA  
 Neighboring Tags: NA

Comments: Mark H2O + Sewer + Remove B&B/1000

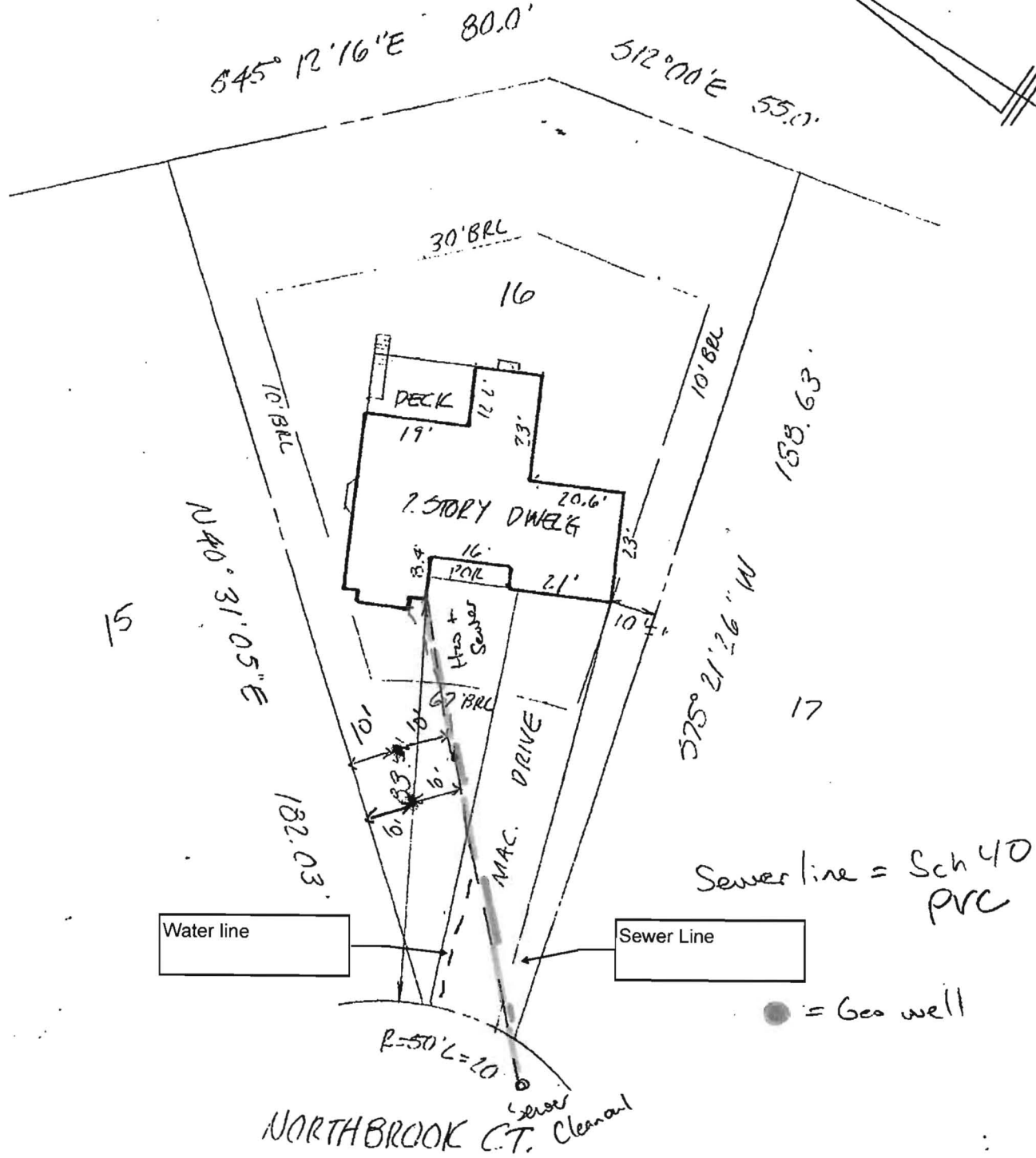
Person Completing Form: \_\_\_\_\_

# LANDTECH ASSOCIATES, INC.

1410 CRAIN HIGHWAY, N.W. SUITE 7B GLEN BURNIE, MD 21061

(410) 768-2121 FAX (410) 553-9081

NOTE: NOT TO BE USED FOR THE ISSUANCE OF PERMITS.



Sewer line = Sch 40 PVC

● = Gas well

Water line

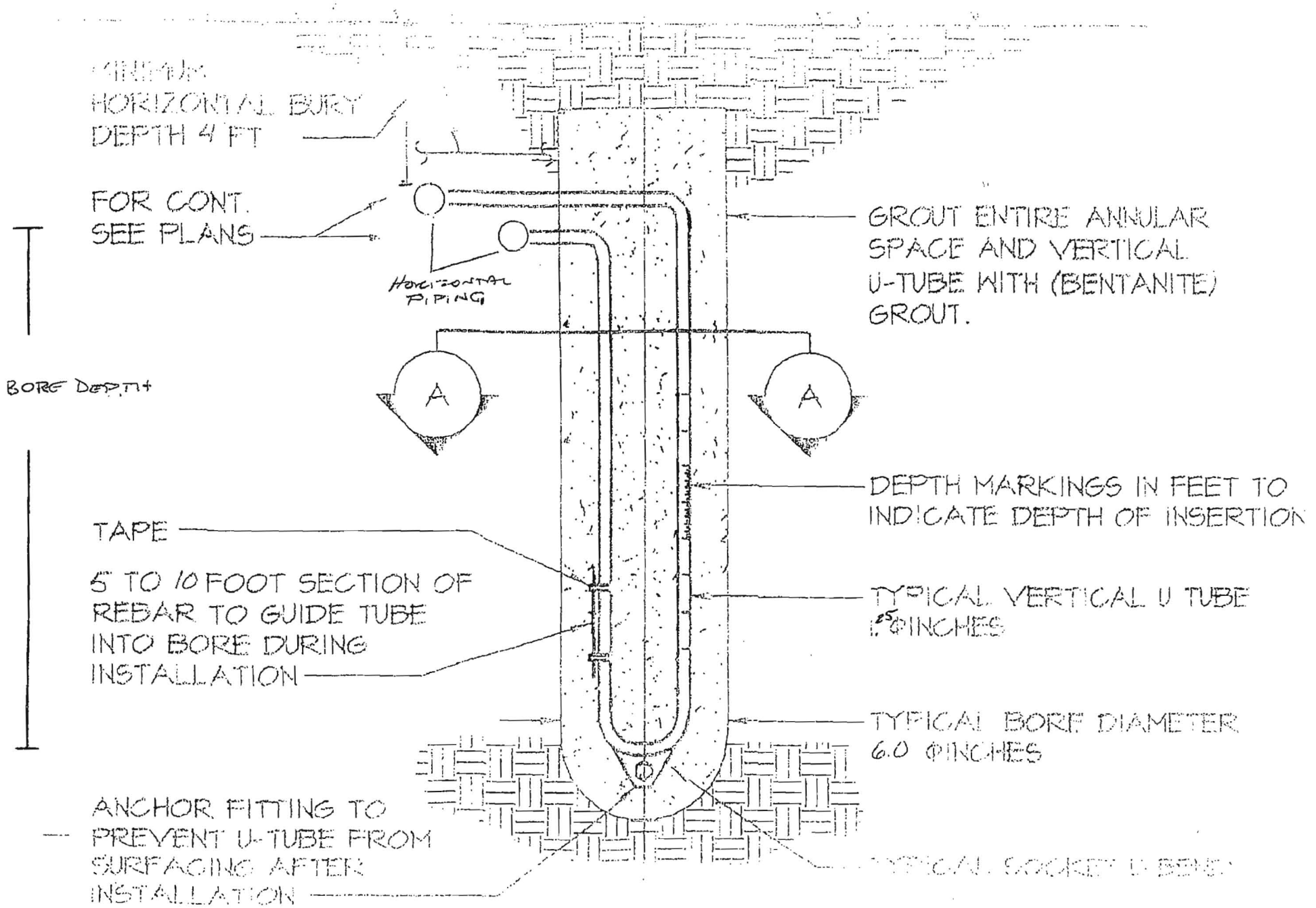
Sewer Line

NOTE: THIS PROPERTY LIES IN FLOOD ZONE C. AN AREA OF MINIMAL FLOODING, AS DELINEATED ON THE MAPS OF THE NATIONAL FLOOD



GRADE .....

EACH BORE HOLE (TYP.)



HORIZONTAL BURY DEPTH 4 FT

FOR CONT. SEE PLANS

HORIZONTAL PIPING

GROUT ENTIRE ANNULAR SPACE AND VERTICAL U-TUBE WITH (BENTANITE) GROUT.

BORE DEPTH

TAPE

5 TO 10 FOOT SECTION OF REBAR TO GUIDE TUBE INTO BORE DURING INSTALLATION

DEPTH MARKINGS IN FEET TO INDICATE DEPTH OF INSERTION

TYPICAL VERTICAL U TUBE 1.25 INCHES

TYPICAL BORE DIAMETER 6.0 INCHES

ANCHOR FITTING TO PREVENT U-TUBE FROM SURFACING AFTER INSTALLATION

TYPICAL SOCKET U BEND

## HOWARD COUNTY GROUTING PROCEDURE

Boreholes will be grouted from the bottom to the top via a tremie pipe and positive displacement pump. Bentonite grout, known as Quik-Grout will be used according to the manufacturer's specifications to achieve a consistency of at least 20% solids (24 gallons potable water/50 lb. sack of grout) and a permeability no more than  $2.5 \text{ E}(-08) \text{ cm/sec}$ . Grouting will be completed immediately after installing the geothermal loop and no later than twenty-four (24) hours after installing the geothermal loop. Open boreholes/annular space will be protected as necessary to prevent the entry of surface water or pollutants.