ICHD–ENVIRONMENTAL HEALTH DIVISION

Statesville Office (704) 878-5305 | Mooresville Office (704) 660-3625 | PERMIT # AP301507

SEPTIC IMPROVEMENT PERMIT / AUTHORIZATION TO CONSTRUCT / OPERATION PERMIT / EXISTING SYSTEM

PIN # 4740671849

APPLICANT/OWNER: John Howard | APPLICANT ADDRESS: 15 Peters Ln Newport News VA 23606

SITE ADDRESS: 169 Barkdale Rd Troutman NC 28166 | PHONE: 757-358-0767 | ALT. PHONE

SITE DIRECTIONS: NC 115 N to L on Barkdale Ln, Lot will be on L | SAP CONTROLLED: ☐ YES ☒ NO

SUBDIVISION: | SECTION: — LOT # — LOT AREA: 5.22 acres | DESIGN FLOW: 240gpd | L.T.A.R.: .25

Septic Tank	1000 (gal)	STB 766	Date 12/19/21	☒ New System ☐ Repair ☐ Expansion	System Type: I II III IV V VI	☒ Residence	No. Bedrooms	2	Water Supply
Pump Tank	1000 (gal)	PT 9 363	Date 1/3/22	System Description:	PM 25% Reduction	☐ Business	No. Persons	4	☒ Private
Pump Make	Zoeller	Model	Serial #	Repair System Description:	LPPPBPS	☐ Other	No. Employees		☐ Public
# Nitrification Fields	1	# Lines 3	Linear Ft 240'	Maintenance Agreement Required:	☐ YES ☒ NO	☐ Slab	☒ Crawl Space		☐ Community
Trench Width	36"	Trench Bottom Depth (Low side)	36" max	Gravel Depth	☐ GRAVITY ☒ PRESSURE	☐ Basement w/ plumbing			☐ Basement w/o plumbing

Comments / Conditions: Install Lines on contour. Do not Drive on store material or manipulate drainfield in any way

INITIAL SITE SKETCH

This permit is issued pursuant to Section 11 . (C) of S.L. 2018-114 using the signed and sealed LSS Evaluation by:

Ashley Rollans

LSS # 1231

AS BUILT SKETCH

Installed as Drawn

Lines ✓
Ductile Iron ✓
Tanks ✓
PM
PH CW
Floats 8/30/22
Alarm
Electrical CW 9/2/22

Permit can be suspended or revoked if any false information is supplied toward securing the permit / any unauthorized changes are made to the site / any unauthorized changes are made in the installation of the system. **CONTACT A LOCATOR SERVICE PRIOR TO ANY EXCAVATION**

☐ **IMPROVEMENT PERMIT** *with plat valid without expiration.* ☒ **IMPROVEMENT PERMIT** *with site plan valid for 60 mos.* ☒ **AUTHORIZATION TO CONSTRUCT** *valid for period equal to IMPROVEMENT PERMIT--not to exceed 60 mo.*

Owner / Applicant Signature: Acceptance of Permit Rec'd Date: 7.23.2020

IMPROVEMENT PERMIT by: Patrick J Boyle III Date: 7/20/2020

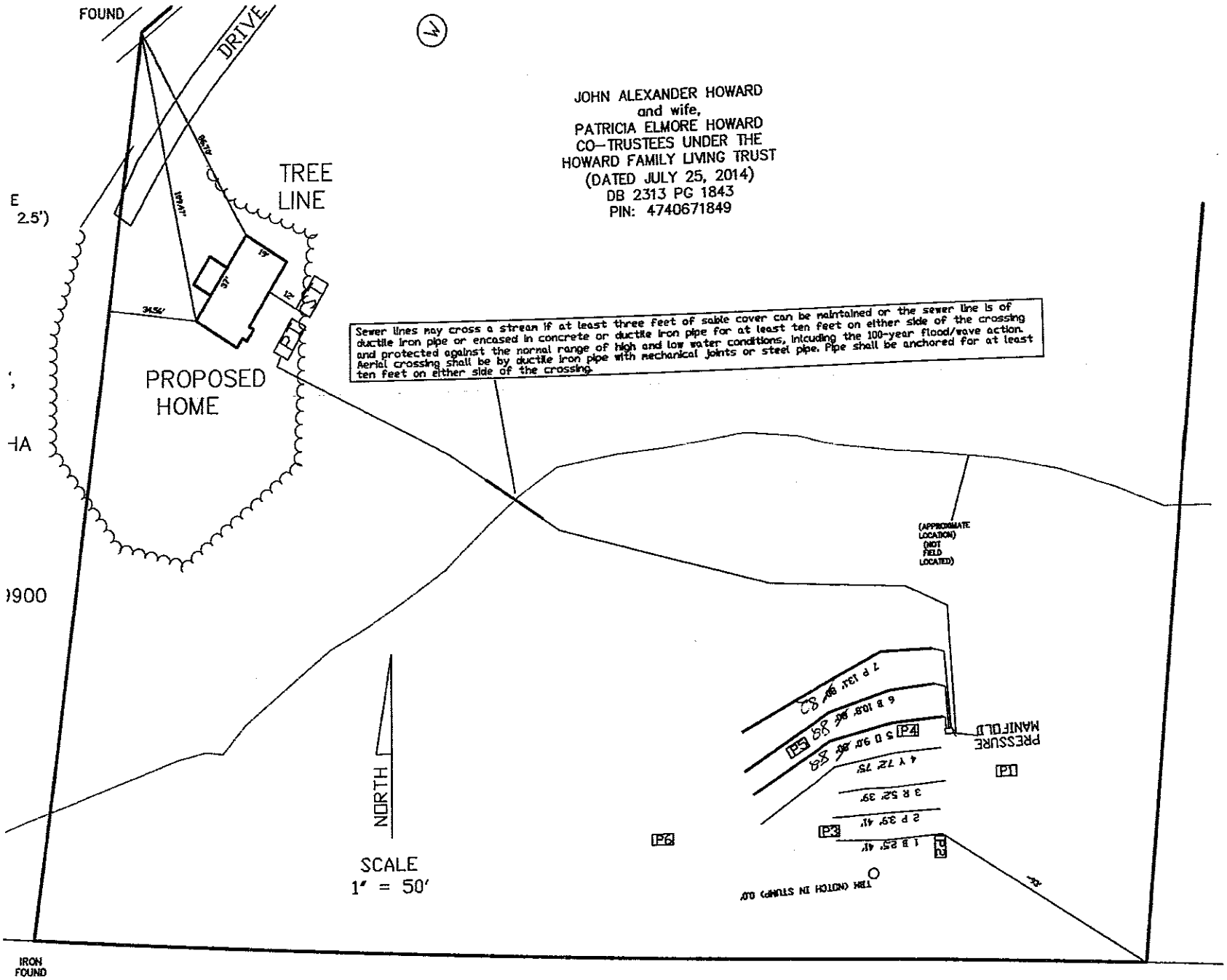
AUTHORIZATION TO CONSTRUCT by: Patrick J Boyle III Date: 7/20/2020

Installed by: Castle Excavating Date: 9/2/22

OPERATION PERMIT by: Cory Lutz Date:

Existing System Inspected by:

FOR SEPTIC FINAL INSPECTION: CALL 704-664-3703 between 8am-9am the day the inspection is needed. Be sure to speak with an inpsector to confirm your inspection time.


FOUND
DRIVE
TREE
LINE
PROPOSED
HOME
JOHN ALEXANDER HOWARD
and wife,
PATRICIA ELMORE HOWARD
CO-TRUSTEES UNDER THE
HOWARD FAMILY LIVING TRUST
(DATED JULY 25, 2014)
DB 2313 PG 1843
PIN: 4740671849
Sewer lines may cross a stream if at least three feet of sable cover can be maintained or the sewer line is of ductile iron pipe or encased in concrete or ductile iron pipe for at least ten feet on either side of the crossing and protected against the normal range of high and low water conditions, including the 100-year flood/wave action. Aerial crossing shall be by ductile iron pipe with mechanical joints or steel pipe. Pipe shall be anchored for at least ten feet on either side of the crossing.
(APPROXIMATE LOCATION) (NOT FIELD LOCATED)
PRESSURE MANIFOLD
P1
P2
P3
P4
P5
P6
NORTH
SCALE
1" = 50'
IRON FOUND
IRON NOTCH IN STUMP 0.0'

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant:	John Howard
Address:	15 Peters Ln Newport News, VA 23606
Phone:	757.358.0767
County:	Iredell
Location:	169 Barkdale Rd, Troutman NC 28166

Source of Wastewater Flow:	2 Bedroom Single Family Residence
Estimated Daily Wastewater Production:	240 gpd
System Flow:	21.33

Design Specifications

Drainfield Size:	240
Loading Rate:	0.25
Depth of Gravel in Trench:	NA (25% reduction)
Gravel Size:	NA (25% reduction)
Trench Depth:	36 in. Repair Trench Depth 44 in.
Trench Width:	36 in.
Septic Tank Size:	1000
Pump Tank Size:	1000

Estimated Supply Line Length:	344
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	59.86
Dosing Volume:	109.70
Supply Manifold:	4 in. SCH 80 PVC
Supply Manifold Length:	4 ft. (minimum)
Supply Manifold Volume:	N/A

Recommended Float Controls:	SJE Sensor Float Control Switches as Required for Control Panel or County Approved Equivalents
Recommended Control Panel:	SJE-Rhombus Model 112 (NEMA 4x) Control Panel or County Approved Control Panel.

Pressure Head:	2 ft.
Friction Head:	6.12
Elevation Head:	24.00
Total Dynamic Head:	36.94

Threaded Union:	In Tank
Gate Valves:	1 in Tank 1 at Pressure Manifold
Check Valves:	In Tank
Anti-Siphon Hole:	In Tank
Additional Comments:	Soil suitability was performed by Soil & Forestry Services of the Carolinas, PA.

169 Barkdale Rd, Troutman NC 28166
PRESSURE MANIFOLD DESIGN

DESIGN FLOW:	240	
SOIL APPLICATION RATE:	0.25	
TOTAL AREA TRENCH BOTTOM:	720	
TOTAL LATERAL LENGTH:	240	
NUMBER OF FIELDS:	1	
LATERAL LENGTH REQUIRED PER FIELD:	240	
SUPPLY LINE LENGTH:	344	
TOTAL DYNAMIC HEAD:	36.94	
MANIFOLD SIZE:	4 in.SCH 80 PVC	
DOSING VOLUME:	109.70	
PUMP TANK DRAW DOWN*:	5.2	
SEPTIC TANK SIZE:		1000
PUMP TANK SIZE:		1000

**Pump tank draw down based on a volume basis of 21 gallons per inch. Draw down may vary among pump tank manufacturers.*

Layout Specifications - 169 Barkdale Rd

Project #: 20-0002

LAYOUT FOR 2 BEDROOM HOME

May 21, 2020

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		0.00			100.00		
HOUSE				29.00	71.00		
PUMP TANK				27.00	73.00		
INSTR. 1			100				
1	BLUE			2.50	97.50	41	41
2	PINK			3.90	96.10	41	41
3	RED			5.20	94.80	39	39
4	YELLOW			7.20	92.80	75	75
5	***ORANGE***			*9.00*	*91.00*	*80*	*80*
6	***BLUE***			*10.80*	*89.20*	*80*	*80*
7	***PINK***			*13.10*	*86.90*	*80*	*80*
					Total	436	436

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION	TRENCH DEPTH
** System*	*276*	*0.250*	*ACCEPT.*	*0.250*	*25% RED*	***PRESSURE MANIFOLD***	36"
Repair	235	0.250	MOD. CONV.	0.250	PPBPS	LOW PRESSURE	44"

Notes: **All measures in feet

**Nitrification lines are demonstrated on contour via colored pin flags

**Nitrification lines were located by GPS. House located via survey.

PRESSURE MANIFOLD TAPSHEET - 169 BARKDALE ROAD

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area	Line LTAR
1	***PINK***	***87.80***	80	SCH 40 1/2	**7.11**	240	0.15
2	***BLUE***	***90.10***	80	SCH 40 1/2	**7.11**	240	0.15
3	***ORANGE***	***91.90***	80	SCH 40 1/2	**7.11**	240	0.15

total	**feet =**	**240**	**gal/min =**	**21.33**
		Des. Flow	**240**	
		Pump Run=	**5.14**	
		soil LTAR	**0.25**	
		LTAR +5%	**0.2625**	
		LTAR with ACCEPTED	**0.333333333**	
		LTAR with ACCEPTED + 5%	**0.35**	

SOIL & FORESTRY SERVICES
OF THE CAROLINAS, PA

www.soilandforestryservices.com

Project#: 20-0002
May 25th, 2020

JOHN & PATRICIA HOWARD
Attn: *John & Patricia Howard*
Email: jhoward47@cox.net

RE: Soil & Site Evaluation for a 2 Bedroom Residence (Crawl Space) at 169 Barkdale Road, 5.22 ac, PIN#: 4740671849, Troutman, NC 28166, Iredell County, North Carolina.

John & Patricia:

At your request Soil & Forestry Services of the Carolinas (S&FS) has performed soil/site evaluations on parcel noted above. The Lot size is noted on the attached soil evaluation form. The purpose of our work was to identify soil areas with potential to support subsurface wastewater disposal systems and provide design details for Session Law submittals to Iredell County Health Department.

Site Conditions
At the time of our evaluation land cover on the property was mostly young hardwood forest. Topography within the evaluated area was moderate slope near the house site with moderate to steep percentage of slope in the proposed drainfield area. There is a creek downslope of the proposed house. Property lines and corners were marked at the time of the evaluation by David Medlin. The Surveyor provided an Autocad File of the survey as a basemap. The proposed septic layout was located via Trimble Submeter GPS and used to produce the attached *Site Plan*. The house envelope was located via Survey by David Medlin.

Methodology
We initially evaluated soil areas through the use of hand augers then had backhoe pits dug for final soil morphological data. Soil morphological conditions including color, texture, structure, etc. were reviewed in the field with five pit locations on the property flagged and located via GPS. Four of the soil pits were reference for the proposed septic layout. Soil suitability was determined by referencing 15A NCAC 18A.1900 "Laws and Rules for Sewage Treatment and Disposal Systems". *Soil & Site Evaluation Forms* were utilized to record the soil morphological data for each boring. The house envelope was located via survey. An on-ground layout of system and repair was performed using a laser level. Pin flag locations of the layout were also located by GPS. Detailed system & repair information is summarized in the following paragraph for this Lot.

169 Barkdale Road (*See Attached Design*)
The septic layout for this lot (9' centers) yielded a total of 436 linear feet of line. The primary system is proposed as 240' of Accepted (25% Reduction) drainfield with Pressure Manifold distribution. Trench depth is specified at 36 inches. The repair system is proposed as 196' of PPBPS drainfield with Low Pressure distribution. Trench depth is specified at 44 inches.

Session Law Requirements

An LSS Evaluation may be submitted in conjunction with a complete application to the LHD. The application shall include all information described in 15A NCAC 18A .1937(d) and be accompanied by a signed and dated statement from the applicant (owner or owner's legal representative) that reads as follows:

"The LSS Evaluation attached to this application is to be used to produce design and construction features for permitting in accordance with SL 2018-114 Section 11.(c).".

Owner Date

Print Name John A. Howard / Patricia E Howard
Signature John A. Howard / Patricia E Howard 29 May 2020

The LSS Evaluation shall include a statement bearing the LSS seal and signature that reads as follows:

"The LSS Evaluation is being submitted pursuant to and meets the requirements of SL 2018-114 Section 11.(c)."

Disclaimer
This report reflects the findings of S&FS, PA. *This LSS Evaluation is being submitted pursuant to and meets the requirements of SL 2018-114 Section 11.(c).* Any site modifications that impact the proposed septic areas at 169 Barkdale Road may nullify this design. System design requirements and site requirements shall be adhered to for installation and Operations Permits to be issued by the local Health Department. If you have questions regarding these requirements a Pre-Construction meeting should be scheduled to discuss. Please contact S&FS if you have any questions regarding this report or the attached information. S&FS also offers septic system inspection, wetland delineation and forestry services.

Sincerely,

S. Ashley Rollans, LSS
Attachment: *Septic Design*

SOIL & FORESTRY SERVICES
OF THE CAROLINAS, PA

www.soilandforestryservices.com

Attached is a proposed design for an Accepted (25% reduction) Septic System with Pressure Manifold distribution for a 2 bedroom single family residence at 169 Barkdale Rd (PIN #:4740671849), Troutman NC, 28166.

Contents: **Page**

Information for the Installer---------- 1

Design Information
- Design Specifications---------- 2-3
- Layout Specifications---------- 4
- System Tapsheet---------- 5
- Pressure Manifold Diagram---------- 6

Site Plan/System Plan---------- 7-9

Calculations---------- 10

Profile Descriptions---------- 11-12

Zoning Permit & Receipt---------- SUBMITTED

Application---------- SUBMITTED

Agent Authorization Form---------- 13

Green Sheet---------- SUBMITTED

Session Law Requirments---------- COVER LETTER

May 21, 2020
Project No. 20-0002
Design By: Soil & Forestry Services of the Carolinas, PA

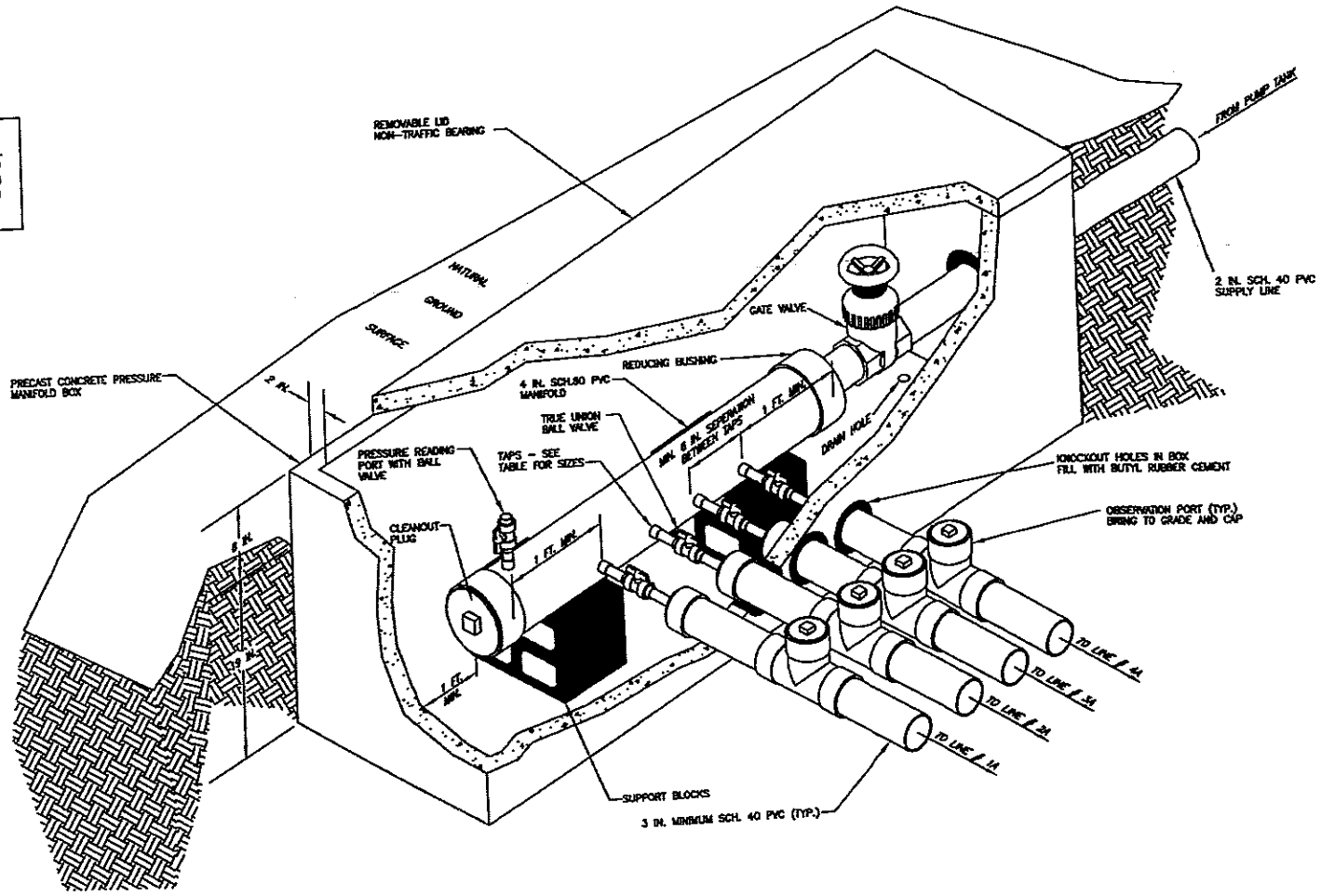
INFORMATION FOR THE INSTALLER:

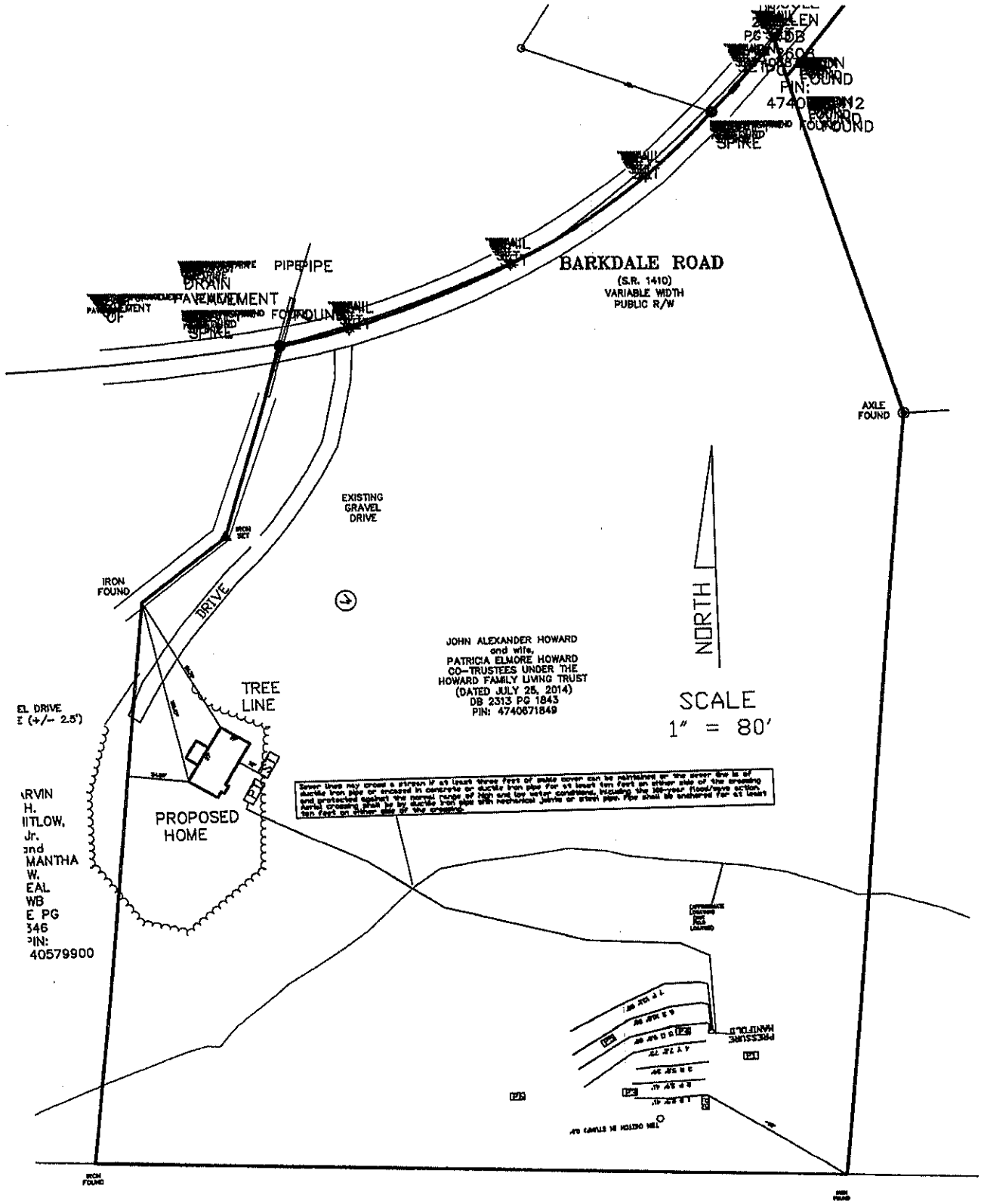
- The permit should be read very carefully prior to bidding. The following are details that must be considered along with all other considerations.
- Tanks shall be approved by DHHS, and certification supplied by the manufacturer.
- Tanks shall be water tested prior to installation.
- The installer shall be responsible to the owner for placement of the tanks and to insure that final grades are returned to the original natural grade, with exception of added structural features.
- The supply trench shall be compacted to eliminate cavities left during initial fill placement.
- Installation of the system shall be during dry conditions in order to protect the soil structure.
- All fittings shall be pressure rated fittings.
- All joints shall be cleaned with PVC pipe cleaner and a heavy bodied glue applied to weld all joints.
- Trenches shall be carefully excavated so the bottom is within 2" from the highest to . the lowest points of elevation within the trench. If the bottom elevation needs adjusting after it has been trenched, it will be done by removing high points rather than filling low points. It is extremely important to insure that trenches are not over excavated during initial trenching. All fine grading within the trench will be hand done with a shovel. No loose material will be left in the trench
- All pipe openings in the tanks shall be properly grouted. This also applies to the joints around the riser.
- All tanks shall be properly back filled and compacted to prevent slump at a later date.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral.
- No heavy equipment shall be used on the field during or after installation. The use of a small loader (i.e. Bobcat) or a trencher (i.e. Ditch Witch 2300/2310) may be used for installation.
- Elevations at pinflag locations should be checked by the installer prior to beginning trenches.
- Pumptank riser should be 6" above grade, control panel should be 12" above grade.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as an Accepted 25% reduction installation w/Pressure Manifold.
- Repair is specified as a PPBPS installation with Low Pressure Distribution.
- **See Site Plan for Creek Crossing Requirements for Supply Line**

PRESSURE MANIFOLD DETAILS
FOR
169 BARKDALE ROAD

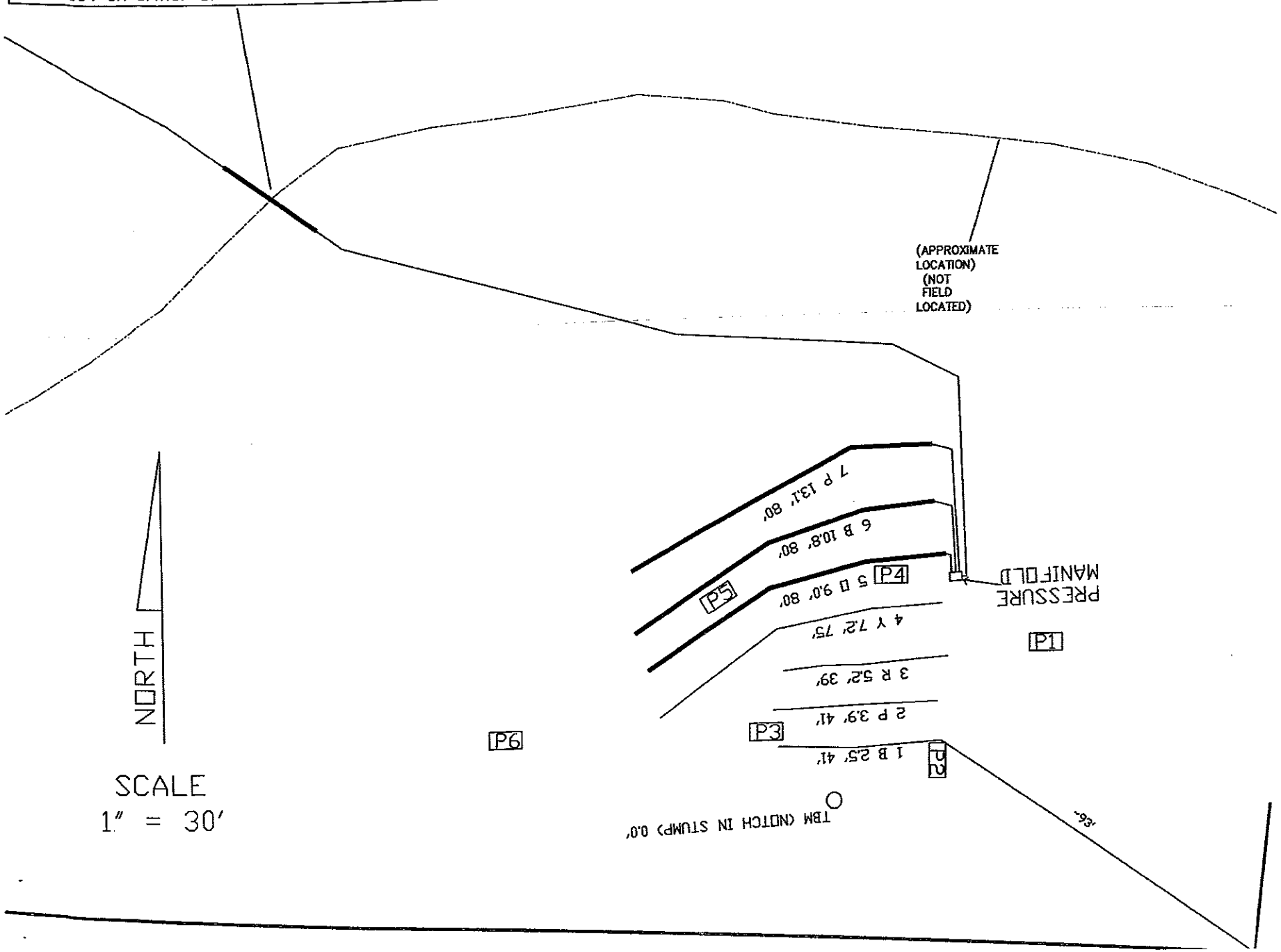
TAP SIZES

LINE No.	TAP SIZE
5	1/2" SCH. 40
6	1/2" SCH. 40
7	1/2' SCH. 40




BARKDALE ROAD
(S.R. 1410)
VARIABLE WIDTH
PUBLIC R/W
PIPE
PIPE
DRAIN
PAVEMENT
FOUND
SPIKE
AXLE
FOUND
EXISTING
GRAVEL
DRIVE
IRON
FOUND
DRIVE
TREE
LINE
PROPOSED
HOME
JOHN ALEXANDER HOWARD
and wife,
PATRICIA ELMORE HOWARD
CO-TRUSTEES UNDER THE
HOWARD FAMILY LIVING TRUST
(DATED JULY 25, 2014)
DB 2313 PG 1843
PIN: 4740671849
NORTH
SCALE
1" = 80'
PIN:
40579900

Sewer lines may cross a stream if at least three feet of sable cover can be maintained or the sewer line is of ductile iron pipe or encased in concrete or ductile iron pipe for at least ten feet on either side of the crossing and protected against the normal range of high and low water conditions, including the 100-year flood/wave action. Aerial crossing shall be by ductile iron pipe with mechanical joints or steel pipe. Pipe shall be anchored for at least ten feet on either side of the crossing.



CALCULATIONS

Location 169 Barkdale Rd

Project Number 20-0002

Lot No: N/A

No. of Bedrooms 2

Design Flow 240 $^{gal}/_{day}$

LTAR 0.250 $^{gpd/ft^2}$

25% RED.? (YES OR NO) YES

Supply Line Length 344 ft.

Supply Line Volume 59.856 gal.

Required Feet of Line 240 ft.
Amount of Line from Layout 240 ft.

Gallons per Minute 21.33 $^{gal}/_{min}$

Required Septic Tank Capacity 1000 gal.
Minimum Standard Tank Size 1000

Lateral Line Volume 156.72 gal.

Dosing Volume 109.70 gal.
Note: Dosing Volume based on 70% of lateral line volume

FRICTION FACTOR INTERPOLATER
2" SCH 40 PVC

GPM	*f*
20	0.84
	-0.88
25	1.27
	-1.28
30	1.78
	-1.76
35	2.37
	-2.25
40	3.03
43.07	3.48
45	3.77
48.14	4.28
50	4.58
57.11	5.89
60	6.42

Tank Draw Down 5.2 *Generic Draw Down of 21 gal.per in.*

Pump Run Time 5.14 minutes

Elevation Head 24 ft.
Pressure Head 2 ft.
Friction Factor 1.78 ft./100 ft. *(From the interpolater.)*
Friction Head 6.12 ft.

Total Dynamic Head (+15%) 36.94 ft.