

VIRGINIA DEPARTMENT OF HEALTH
ENGINEERING DESCRIPTION SHEET

DATE: April 23, 2012

WATERWORKS CLASS: VI

TYPE: Community

WATERWORKS NAME

Cherokee Hills

COUNTY/CITY:

Franklin County

LOCATION:

From the Town of Rocky Mount take U.S. Route 229 South for approximately 15.3 miles; turn left onto Country Ridge Road (State Route 609) travel approximately 0.5 miles; waterworks is located on the left hand side of the road.

OWNER:

Pepper Environmental Services
Contact: Mr. Greg Flory
1807 Murry Road, Unit O
P.O. Box 21173
Roanoke, VA 24014
Phone: (540) 344-9800

OPERATOR:

Licensed Class VI Operator Required

PERMIT NUMBER:

5467070

EFFECTIVE DATE:

June 27, 1977

Amended

October 17, 1994

October 20, 2004

April 23, 2012

TYPE OF TREATMENT:

Sequesterant and Chlorination

SOURCE:

Two Drilled Wells

DESIGN CAPACITY:

21 Existing Residential Connections

DESCRIPTION OF THE WATERWORKS

The waterworks consists of two drilled wells, sequesterant treatment, chlorination treatment, a 10,000-gallon atmospheric tank, a 30-gallon bladder-type hydropneumatic tank, a 2000-gallon hydropneumatic tank, two booster pumps located inside the atmospheric tank and distribution system.

Well No. 1 (Sequesterant Bladder Type Well): This well is located in the 14 ft x 4 in x 12 ft wooden building off of Route 609. The well is cased with 6-inch casing to a depth of 104 feet and grouted to a depth of 73 feet. The yield of the well determined by a one-hour pump test completed in September, 1965 and is recorded as 16.5 gpm. The well is equipped with a 14-gpm submersible pump driven by a 2-HP motor. The casing is of the thick-walled type except for about the uppermost 4 feet, which is provided with additional protective grouting. A screened casing vent is provided.

Well No. 2: The Class IIB well is located 50 feet north east of the control building. The well was drilled July 2001 to a total depth of 257 feet and is cased and pressure grouted to a total depth of 140 feet. The well is provided with 6-inch steel casing to 80 feet, and 5-inch steel casing to 140 feet. During the yield and drawdown test performed during October (4-16, 2005), the well yielded 15 gpm at a drawdown depth of 69 feet. A submersible well pump is provided in the well capable of delivering 10 gpm @ 118 feet TDH. The well is provided with a 6 foot by 6 foot by 6 inch sloped concrete pad. A pitless adapter and well cap with vent, pressure gauge, and drawdown gauge are provided. Water is pumped from the well to the treatment building where the independent 1-inch diameter line is provided with a check valve, water meter, sample tap, pressure gauge, screened blowoff, and isolation valve. HOA switches are provided for control of the well pump. Water level (non mercury) float switches in the 0.010-MG storage tank will control the activation of the well pump.

Atmospheric-Type Storage Tanks: A 10,000-gallon steel tank is located adjacent to the well house. Appurtenances include a protected drain, overflow, and a skid-box roof access hatch.

Booster Pumps: There are two submersible type booster pumps located inside of the atmospheric storage tank. The pumps have a combined capacity of 35 gpm at 139 ft TDH.

Hydropneumatic Storage Tanks: A 2,000 gallon hydropneumatic storage tank is located off Route 976 in an underground vault. Appurtenances include a pressure gauge, sample tap, and air/volume controller. The 30-gallon hydropneumatic tank is located in the well house. Appurtenances include a protected drain and pressure gauge.

Treatment: The treatment systems are located in the control building house. The orthophosphate and sodium hypochlorite chemical metering pumps have capacities of 6 gpd, and 15 gpd respectively, and are added from separate 30 and 15 gallon solution tanks respectively. The chemical feed pumps are activated simultaneously with the well pump.

CAPACITY EVALUATION OF THE WATERWORKS

Design Basis: Commonwealth of Virginia Waterworks Regulations
One Equivalent Residential Connection (ERC) = 400 gpd

Existing Services: 21 residential connections

Source Capacities:

Well No.	Well Yield (gpm) ± 400 gpm/ERC ± 400 gpd/ERC	Pump Capacity - gpd (gpm x 1440 min/day)	Effective Capacity gpd
1	Unknown	14 gpm 20,160	Unknown
2	15	10 gpm 14,400	12,000
TOTAL			12,000

Storage Capacities:

Atmospheric-type storage tank - 0.010 MG

Hydropneumatic Storage Tank - 2,000 gal ÷ 3 = 667 gallons

Effective Vol. = $\pi (5.9 \text{ ft})^2 \times (11.3 \text{ ft}) = 1,239.9 \text{ ft}^3 \approx 9,244 \text{ gallons}$

9,244 gallons ÷ 667 gallons = 9,911 gallons ÷ 200 gal/ERC = 49 ERCs

49 ERCs x 400 gpd/ERC = 19,600 gpd

Combined capacity of 35 gpm @ 139 ft TDH. $Q \approx 11.4 \cdot N^{1.454}$

$Q = 35 \text{ gpm}$ (two pumps) ; $N = 8$

8 ERCs x 400 gpd/ERC = 3,200 gpd

Inadequate system pressure or capacity has not been reported or observed at the waterworks.

Conclusions:

This waterworks is permitted for a design capacity of 21 existing residential connections, due to the limited booster pump capacity described above. This permit does not suspend, invalidate, or otherwise alter this owner's obligation to comply with applicable federal, state, or local laws and regulations or permits.