



LAND SURVEYING
ENGINEERING
LAND PLANNING

JIM L. TAGGART, P.E.
DON FRANCO, P.E.
DAVID M. ROBINSON, P.E.
AMMY M. GEORGE, L.A.

ROUDABUSH, GALE & ASSOCIATES, INC.

A PROFESSIONAL CORPORATION

Serving Virginia Since 1956

ENGINEERING DEPARTMENT
172 SOUTH PANTOPS DRIVE, STE. A
CHARLOTTESVILLE, VA 22911
PHONE (434) 979-8121
FAX (434) 979-1681

INFO@ROUDABUSH.COM

SURVEY DEPARTMENT
914 MONTICELLO ROAD
CHARLOTTESVILLE, VA 22902
PHONE (434) 977-0205
FAX (434) 296-5220



WILLIAM J. LEDBETTER, L.S.
BRIAN D. JAMISON, L.S.
DAVID A. JORDAN, L.S.
KRISTOPHER C. WINTERS, L.S.

March 8, 2019

Mrs. Cynthia Genet Schnaitman
General Manager, Peacock Hill Service Company
P.O. Box 284
Ivy, VA 22945

RE: Peacock Hill Utility Study

Dear Mrs. Schnaitman,

Thank you for allowing Roudabush, Gale and Associates the opportunity to assist Peacock Hill Service Company to examine the feasibility of their proposed utility rate increase. Based on our analysis, a more substantial rate increase would certainly be appropriate. However, the proposed increase is a good first step based on the history of the utility and until more formal plans and budgets are prepared.

Attached please find a draft of our report supporting the utility rate increase. Based on the age and reported condition of the underground utilities, it is vital to budget for future infrastructure improvements to the water and sanitary systems. The attached report summarizes our analysis, observations and presents a list of next steps recommended to address the issues.

We appreciate the opportunity to work with Peacock Hill Service Company and look forward to working with you for your future needs. Please do not hesitate to contact Don or me with your questions and concerns.

Sincerely,

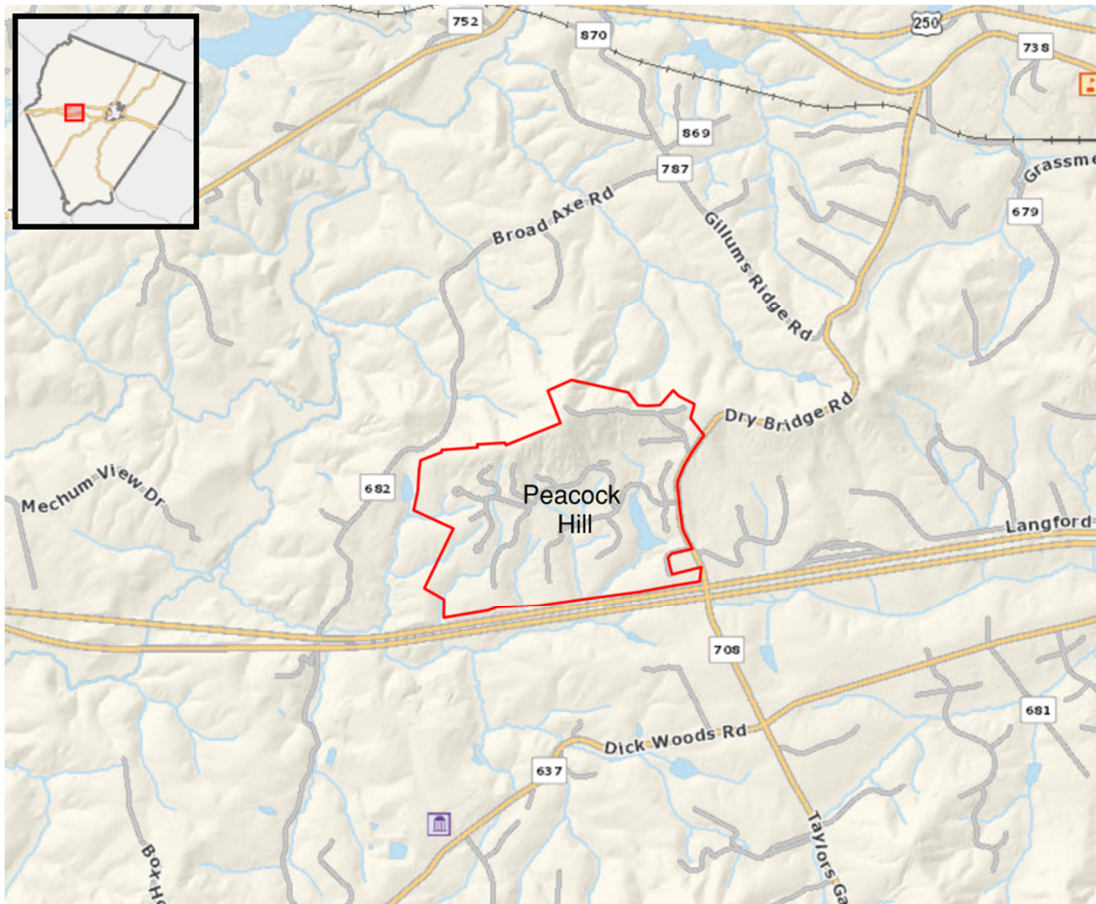
Ulrika van-Niekerk, EIT
Roudabush, Gale and Associates, Inc
172 South Pantops Drive, Suite A
Charlottesville, Virginia 22911

Don Franco, PE
Roudabush, Gale and Associates
914 Monticello Road
Charlottesville, VA 22902

Utility Study

Peacock Hill

Albemarle County, Virginia 22903



Prepared for: Peacock Hill Service Company Board of Directors

Prepared by: Roudabush, Gale, and Associates
914 Monticello Road
Charlottesville, VA 22902

Date: 8 March 2019

BACKGROUND

Peacock Hill is a rural residential subdivision located west of Charlottesville, VA just north of Interstate 64. The project consists of 180 single family detached lot layouts, ranging in size from 0.2 to 18 acres, and was designed and developed by Frank F. Smith, in the mid 60's. The developer formed a Public Utility company, Peacock Hill Service Company (PHSC), under the Virginia state laws to own and operate the water and sanitary sewer system in the community. In 1984, Frank Smith turned over the management of the company and utility systems to the Peacock Hill Homeowners Association. At that time, it consisted of five wells, two water storage towers, several drain fields, and their respective distribution and collection systems. Daily operations were contracted out to licensed water management companies while oversight was provided by a committee on the board of the community association.

In 2002, PHSC faced water shortages and had trouble meeting its financial obligations. To solve their problems, PHSC formed its own board separate from the Community Association. They applied and received grant money and a loan to bring two additional wells on-line which solved the water shortage problem. Thereafter, the company hired a bookkeeper, developed a budget, and raised the rates to cover all expenses and pay back the loans. The company's income is generated by utility usage fees and service charges, which are used to fund administrative operations, maintenance and repair, and infrastructure improvements. The last rate increase was in 2005 and those rates are still in place today.

In 2012 PHSC took control of the operations which previously had been contracted out. The board notified the community and state health department and hired 3 employees to oversee daily operations. The employees are: a state licensed water operator, a general manager, and a bookkeeper. They serve as part-time permanent employees and report to the PHSC board of directors. Since 2002 when PHSC assumed more oversight they have continuously upgraded and added significant improvements and reliability to the system for the community. PHSC is a for profit public utility company with the Peacock Hill Community Association the sole stockholder.

Today, PHSC owns eight wells, six operational wells and two additional wells which are currently off-line due to low flow rates and equipment failures. The water system consists of two subsystems which supply clean water to 169 active connections. Wells 1, 2, 6, 7 and 8 fill the lower tower tank and Well 5 supplies the upper tower tank. From these tanks, water is supplied to homeowners via gravity flow. Although the two subsystems operate as separate systems within different pressure bands, additional water can be supplied to the upper tank directly from the lower tower using booster pumps. The distribution system includes one service meter per home, twelve water valves, six blow-off assemblies, and just over 21,000 linear feet of water line ranging in size from 2" to 8" in diameter. The sanitary system consists of four large drain fields serving 39 homes and over 4,000 linear feet of collection lines. The remaining 128 homes make use of private septic

tanks. All homeowners are therefore required to use the community facilities, no private wells are allowed to be drilled. The infrastructure is estimated to have a fifty-year life expectancy. Given the age of the systems, repair expenses are expected to increase dramatically as the age of the distribution and collection systems reach and exceeded the end of their normal service life. To address this situation, PHSC collected a variety of background data and initiated a rate study. Roudabush, Gale and Associates (RGA) was hired in February 2019 to evaluate the proposed fee increase.

SUMMARY OF DATA & ANALYSIS

After completing their studies, PHSC is considering a service fee increases to \$25 per month and the utility usage rate increase to \$10 per 1,000 gallons used. As a final step, RGA has been engaged to review the background data and rate analysis, to offer constructive criticism on the proposed increase, and to recommend next actionable steps.

Our review included all the supplied information and focused primarily on the company's financial statements from 2013 through 2018, an inventory of capital assets, and the utility rate study. RGA offers the following summary and analysis on these documents.

FINANCIAL STATEMENTS

A slight decline in both income and water usage has occurred over the last three years. PHSC suggested that the decline is associated with more units being utilized as second residences or vacation homes. RGA believes that the decline could be attributed to homeowners changing to low flow fixtures inside the homes and partaking in water saving practices. Finally, as an older community, the demographics may have changed as children moving out of the family home. This could also be attributing to the decline in usage.

Overall, operational expenses have stayed fairly consistent over the five-year period. However, maintenance and repair cost have trended up due to equipment replacement and repair. Most notably, repairs and upgrades include cleaning and recoating the Upper Tower Storage Tank interior in 2017; and the installation of new telemetric communications system in 2018. A summary of PHSC financial statements from 2013 through 2018 can be seen in Table 1-Financial Statement Summary. PHSC's income was reduced after 2008 when it dropped two fees, one for loan repayment of the two new wells and the other was a lot availability fee.

INCOME	2013	2014	2015	2016	2017	2018
Water usage	62,638.09	57,002.81	62,014.18	71,557.90	56,753.97	41,327.60
Service fee	34,996.99	35,176.17	35,093.36	35,323.75	35,490.42	35,538.92
Sewer Usage	11,871.86	10,734.16	11,073.71	10,600.79	9,955.03	10,622.15
Other	4,913.47	5,775.06	4,978.38	4,583.74	5,700.76	5,738.78
Total Income	114,420.41	108,688.20	113,159.63	122,066.18	107,900.18	93,227.45
EXPENSES	2013	2014	2015	2016	2017	2018
1. Operational & Maintenance						
1.1 Water						
615.0 - Purchased power	8,443.29	8,309.03	8,105.10	7,252.16	8,137.51	9,330.16
618.0 - Chemicals	2,067.85	978.78	2,474.18	1,874.09	684.78	609.36
635.2 - Water testing Dept. of Health	321.82	978.78	-	-	-	-
635.5 - Water testing Commonwealth of Virginia	-	-	-	-	3,726.90	629.48
675.5 - Telephone	1,968.08	2,050.65	2,154.34	2,268.44	2,913.86	3,202.62
1.2 Sewer system						
736.3 - Miscellaneous sewer expenses	0.00	13.54	-	-	-	-
736.5 - Grounds Maintenance - Sewer	-	900.00	325.00	3,535.00	772.87	1,200.82
Total Operational Expenses	12,801.04	12,330.78	12,733.62	11,394.69	15,463.05	13,771.62
2. Repair						
2.1 Water						
615.2 - Miss utility	90.30	58.80	91.35	113.40	123.90	137.55
636.3 - Total Water system repair	19,259.67	6,507.72	14,712.17	27,744.47	45,134.68	55,601.90
2.2 Sewer						
736.1 - Repair expenses	239.13	200.00	10,184.33	0.00	0.00	0.00
Total Repair Expenses	19,589.10	6,766.52	24,987.85	27,857.87	45,258.58	55,739.45
3. Salaries, General Admin & Tax						
	47,738.24	60,557.97	67,934.07	71,825.32	68,705.46	65,488.77
Total Yearly Expenses	105,081.03	102,882.20	133,493.79	139,296.58	149,795.66	154,984.26
Net Income (from financial statement)	9,339.38	6,751.00	(21,441.30)	(29,140.01)	(41,655.48)	(61,756.81)
VNB Checking Balance	110,598.87	125,028.34	127,172.86	115,246.98	89,142.21	46,989.45

Table 1-Financial Statement Summary

From the financial summary table, it is clear that a rate change or special assessment if required in the very near future.

PEACOCK HILL SERVICE COMPANY CAPITAL ASSETS

The majority of the water and sewer lines were installed in 1967 and are estimated to have a life expectancy of 50 years. PHSC estimates the current value of their water distribution and septic collection systems to be \$1,489,135. The value of all their capital assets to be \$2,036,935.

Based on our review of the documents and conversations with operations staff, there is anecdotal information that suggests that the current map and inventory do not provide a complete picture of the assets. It is our understanding that initial construction routinely deviated from the design plans and that prior to purchase by the Peacock Hill Homeowners

Association, repairs were made on an emergency basis with the most convenient materials available. Given our understanding of past history of the systems, reliance on the original plats and design plans is risky.

Additionally, the capital assets should consider replacement value to include base conditions other than just material and installation. A good example is the waterlines. The lines are reported to be under the pavement. Replacement will need to consider repair/replacement of the pavement as well. This could double the overall construction budget.

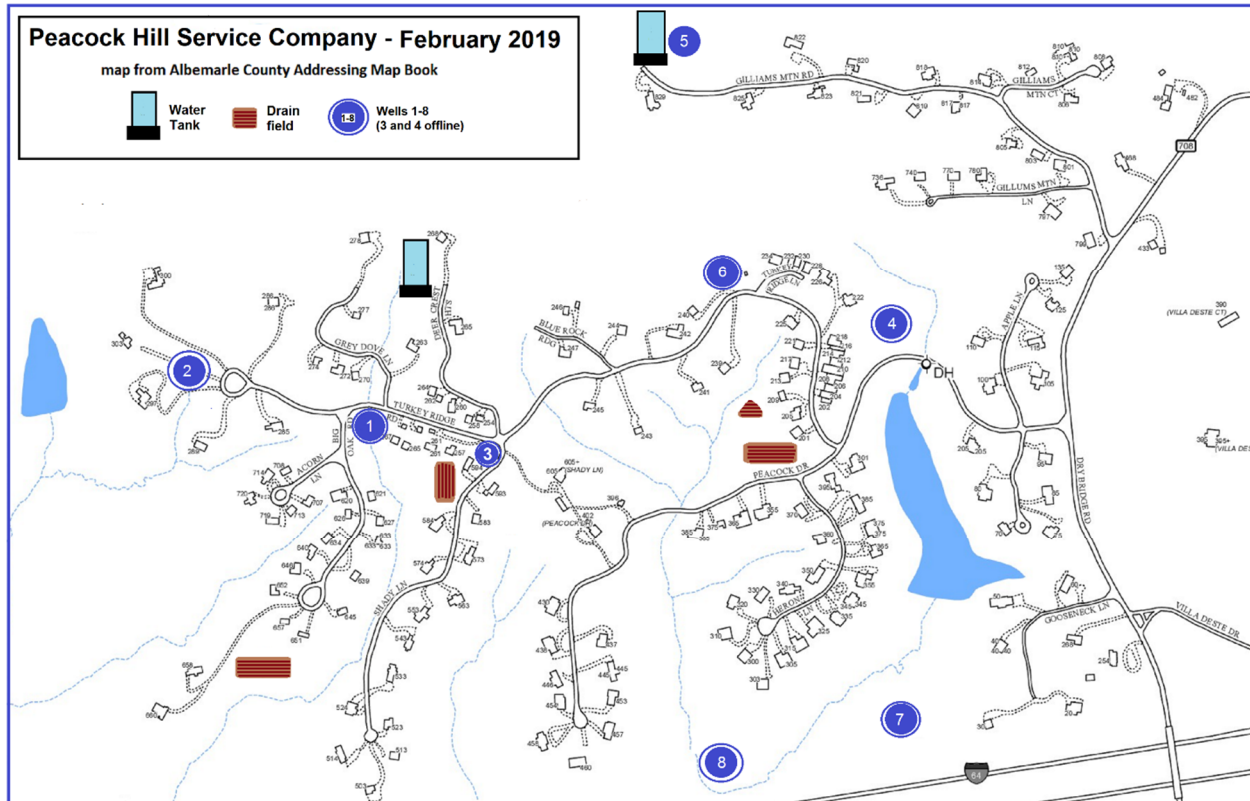


Figure 1-Area location map of wells, tanks, and drain fields (source: www.peacockhillsc.com)

NOVEMBER 2018 UTILITY RATE STUDY

Although there are ten lots presently vacant, Peacock Hill is considered a fully built out subdivision. These lots were purchased by homeowners wishing to maintain their privacy by keeping the adjacent lots undeveloped. The financial documents indicate there are 169 current users. This suggests that an additional lot is unoccupied. If the current undeveloped lots remain vacant it can be expected that PHSC’s income from utilities will remain the same unless the utility usage rates and/or service fees are increased.

The current rates structure at Peacock Hill has been in effect since May 1, 2005. The users receive bills every two months, where a flat rate service fee of \$17.50 per month is charged to each of the 169 users. The water usage fee is broken into two tiers: a) water usage up to 21,000 gallons is charged at \$7.50 per 1,000 gallons used, and b) water usage over 21,000

gallons is charged at \$75 per 1,000 gallons used. An additional sewer usage fee equal to 105% of water usage fee is also charged to the 39 septic customers.

PHSC completed a utility rate study in November 2018 by comparing year-to-date (YTD) budgeted incomes versus YTD budgeted total expenses for the year 2017. The goal was to find a combination service fee and usage rates that will allow for extra capital to be reserved and used for the aged distribution system replacement and repair.

After running various combinations, PHSC is considering an increase of the Service Fee to \$25.00, in conjunction with an increase in the water usage rate to \$10.125 per 1,000 gallons. They forecast that this will reestablish a positive cashflow or breakeven cashflow if you assume \$20,000 in repairs per year.

OBSERVATIONS

FINANCIAL STATEMENTS

PHSC's has operated at an annual loss since fiscal year 2015. With an overall loss of \$153,993.60 for the 5-year period between 2013 and 2017. Cash reserves have declined since the company's first year as a self-run company and now represent roughly 36% of the annual expenses. It should be expected that the operating deficit will continue to increase with less water usage and the increase costs of deferred maintenance of the distribution system.

CAPITAL ASSESTS

Peacock Hill Service Company's water and sewer system replacement costs are based on a unit price of \$50 per foot. With water mains ranging in size from 2" to 8" running under paved roads, a higher cost for replacement should be used.

Based on our projects over the last few years, RGA estimates the average repair cost of 2" waterline to be \$60 per foot and \$105 per foot for 8" waterpipe. With over 21,000 linear feet of 4" pipe throughout the subdivision, RGA estimates the construction cost to replace the Peacock Hill distribution system would be just over \$2MM (not including road replacement and repair) versus \$1,489,135. (See Figure 2)

Given the age of the systems, PHSC should expect to replace all or most of the water and sewer systems over the next 10 years.

ESTIMATED CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT COST	QTY	TOTAL

WATER MAIN					
A.	12"	LF	\$140.00		\$0
B.	8"	LF	\$105.00		\$0
C.	6"	LF	\$80.00		\$0
D.	4"	LF	\$70.00	21398.0	\$1,497,860
D.	2"	LF	\$60.00		\$0
AIR RELIEF VALVES					
		EACH	\$2,000.00	6.0	\$12,000
GATE VALVES & BOXES					
		EACH	\$1,500.00	12.0	\$18,000
T.S. & VALVES					
		EACH	\$6,000.00	4.0	\$24,000
WATER SERVICES					
A.	SAME SIDE SERVICE	EACH	\$1,000.00	85.0	\$85,000
B.	FAR SIDE SERVICE	EACH	\$1,500.00	84.0	\$126,000
SUBTOTAL=					\$1,762,860
MOBILIZATION					
		L.S.	\$5,000.00	1	\$5,000
CONTINGENCY					
		% OF SUBTOTAL		15%	\$264,429
SURVEYING/ENGINEERING					
		L.S.	\$10,000.00	1	\$10,000
PROJECT TOTAL=					\$2,042,289
TOTAL LOTS=					169
COST PER UNIT					\$12,085

Figure 2-Estimated Construction Cost Example

UTILITY RATE STUDY

PHSC is considering an increase in the service fee to \$25 per month combined with increasing the water usage rate to \$10 per 1,000 gallons used. A net income, not including any capital asset replacement program or significant repairs, of \$22,852 is projected. While the net income can be used to start replacing the distribution system or to continue upgrading the system from analog to digital and additional upgrades to the wells.

The rate study did highlight the need to adjust fees and rates in order to generate more income. It's also worth noting that the study used budgeted numbers from 2017. Based on actuals, the reported net loss of \$17,107 increases to \$41,655.

CONCLUSIONS & RECOMMENDATIONS

Based on our review of the information, a rate increase is clearly required. RGA is of the opinion that the proposed rate changes are a good first step. But given the age of the system, additional income will certainly be required to sustain PHSC during the short and midterms.

RGA offers several recommendations based on our study of the referenced documents:

1. Implement the service charge and usage rates increases as proposed;
2. Complete detailed mapping and inventory;
3. Develop Formal Funding and Emergency Action Plans

RATE INCREASE

Given the replacement costs expected in the near future combined with the operating losses recorded over the past 4-years, RGA recommends PHSC move forward with their proposed increase in service fee and usage rate as quickly as possible.

RGA also recommends a review and evaluation of the organizational documents. For the purposes of this study, we have focused on more immediate items and reviewed readily available documents and current practices. RGA is unclear as to whether the homeowners or private utility company owns the infrastructure. We are also unclear if all lots within Peacock Hill must use the facilities as designed (i.e., could someone drill their own well?).

The practice of not charging undeveloped lots should be reevaluated. Maintenance of the required improvements is required independent of use. The lots are basically the same age. Should only a portion of the lots, for which this infrastructure was designed and constructed be responsible for maintenance and replacement? Assuming the systems are upgraded and replaced, does an undeveloped lot simply pay a hook up fee?

Finally, it is considered a best practice within the utilities industry to perform a utility rate study at least every five years. This is to ensure that the operating margin of the company allows for review and consideration of adjustments as needed. Prior to 2018, PHSC had not conducted a utilities study for ten years.

SYSTEM ASSET VERIFICATION

Knowing the inconsistencies between documented system components and as-builts have contributed to higher construction costs, RGA recommends updating the current inventory in order to better assess existing conditions and replacement costs.

A detailed mapping of the systems and equipment should take place and portions of the underground systems should be exposed to verify their age, size, and material used. This review of the existing system layout, materials and conditions will be critical to avoiding future construction delays and cost overruns and will also help to prioritize. To be clear,

PHSC should expect to replace all or most of the water and sewer systems over the next 10 years.

FUNDING AND EMERGENCY PLANNING

As observed in a previous section, the replacement cost of the distribution system will cost upwards of \$2MM. RGA recommends that an investigation of available funding mechanisms to mitigate the financial burden should the system replacement be required. This plan could include pursuance of public grants or establishing an emergency reserve fund specifically for utilities replacement.

As an example, if we assume the replacement cost for the water distribution systems is \$2MM. Replacement of the system could be funded by:

1. A special assessment of \$11,834 assuming 169 users;
2. An annual special assessment of \$1,183 plus financing, for the next ten years
3. Assuming \$500,000 in grants, the annual base costs would be \$888 per user over ten years; or
4. Every 100,000 in reserve funding lowers the annual ten-year assessment roughly \$60.

It's also worth noting that allocating the costs across all 180 lots lowers the annual ten-year assessment just under \$5 for each \$100,000.

Independent of the financing, an emergency plan should be adopted to help establish expectations during extended periods without utilities. Further investigation into the legal responsibility for the services during a major event should be conducted.