



**MAYOR**  
EARNEST W. PORTA, JR.

# TOWN OF OCCOQUAN

CIRCA 1734 INCORPORATED 1874  
314 MILL STREET, P.O. BOX 195  
OCCOQUAN, VIRGINIA 22125  
703-491-1918 FAX 703-491-4962

**TOWN COUNCIL**  
KENNETH T. BRUNSVOLD, VICE MAYOR  
DENISE M. BUSH  
ELIZABETH A. QUIST  
PATRICK A. SIVIGNY  
JAMES N. WALBERT

**TOWN MANAGER AND CLERK**  
CLAUDIA A. CRUISE, CMC

**TREASURER**  
ABIGAIL BREEDING, CPA

## STAFF REPORT ON TOWN STORM SYSTEM IMPROVEMENTS

Date: February 7, 2012

### PART I

#### A. EXECUTIVE SUMMARY

The Town Council directed the Town Engineer to evaluate possible engineering solutions and costs to control the runoff onto Mill Street from the hillside above the Rockledge Property.

#### B. BACKGROUND

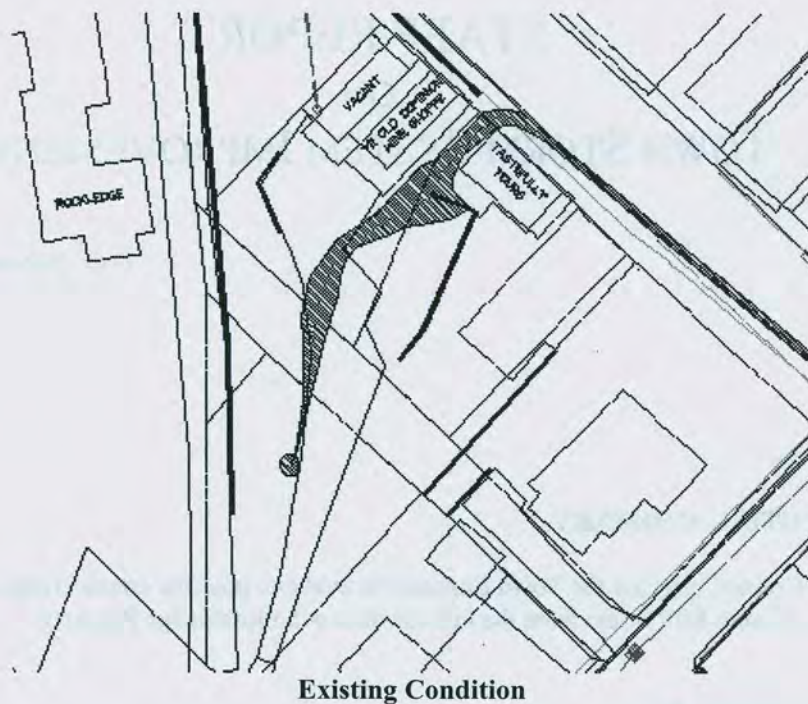
On 12/09/11 the Assistant Town Engineer conducted a visual inspection of portions of the Town, site to evaluate potential sources of runoff and subsequently methods to convey and control the runoff to existing storm drainage systems. Several sources of runoff were identified, leading to the likely conclusion that an underground spring with multiple springmouths exists in the vicinity. As such, several options are presented, organized by location and cost.

## PART II

### A. ANALYSIS

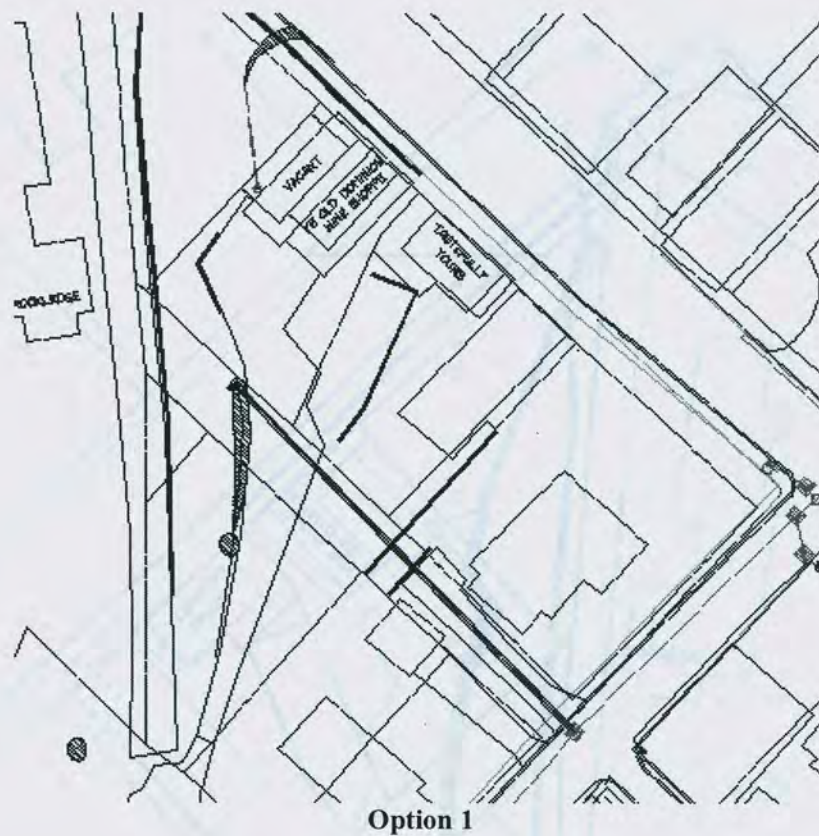
#### Location: Poplar Alley – Rockledge – Tastefully Yours – Ye Olde Dominion Wine Shoppe

Runoff flows from a rock face below the driveway of Rockledge Mansion, across the driveway behind the Tastefully Yours and Ye Olde Dominion Wine Shoppe. Additional flow emerges from retaining walls in the patio area behind Tastefully Yours and The Garden Kitchen. It is unclear if these additional flows are from overland runoff penetrating the ground behind the wall face, or an additional springmouth. The runoff spreads across the patio area, down the side access steps of Tastefully Yours, across the Town sidewalk, and then to Mill Street, as depicted below:



**Solution Option 1:**

Construct a roadside ditch from the springmouth to a proposed inlet in the Town controlled portion of Poplar Alley, and connect via storm drainage pipe to the existing inlet at the intersection of Poplar Alley and Ellicott Street. Option depicted below:



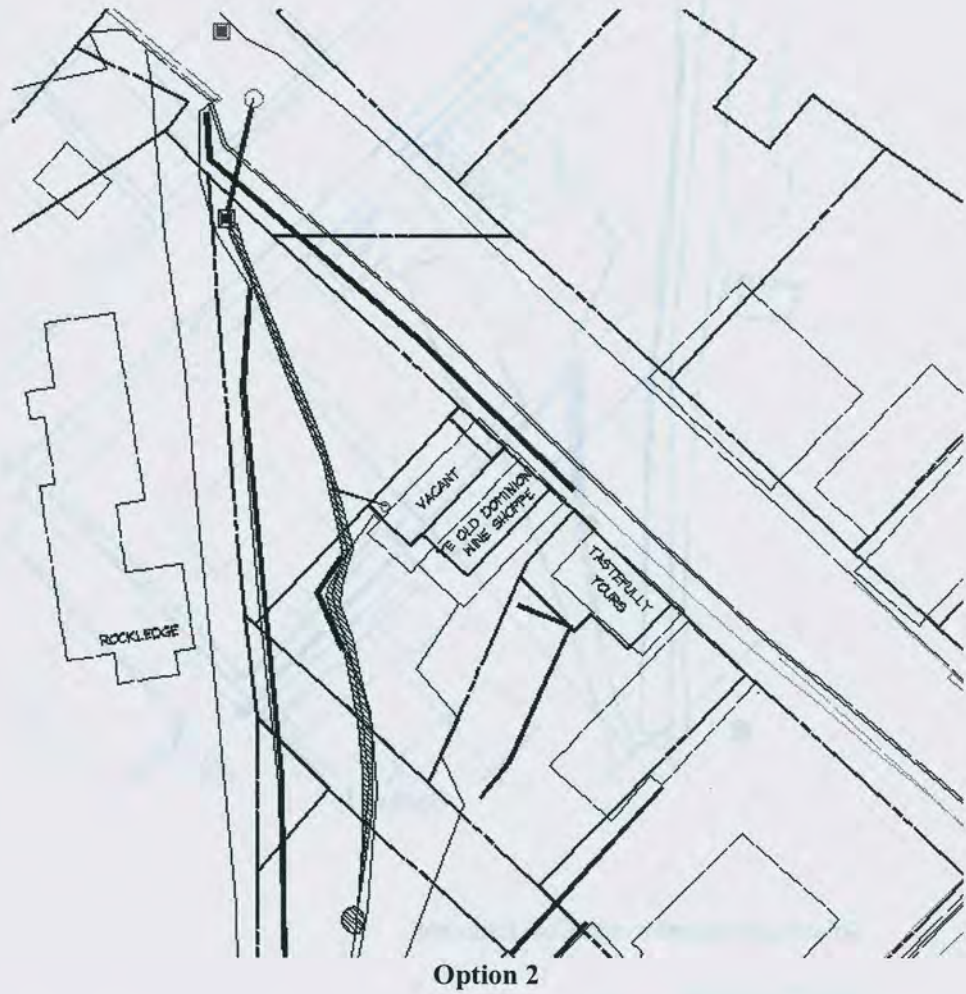
**Solution Itemization and Cost Estimate:**

- 1 DI-7 - \$3,500
- 190 lf 15" RCP - \$7,600
- 100 lf Std. Roadside Ditch - \$650
- Reconstruction of Timber Retaining Walls - \$2,500
- Surveying - \$1,600
- Engineering - \$2,500
- 25% Contingency/Administrative cost - \$4587.50

**Total - \$22,937.50**

Solution Option 2:

Construct a roadside ditch from the springmouth to a proposed inlet above the Mill Street entrance of the Rockledge driveway. From here, the inlet would drop below the existing retaining wall along the sidewalk of Mill Street, and connect to the existing storm drainage system.



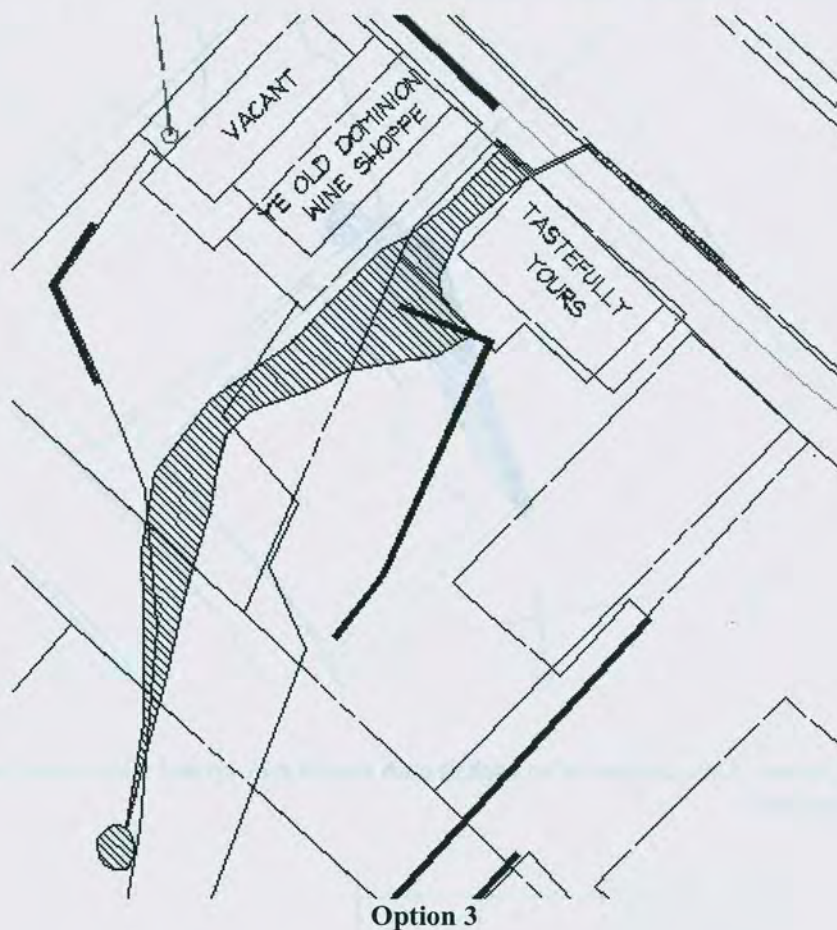
Solution Itemization and Cost Estimate:

- 1 DI-7 - \$3,500
- 42 lf 15" RCP - \$1,680
- 250 lf Std. Roadside Ditch - \$1,625
- Reconstruction of Masonry Retaining Walls - \$2,560
- Surveying - \$1,600
- Engineering - \$2,500
- 25% Contingency/Administrative cost - \$3366.25

**Total - \$16,831.25**

Solution Option 3:

Construct a slot drain at the base of the side access steps from Tastefully Yours, run a storm pipe under the existing sidewalk, and discharge at the curb & gutter along Mill Street.



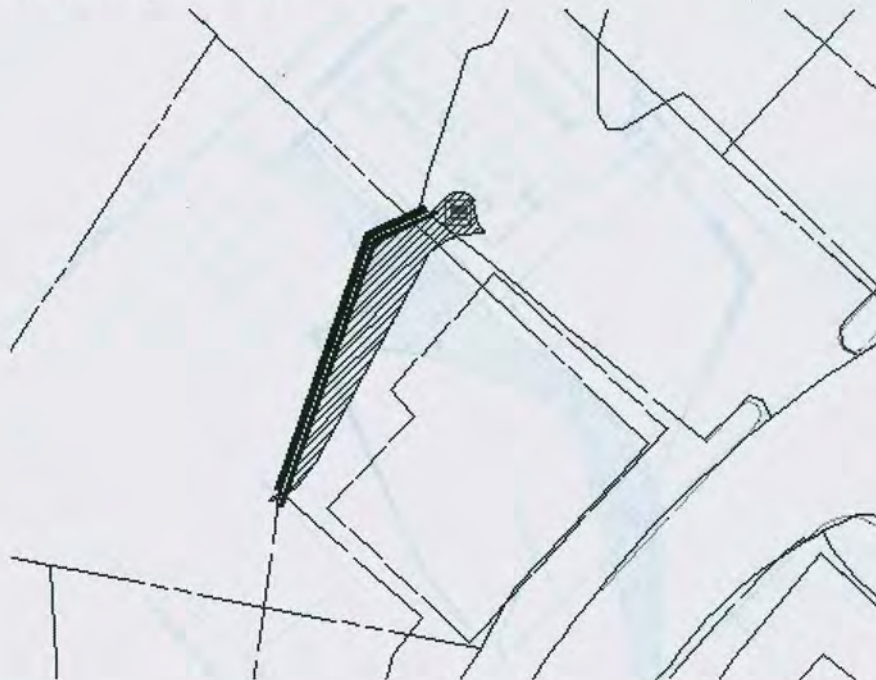
Solution Itemization and Cost Estimate:

- 1 Slot Drain - \$1,000
- 12 lf 4" PVC Pipe - \$500
- Engineering - \$2,500
- 25% Contingency/Administrative cost - \$1000

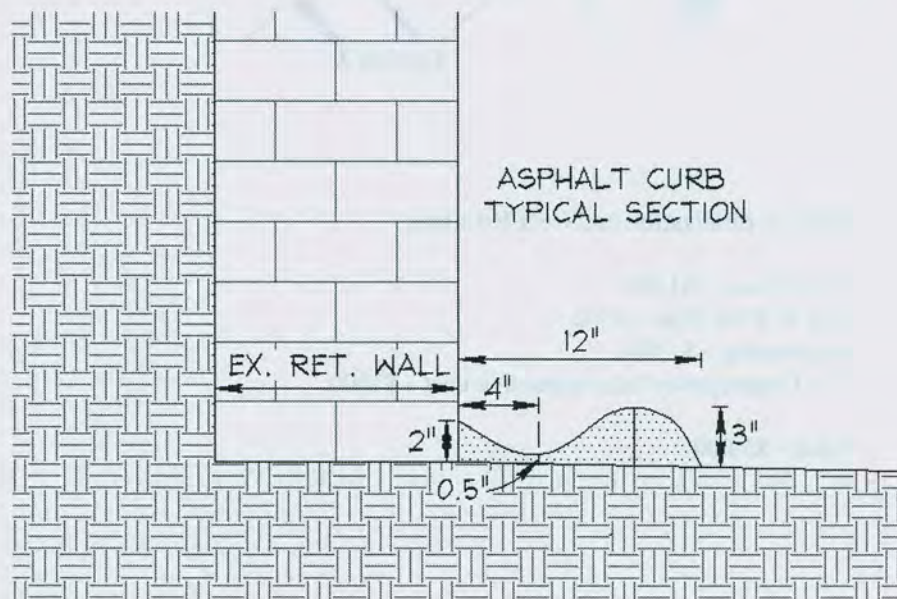
**Total - \$5,000**

**Location: 300 Ellicott Street – Town Parking Lot**

Runoff flows from the ends and weep holes of the retaining wall constructed behind the building, spreads across the travelway, and ultimately splits flow to enter an existing inlet, with some bypass, as depicted in the existing condition detail below.



Solution Option: Construction of an asphalt curb should pick up and allow conveyance of runoff to the existing inlet.



Solution Cost: \$500.

PART III

**STAFF CONCLUSIONS**

Each solution option presented bears unique challenges, which may merit additional consideration. Option 1 bears a higher cost, but a higher likelihood of achieving the desired result. Option 2 requires construction on private property, as well as disturbance of the stone retaining wall along Mill Street, sidewalk and pavement reconstruction. However, Option 2 provides the ability to solve the sidewalk icing issue, related to the sump pump discharge of the end building on Mill Street. Option 3 provides the least cost to the Town, however, it does not purport to resolve the runoff issues associated with the driveway and patio areas of Tastefully Yours, Garden Kitchen, and Ye Olde Dominion Wine Shop. At the 300 Ellicott Street/parking lot location, only one option is presented, however, consideration of construction on private property may also warrant mention.

As little comprehensive storm system information exists, Option 1 & 2 require the performance of some survey work, primarily to identify the elevations, sizes and locations of storm structures, pipes, grades and retaining walls in the vicinity of construction. Should field surveying identify the presence of storm structures not previously observed, an alternative design not presented here may become preferable. It should also be noted that given unique characteristics of multimouthed underground springs, the solutions presented may not entirely address the issue at hand, or, over the course of time, these solutions may be rendered ineffective.

**PREPARED BY:** Matthew A. Williams, Asst. Town Engineer, February 7, 2012  
**APPROVED BY:** Bruce A. Reese, Town Engineer, February 7, 2012