



ARLINGTON COUNTY, VIRGINIA

County Board Agenda Item Meeting of April 21, 2007

DATE: April 20, 2007

SUBJECT: Approve the Award of a Contract to Sagres Construction Corp. for the construction of Phase I of the Little Pimmit Run Flood Control Project.

C. M. RECOMMENDATIONS:

1. Approve the award of Contract No. 133-07 to Sagres Construction Corporation for the replacement of an existing culvert beneath Old Dominion Drive and streetscape improvements along Old Dominion Drive in the amount of \$895,510, authorize an allocation of \$100,000 as a contingency for change orders and increased quantities, and \$60,000 in stipulated items for a total authorization of \$1,049,510.
2. Authorize the Purchasing Agent to execute the contract amendment documents, subject to review by the County Attorney.

ISSUES: Whether to proceed with Phase I improvements to provide flood control on a portion of Little Pimmit Run.

SUMMARY: Extensive development in the Little Pimmit Run watershed that occurred prior to stormwater runoff control requirements coupled with the construction of numerous homes within the stream's floodplain has resulted in significant flooding problems for many private properties located near the stream. Phase I of the Little Pimmit Run flood control project (see Map 1) is intended to address the most acute flooding problems in this watershed and consists of the replacement of an existing culvert beneath Old Dominion Drive. This work will reduce flood elevations by more than seven feet while reducing the potential for sanitary sewer discharges downstream of Old Dominion Drive. Due to traffic impacts, VDOT has mandated that construction occur during the summer months so postponement of this project, which has been nearly nine years in development, would delay construction until summer of 2008 at the earliest.

Phase II of the project, which consists of replacement of the culvert beneath Williamsburg Blvd. and flood channel restoration upstream of the culvert, is in the final design stage and is about to enter the easement acquisition and utility relocation stage, which are the final activities prior to construction bidding. If easements and utility relocations proceed without difficulty, the second phase could be under construction in 2008, pending availability of funding.

In addition to Phases I and II, staff would proceed with a re-design of the two culvert crossings that carry Little Pimmit Run beneath North Dumbarton Street. Modeling data and citizen reports indicate that these culverts lack the capacity to carry at least the 10-year FEMA estimated flood,

County Manager: _____

County Attorney: _____

Staff: Michael Collins, DES, Engineering

the minimum County standard for culvert capacity. This design effort will also include an evaluation of necessary stream modifications to ensure both effective culvert capacity, protection of downstream channel stability and exploration of best practice stream restoration opportunities.

Finally, the County Manager has proposed a major stormwater management strategic initiative as part of the FY 2008 budget. This initiative will establish a framework for stormwater infrastructure and stream improvements by providing the necessary planning and financial resources, as well as maintenance capacity to address regulatory, environmental, and infrastructure needs in the County's urban watersheds, including Little Pimmit Run. Initiation of this program would enable the implementation of critical infrastructure projects (e.g., storm sewer and culvert replacements) and comprehensive stream restoration efforts, as well as the long-term, cumulative watershed improvements emphasized in the County's Watershed Management Plan.

BACKGROUND: Approximately 30 homes along Little Pimmit Run fall within the Federal Emergency Management Agency (FEMA) 100-year floodplain (see Map 2). Many of these homes have been subjected to flooding over the past 40 years, including most recently during the storm events of July 2001 and June 2006. The stream is typical of most streams in Arlington County, exhibiting erosive velocities and ongoing streambank erosion, areas of channel hardening, degraded habitat and water quality, and surcharging into the floodplain during severe storms.

An important factor that makes these typical problems more acute in this watershed is the extensive residential development that has occurred within the stream's active floodplain—both upstream and downstream of Old Dominion Drive. Most of Arlington's streams are contained within parkland, where stream erosion and overbank flooding, while often responsible for damage to utility and park infrastructure, generally do not impact private properties. In this watershed the encroachment of homes along the stream not only lead to greater frequency and impact of flooding and other problems, but the encroachment also severely restricts the opportunity and available methods for stream restoration.

This watershed was originally identified in the County's Capital Improvement Plan (CIP) in the mid 1980's for a flood control project, and originally funded for a study in 1994. In 1998, the County issued a Request for Proposal (RFP) and selected Michael Baker, Inc., to provide a hydrologic/hydraulic analysis of the watershed and stream and to identify alternatives to address the flooding problems between Little Falls Road and the County line.

The study included an extensive public process with at least five public meetings and the guidance of a Citizen Advisory Committee which included residents from both upstream and downstream of Old Dominion Drive. More than a dozen potential solutions were evaluated, including watershed-scale stormwater controls such as stormwater detention. Ultimately, the consultant recommended the replacement of existing culverts beneath Old Dominion Drive and Williamsburg Blvd as well as channel improvements upstream of Williamsburg Blvd as the most feasible and cost-effective solutions to address flooding problems. The consultant's recommendation was approved by the Rock Spring Civic Association.

Because the great majority of the significant property flooding issues along Little Pimmit Run are located in the blocks between Old Dominion Drive and Williamsburg Boulevard, most of the alternatives identified by the consultant were focused on reducing flood water elevations upstream of Old Dominion Drive. Of the 29 homes within the FEMA 100-year floodplain, 25 of them are located upstream of Old Dominion Drive, and these homes have historically been most susceptible to flooding at intervals far more frequent than 100 years. Phases I and II of the proposed project will remove twelve of these homes from the floodplain, and will reduce the flood risk at an additional ten.

Comprehensive Stream Modeling

Hydrologic and hydraulic modeling techniques specified by FEMA and approved by VDOT as standard practice for these applications were used to evaluate and assist in the selection of project alternatives. The modeling suggests that impacts in terms of flow velocities or water surface elevations downstream of the proposed project will be negligible, while reductions in water surface elevations of more than seven feet are expected upstream of Old Dominion Drive.

Project Overview

Due to funding and property acquisition issues, the project has been split into phases: Phase I, which will replace the culvert at Old Dominion Drive, and Phase II, which will replace the Williamsburg Blvd culvert and construct channel improvements between Williamsburg Blvd. and Little Falls Rd. Additional efforts, in consultation with affected residents, will address downstream concerns between Old Dominion Drive and the County line.

Phase I (Old Dominion Drive)

Phase I of the Pimmit Run Flood Control Project will replace the existing metal culvert at Old Dominion Drive with a new concrete arch culvert and implement streetscape and drainage improvements along Old Dominion Drive between 37th Street North and Williamsburg Boulevard. The new culvert will reduce the flooding potential for the homes upstream of the Old Dominion Drive culvert. The streetscape improvements will provide surface drainage relief for several homes through curb, gutter, and storm drainage structures, and will also provide sidewalks along Old Dominion Drive in this section. Currently, there is no curb, gutter or sidewalk.

The first Phase of the Pimmit Run Flood Control Project is the most critical for construction because it will have the greatest immediate impact to protect public and private property. Additionally, the VDOT permit mandates construction of Phase I during summer months to mitigate the traffic impacts. Therefore the County would not have an opportunity to construct these critical infrastructure improvements again until the summer of 2008.

Delaying the project until summer of 2008 could result in significantly increased costs. A delay in the project would also expose dozens of homes to the continued threat of significant property damage from stream flooding.

The project will be constructed in compliance with County erosion and sediment control requirements as well as the in-stream permitting requirements of the U.S. Army Corps of Engineers.

Phase II (Williamsburg Boulevard)

Phase II of the Pimmit Run Flood Control project (which is not included in the referenced construction contract) will replace two existing culverts at Williamsburg Boulevard with a single arch culvert similar to the structure proposed at Old Dominion Drive. This phase of the project is currently in the final design stages. Staff is targeting to move Phase II to construction in 2008, but timing will be driven by easement acquisition and utility relocations as well as the availability of funding. Phase II will significantly reduce flooding risks to several homes along Williamsburg Blvd, N. Columbus Street, and George Mason Drive between Little Falls Road and Williamsburg Blvd.

Downstream Concerns (Between Old Dominion Drive and the County line)

Staff and Board members have met with downstream property owners numerous times since the June storms last year to listen to their concerns and to discuss the impacts of the flood control project upon their homes and property. During the June 2006 storm, several properties downstream of Old Dominion Drive suffered sanitary sewer surcharges in their home and erosion damage to their properties. Several homes have also reported stormwater flooding in their basements. Since that storm event, many of the residents downstream have expressed reservations and concerns that the Phase I project will adversely affect their existing situation.

Investigation of two existing culvert crossings beneath N Dumbarton Street suggests that the two installations are both unable to pass the FEMA 10-year flow demand without surcharging. The resultant discharge of water across the roadway creates a public safety issue and contributes to flooding across several properties. Staff recommends analysis of the existing culvert conditions and implementation of a design to replace the culverts and associated infrastructures to comply with County standards. Public participation and input would be an important part of the analysis and design process.

DISCUSSION: Within Arlington County and across the region, there is enhanced awareness of the potential to restore urban watersheds through the implementation of multiple stormwater storage and retention projects distributed across the watershed. These options include small-scale or site-level stormwater storage (e.g., bioretention systems, permeable paving, rainwater collection, and vegetated roofs) and incremental impervious cover reduction (e.g., by narrowing certain streets, where feasible), in combination with more conventional underground and (where land is available) aboveground stormwater storage and treatment systems.

However, with this awareness also comes the recognition that most of these techniques will provide stormwater quality and quantity benefits gradually over the long-term (e.g., 20+ years), as locations are identified for specific small-scale projects and individual properties are redeveloped with improved stormwater controls. Unfortunately, incremental implementation of these various strategies over decades will not provide immediate solutions to today's flooding, environmental, and infrastructure damage problems. These strategies may not ever be sufficient

to restore stream ecology and protect valuable infrastructure, due to the significant level of development and floodplain encroachment that already exists in this watershed. Therefore, near-term and long-term solutions must be implemented in parallel fashion in the County's urban watersheds because of the range of acute conditions that exist.

As a result, staff believes that the Phase I culvert replacement project should move forward as an effective near-term strategy to relieve a major flooding problem along Little Pimmit Run. Comprehensive modeling according to widely accepted and specified modeling techniques has indicated the reduction of floodwater depths of more than seven feet and the elimination of at least five homes from the floodplain and the reduction in flooding risk of at least ten additional homes, with negligible impacts upon the properties downstream of the proposed culvert in terms of either flow velocities or water level elevations. The proposed project has been examined through an extensive engineering and public review process which has encompassed nearly nine years and has been endorsed by the affected Civic Association.

Implementing Phase I will not preclude the desired long-term improvements in the Little Pimmit Run watershed. And, the larger capacity for the stream to pass under Old Dominion Drive may potentially facilitate future stream restoration efforts.

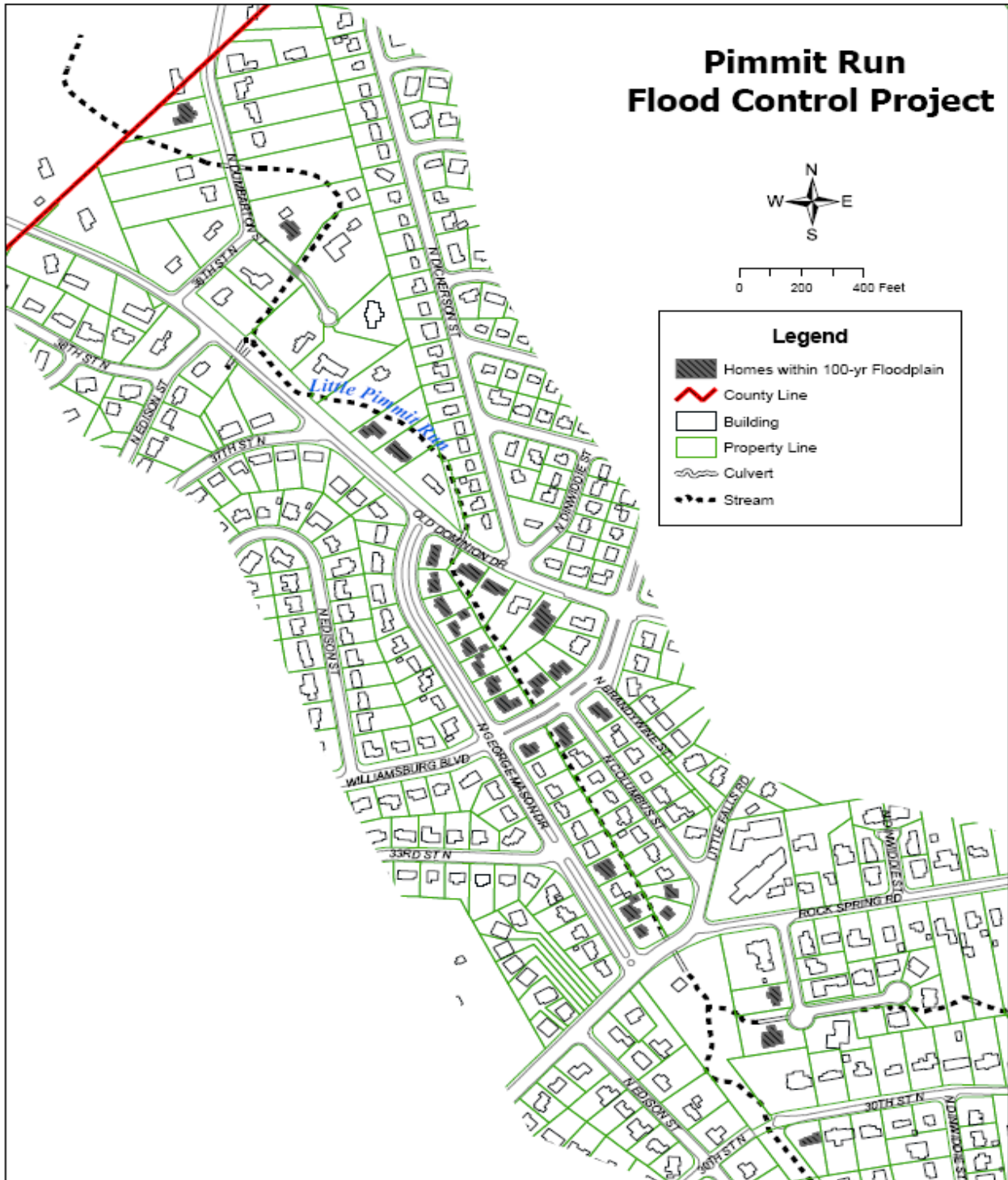
The County has received favorable bids and postponement of the project until next summer or later may result in significantly higher construction costs. It is recommended that the County Board award the contract to Sagres Construction Corp. Sagres was found to be the lowest responsible bidder. The bid amounts were lower than the Engineer's estimate. A contingency fund of \$100,000.00 is recommended for any necessary change orders and increased quantities. An additional \$60,000.00 is also recommended to cover stipulated price items. Therefore, the total authorization is \$1,049,510.00. Bid results received on April 10, 2007 are shown below:

<u>Bidder</u>	<u>Bid Amount</u>
Sagres Construction Corp.	\$889,510.00
Corinthian Contractors, Inc.	\$947,387.00
Omni Excavators, Inc.	\$994,092.50
Jeffrey Stack, Inc.	\$1,216,942.75
A&M Concrete Corporation	\$1,440,333.00
Fort Myer Construction Corporation	\$1,562,391.91
Cube Construction Corp.	\$1,597,524.00
Corman Construction, Inc.	\$1,768,605.60

Staff is working expeditiously to ready Phase II of the project for construction. The easement acquisition process and initiation of necessary utility relocations are intended to begin in May. Pending funding availability and successful acquisition of necessary easements and relocation of utilities, construction of Phase II in calendar year 2008 may be possible. Implementation of Phase II will remove an additional seven homes from the floodplain and reduce the risk of flooding for several other homes.

FISCAL IMPACT: Sufficient funding for the Phase I construction contract (\$1,049,510) has been authorized by Arlington County voters in the 2004 bond referenda as part of the Storm

Drainage Improvement Program, and it is anticipated that bonds will be sold in May as part of the 2007 bond sale, with closing and appropriation of bond proceeds scheduled for June of 2007. Until appropriation of bond proceeds occurs, funding for this contract will come from previously appropriated capital funds.



Project Impact Summary: There are currently 29 residences within the study area that are in the 100 year flood plain of Little Pimmit Run (shown above). Of these 29 residences 25 are upstream of Old Dominion Drive and 4 are down stream. The completed project will remove 12 residences from the 100 year flood plain and reduce flooding risk for an additional 10 residences.