



ARLINGTON COUNTY, VIRGINIA

**County Board Agenda Item
Meeting of June 13, 2009**

DATE: June 2, 2009

SUBJECT: Approve the Award of a Contract to Corinthian Contractors, Inc. for the construction of Phase II of the Little Pimmit Run Flood Control Project, Contract No. 174-09.

C. M. RECOMMENDATION:

1. Approve the award of Contract No. 174-09 to Corinthian Contractors, Inc. for the replacement of two existing culverts beneath Williamsburg Boulevard with a single culvert and reconstruction of the existing concrete channel between Williamsburg Boulevard and Little Falls Road in the amount of \$1,470,957, and authorize an allocation of \$200,000 as a contingency for change orders and \$75,000 in stipulated items for a total authorization of \$1,745,957.
2. Authorize the Purchasing Agent to execute the contract documents, subject to review by the County Attorney.

ISSUES:

1. Whether to replace the two (2) existing culverts beneath Williamsburg Boulevard with a single concrete culvert to reduce flood exposure of more than a dozen properties adjacent to Little Pimmit Run (LPR) upstream of the existing culverts.
2. Whether to include the reconstruction of the existing concrete channel between Williamsburg Boulevard and Little Falls Road to reduce flood and property damage exposure to several properties at the upper end of the channel and to rehabilitate the channel infrastructure to minimize future failure as well as maintenance concerns.

SUMMARY: Extensive development in the Little Pimmit Run watershed from the 1950's into the 1980's 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, which replaced a culvert beneath Old Dominion Drive, was constructed during the summer of 2007 and has reduced flood elevations by as much as eight (8) feet in the block upstream of the culvert.

Phase II will replace two (2) existing inadequate metal culverts beneath Williamsburg Boulevard with a single concrete arch culvert, and will reconstruct the existing concrete channel upstream from Williamsburg Boulevard to Little Falls Road. The replacement of the culvert and

County Manager: _____

County Attorney: _____

Staff: Michael Collins, DES

reconstruction of the channel will reduce flood elevations in this block by more than three (3) feet, and will address recurring maintenance concerns.

After completion of the construction, staff intends to issue a separate contract for landscape restoration on the private properties adjacent to the stream. That effort is expected to require an additional \$250,000 for design and construction.

BACKGROUND: Approximately 30 homes along Little Pimmit Run between Rock Spring Park and the County line fall within the Federal Emergency Management Agency (FEMA) 100-year floodplain. Many of these homes have been subjected to flooding over the past 40 years, and most recently during the storm events of August 2001 and June 2006.

Little Pimmit Run is typical of most streams in Arlington County, exhibiting flash flooding, erosive velocities and ongoing streambank erosion, areas of channel hardening, degraded habitat and water quality, and surcharging into the floodplain during severe storms. However, 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 the Little Pimmit Run watershed, the close proximity of homes to the stream not only leads to greater frequency and impact of flooding and other problems; it also restricts the available methods for stream restoration and makes regular maintenance of the sanitary sewer system and channel very difficult. The only available access to the channel without obtaining easements across private properties is at the intersections with Rock Spring Rd and Williamsburg Blvd. Both of these points present grade separations of approximately 10 feet between the channel and the adjacent roadway – such that equipment and materials can only be introduced to the channel via crane.

Since the completion of the Old Dominion Drive culvert, County staff has been working to obtain the easements necessary to complete Phase II of the Flood Control Project. This effort has led to at least five (5) public meetings over the last two years and dozens of meetings and site visits with each of the individual properties adjacent to the channel to underscore the key objective of protecting vulnerable properties and to also allay resident concerns about the impact of channel construction on their backyards.

As a result of the intensive public outreach and communication, 17 of the 22 property owners adjacent to the Phase II construction delivered a letter to the County Board, County Manager, and Director of the Department of Environmental Services in March 2008 expressing their support for the project and requesting that the County proceed with construction as proposed herein. Conversely, in March 2008 three other property owners delivered a letter to the same recipients requesting that the County *not* proceed with the construction of the channel as proposed.

In April 2009, the County issued complete plans and specifications for the project and bids were received on May 7.

This stream corridor was first 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 was supported by an extensive public process with at least five public meetings and the guidance of a Citizen Advisory Committee which included residents along the entire study corridor – from Little Falls Road to the County line. 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 reconstruction of the existing channel upstream of Williamsburg Blvd. as the most practical and cost-effective solutions to address flooding problems.

In December 2002, the Rock Spring Civic Association delivered a letter stating that “residents unanimously endorsed Baker's recommended Alternative E, which includes replacing the culverts at both Old Dominion Dr. and Williamsburg Blvd., as well as channel improvements between Williamsburg Blvd. and Little Falls Rd.”

After the June 2006 storm, a group of residents located downstream of Old Dominion Dr. began to express strong opposition to the Flood Control Project, based on an opinion that the project would result in increased flooding, erosive damage, and deterioration of the ecological condition of the stream adjacent to their properties. In response to their concerns, the Board commissioned the Little Pimmit Run Advisory Group on Downstream Impacts (Advisory Group) in April 2007. This group was tasked “to explore and recommend viable solutions to reduce flooding potential and other possible damage to public and private property located adjacent to Little Pimmit Run downstream of Old Dominion Drive.”

The advisory group is comprised of six (6) residents adjacent to the stream and six (6) civic activists and/or subject matter experts. The group has now met regularly for more than a year. The advisory group has commissioned a study to evaluate stream hydrology and hydraulics and to identify potential stream channel improvements with the environmental engineering firm, Vanasse, Hangen, Brustlin, Inc. (VHB). VHB recently completed their hydrologic and hydraulic modeling work, and is now preparing concept-level designs that identify opportunities to address the concerns which led to the Advisory Group's conception.

The advisory group also generated an independent study of the Little Pimmit Run watershed by the Center for Watershed Protection (CWP) to evaluate opportunities for watershed-level retrofits in the approximately two square mile watershed. The results of the CWP study will be used to inform the final VHB stream channel report and the Advisory Group's final recommendations to the County Board.

DISCUSSION: Phase II construction involves the replacement of two deteriorated metal culverts beneath Williamsburg Blvd. with a single concrete arch culvert and the reconstruction of an existing concrete channel between Williamsburg Blvd. and Little Falls Road.

Flood Risk Reduction

The proposed culvert will substantially reduce flooding risk immediately upstream of the culvert and will replace the aged and deteriorating metal culverts with a more resilient concrete culvert. The channel reconstruction will reduce flood risk for the properties at the upper end of the channel and will address a growing maintenance concern for County staff and homeowners.

Replacement of the existing culverts will address an existing public safety concern of flood water overtopping Williamsburg Blvd. and will remove two homes from the FEMA 100 year floodplain. One of the homes removed from the floodplain required an emergency rescue when floodwaters intruded into the ground floor during the June 2006 storm. Approximately a dozen other homes and the public infrastructure will be exposed to lesser flood risk as a result of the culvert replacement. The channel replacement portion of the project will remove three more homes from the FEMA 100-year floodplain by eliminating a mid-block constriction created by an old wall that has encroached into the stream channel.

Upon completion of the Phase II project, a Letter of Map Revision (LOMR) will be filed with FEMA to reflect the revised limits of the FEMA floodplain, and to remove these five homes from the floodplain. The LOMR that was submitted to FEMA following Phase I construction is expected to remove more than a dozen homes from the FEMA 100-year floodplain when processing is complete, including some homes downstream of the Old Dominion Drive culvert as a result of updated topographic and hydraulic data.

Maintenance Concerns

Phase II construction will address growing maintenance concerns for both the County and homeowners. The bottoms of the existing metal culverts have been washed away as a result of corrosion, and not addressing this condition will over time lead to failure of the culverts and the roadway above.

The existing concrete channel bottom has also been eroded through the entire corridor. This erosion has exposed two sanitary sewer laterals that are now at risk of being ruptured by stream debris (as recently happened in the next block downstream). The channel floor erosion also continues to undermine the structural integrity of the channel walls.

The existing channel walls have been constructed by various parties over the last half-century using different methods and materials. The result is a haphazard collection of walls in various conditions ranging from good to near failure. All of the existing walls are threatened by the failed channel bottom which will ultimately undermine their foundations.

Wall failure in a storm event could increase the risk of catastrophic flood damage to public and private property and would generate massive debris and subsequent erosion damage at the site of failure, as well as downstream. Wall failure could also generate extensive electrical and telecommunications utility damage and subsequent service loss, loss of a sanitary sewer main adjacent to the channel, and/or loss of vegetation. Repair and recovery operations after a wall failure are likely to be highly disruptive and invasive due to the lack of permanent access to the stream channel.

The County has several times been requested to repair breached channel walls in this section after major storms, including the August 2001 storm. However, due to the very limited access for mechanical equipment, repair options are very limited, consisting primarily of the placement of gabion baskets (wire baskets containing dozens of large rocks each weighing hundreds of pounds) and encasing those gabions in concrete. These repairs are temporary solutions and are susceptible to being washed out during storms by stream velocity within several years. The replacement of the culvert and the acquisition of several temporary construction easements associated with the culvert replacement provide the opportunity for the necessary channel and wall reconstruction, which have not previously been possible, to occur now.

Project Characteristics

The proposed project will restore the failed channel bottom with a new concrete bottom and will replace the existing walls with concrete walls structurally integrated with the new channel bottom. The channel will generally follow the alignment and dimensions of the existing channel, with the exception of the mid-block obstruction, where the channel will expand to match the dimensions immediately up and downstream.

At the request of the neighborhood, the contractor will use molded forms and colored concrete to mimic block walls construction as opposed to smooth white concrete walls and channel bottom. This will make the channel walls more visually appealing to the neighborhood from their backyards and decks.

Tree Impacts

The existing channel courses through an existing permanent easement in the backyards of 20 properties. Along many of these properties vegetation has been cultivated, or in some cases occurred naturally, to provide screening adjacent to the channel. The proposed construction will result in the loss of much of this vegetation.

The County has procured the services of a licensed arborist to conduct several tree surveys, dating back to 2001. The latest survey completed in 2008 identified that approximately 102 trees will need to be removed as a part of this project. Of these, 80 trees fall within the County's permanent easement. In accordance with the County's tree replacement policy, the project includes the restoration of 138 replacement trees upon completion of the project.

Of the 102 trees slated for removal as part of the construction, 15 were identified by the arborist as dangerous trees exhibiting severe damage or disease that endanger adjacent property. Many of the other 86 trees slated for removal are considered undesirable invasive species. One tree identified by the arborist as "Very Important", a 30 inch English Walnut, and five trees identified as "Important" will be removed by the construction. At the recommendation of the arborist, staff retained a tree protection firm to investigate the root structure of the English Walnut to attempt to identify any potential preservation method. The consensus analysis, however, is that this tree cannot be preserved due to its proximity to the channel.

Through extensive discussion and explanation with the arborist, engineers, and neighborhood, several of the most important trees in this corridor that were originally slated for removal will be

protected during construction. Two of the three trees which received the highest classification of “Very Important” will be saved due to revised construction methods. These two “Very Important” trees are a large American Holly at the head of the channel, and a 37 inch Deodar Cedar at the culvert replacement site. Additionally, two trees identified by the arborist as “Important” will be preserved, a 46 inch Silver Maple, and a 24 inch Red Maple, which will be saved by the use of sheeting and shoring adjacent to the tree, and five additional “Significant” trees will be preserved using various techniques including root pruning, revised limits of construction, and tree protection methods.

Neighborhood Involvement

Throughout the final design process, staff has worked closely with the neighborhood (see attached outline of the public process). Staff first met with the immediate property owners to discuss specific construction impacts of the Phase II project in July 2007. Initially, many of the residents expressed concern regarding the replacement of the channel because of the proposed impacts on the trees and backyard vegetation.

Since the initial Phase II construction meeting in July of 2007, staff held three public meetings to discuss tree impacts, preservation techniques and project impacts. A community representative volunteered to serve as the primary point of contact with the neighborhood and the County designated an employee to serve as the community relations liaison. Regular email communications were sent through the community representative both to and from County staff. In addition to these meetings and regular email updates, staff has met individually with all 22 property owners on their property to specifically identify impacts to their property and vegetation. Staff has also fielded numerous telephone and email inquiries with residents along the corridor. Additionally, staff has worked with the three property owners who have had strong reservations about the need for the channel replacement to try to address their concerns as well as their construction suggestions. This group of residents chose to retain private engineering and construction consultants to review and assess the County’s construction documents and County staff met with the residents and their consultants several times to provide engineering and construction information on the proposed project.

As a result of the extensive interaction with the Little Pimmit Run community, 17 of the 22 property owners adjacent to the construction delivered a letter to the County Board in March 2008 expressing their support for the construction as originally proposed by staff and as recommended in this Board Report. Concurrently, three homeowners delivered a letter to the County Board in opposition to the planned construction based on the belief that the channel reconstruction is unnecessary, and that a channel could be constructed more economically using sheeting and shoring techniques, which would also reduce the footprint of the construction area.

Upon award of the construction contract, staff has committed to meeting with all of the property owners who will lose trees or other landscaping to develop specific landscaping and restoration plans. These individual meetings are slated for summer 2009. The restoration work will be issued under a separate contract, with the work expected to begin in spring 2010. Estimated cost for this restoration work may exceed \$250,000.

Downstream Impacts

The hydrologic and hydraulic models used to study the watershed and stream corridor to date indicate that the significant reduction of acute flooding impacts upstream of the Old Dominion Drive and Williamsburg culverts does not result in significant impacts to downstream properties.

Despite these findings, a number of residents along Little Pimmit Run downstream of the Old Dominion culvert have expressed strong opposition to both the Phase I and Phase II construction projects since the June 2006 storm. Staff has held several dozen meetings with this group of citizens to explain the proposed construction projects and review the modeling and analysis which led to the development of the two flood control project.

As a result of these concerns, when the County Board awarded the construction contract for Phase I of the project in April 2007, the Board also created the Little Pimmit Run Advisory Group on Downstream Impacts to “explore and recommend viable solutions to reduce flooding potential and other possible damage to public and private property located adjacent to Little Pimmit Run downstream of Old Dominion Drive.”

The County has retained a consultant, VHB, Inc., to work with staff and the Advisory Group to evaluate stream conditions and opportunities within the stream corridor to reduce flood and erosion impacts and to improve ecological and aesthetic function in the stream. The advisory group also requested that the Center for Watershed Protection (CWP) produce a report to identify watershed level improvements that could reduce the effects of urbanization on Little Pimmit Run. The County entered into a contract with CWP, which is now in the process of developing this study.

The stream channel consultant (VHB) has updated the hydrologic and hydraulic models of the watershed and stream channel and evaluated many different scenarios, including the impact of the Flood Control Project (Phases I and II) upon the downstream channel section. The results from VHB’s models are consistent with both of the models produced as part of the original Flood Control Project development, indicating negligible or no impacts downstream of Old Dominion Drive.

Bid Results

In April 2009, the County requested bids for construction of Phase II of the Little Pimmit Run Flood Control project, including the culvert replacement and the channel reconstruction.

The bids were formatted into culvert replacement and channel reconstruction sections to enable the County to construct either component or both. The County has also requested that the prospective bidders designate either a traditional construction method, or a sheeting and shoring method to honor the three dissenting owners’ assertion that their preference for sheeting and shoring is the more economical approach.

Eleven (11) bids were received on May 5. One of the bids was subsequently rejected by the Purchasing Agent as non-responsive. The bid tabulation is listed below:

| Contractor | Culvert | Channel | Total | Construction Method |
|-------------------------------|------------------|------------------|--------------------|----------------------------|
| Omni Excavators, Inc. | \$439,536 | \$836,067 | \$1,275,603 | N/A |
| Corinthian Contractors | \$573,995 | \$896,962 | \$1,470,957 | Traditional |
| Espina Paving, Inc. | \$643,652 | \$1,069,062 | \$1,712,714 | Traditional |
| Sagres Construction | \$838,750 | \$1,099,020 | \$1,937,770 | Traditional |
| Flippo Construction, Inc. | \$738,457 | \$1,381,377 | \$2,119,834 | Traditional |
| Fort Myer Construction | \$794,190 | \$1,447,915 | \$2,242,105 | Sheeting/Shoring |
| Chevy Chase Contractors | \$730,778 | \$1,751,023 | \$2,481,801 | Traditional |
| G-W Mgmt Serv. LLC | \$983,378 | \$1,564,441 | \$2,547,819 | Sheeting/Shoring |
| A&M Concrete Corp. | \$972,374 | \$1,986,660 | \$2,959,034 | Traditional |
| Pessoa Construction Co. | \$1,059,166 | \$1,921,930 | \$2,981,096 | Sheeting/Shoring |
| Shirley Contracting | \$1,843,535 | \$2,203,245 | \$4,046,780 | Traditional |

- Traditional: Primarily traditional trenching methods, with use of sheeting and shoring in select locations where necessary to protect important trees or structures
- Sheeting/Shoring: Use of sheeting and shoring along the entire channel corridor approximately 1' behind proposed wall

The apparent low-bidder, Omni Excavators, failed to select a construction method and was consequently determined to be non-responsive by the Purchasing Agent.

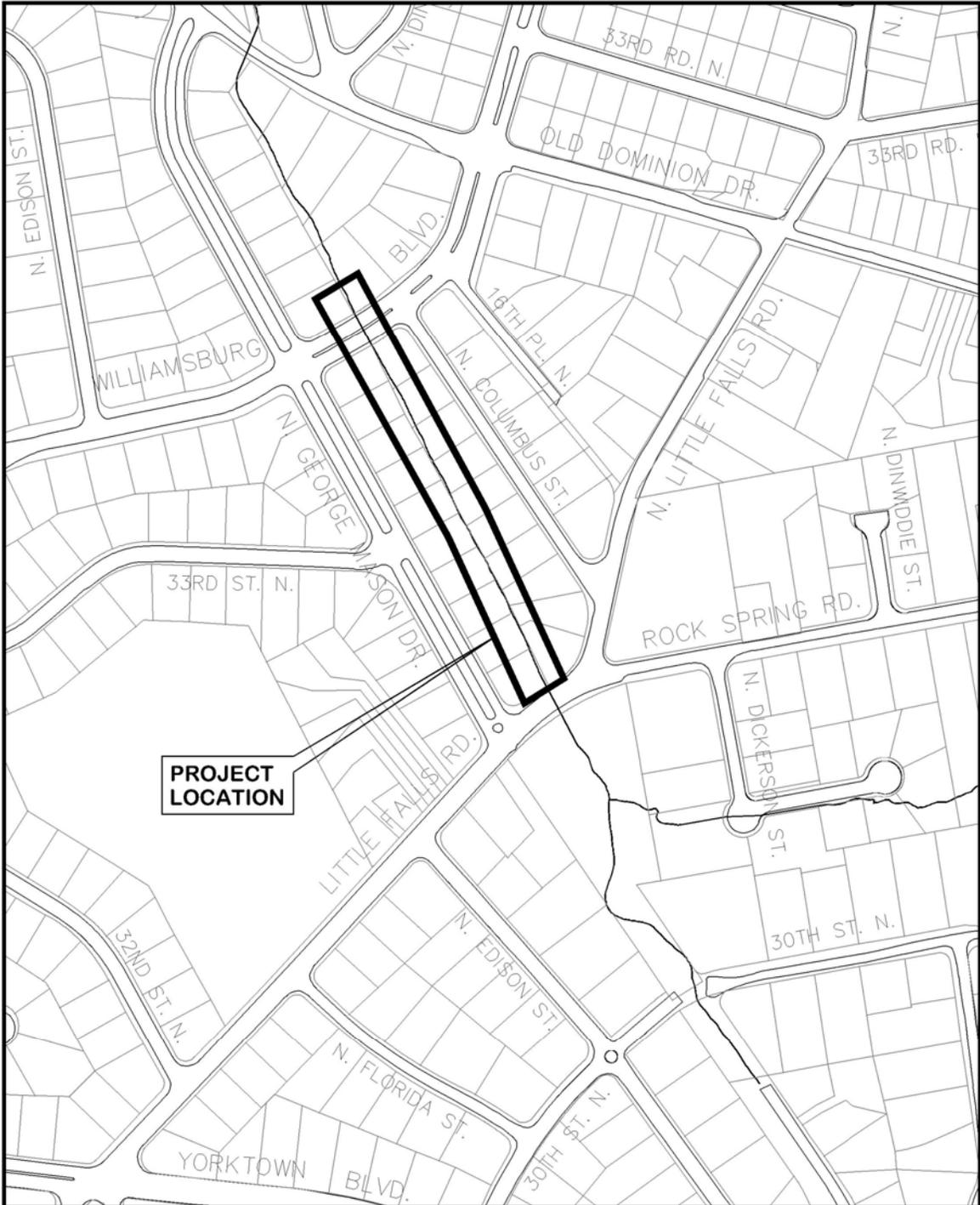
The lowest responsive and responsible bidder has been determined to be Corinthian Contractors, Inc. The total bid is below the Engineer's Estimate for this project, and staff recommends award of the contract to Corinthian Contractors, Inc. A contingency of \$200,000 and an additional \$75,000 is recommended for any stipulated price items, bringing the total recommended authorization for this contract to \$1,745,957.

FISCAL IMPACT: Funds for the construction of Phase II of the Little Pimmit Run Flood Control Project are available from two different sources:

1. \$592,000 from Stormwater Management Funds.
2. The remaining \$1,153,957 from the previously approved Storm Drainage program bond. This funding is made available by the cancellation and/or postponement of many of the programmed storm drainage improvement projects.

Thus, funds totaling 1,745,957 are available to finance the construction of this project from the following accounts:

- 314.437405.43527.S08D.SJD.0000 \$1,153,957
- 321.437405.47224.0000.0000.0000 \$592,000



LITTLE PIMMIT RUN - PHASE II CONSTRUCTION

LOCATION MAP
(Not To Scale)



| Little Pimmit Run Project History | |
|--|--|
| 1980s | Flood Control project initially identified in CIP |
| 1994 | Initially funded for study of flood control project |
| 1997 | Citizen Advisory Committee formed |
| 1998 | Contract awarded for Study, Project Development, and Design |
| 2001 | Study completed |
| 2002 | Recommended alternatives presented to (and endorsed by) Rock Springs Civic Association |
| 2003-2004 | Design and Permitting |
| 2005-2007 | Easement acquisition for Phase I (culvert beneath Old Dominion Drive) |
| April 2007 | Board approves \$1.1M contract for construction of Phase 1 |
| June-Nov 2007 | Construction of Phase I |
| Phase II History | |
| June 2007 | Request for temporary easements for Phase II sent to 22 properties |
| July 26, 2007 | Meeting with group of residents at Handy household to discuss Phase II construction |
| Sept 6, 2007 | Community meeting to discuss easements and Phase II project |
| Sept 27 & Oct 5, 2007 | Letters from residents requesting that County propose alternatives other than channel replacement |
| Nov 29, 2007 | Meeting with small resident group to develop community process to select recommended alternative |
| Dec 10, 2007 | Community meeting to discuss project alternatives and request recommendation from community |
| Dec 2007 | PRCR clears small trees from channel per community request at cost of ~ \$20k |
| Dec 2007 – March 2008 | Community works to develop consensus recommendation |
| Jan 25, 2008 | Meeting with Murphy and consulting engineer to review plans |
| March 7, 2008 | 16 property owners sign (one additional is listed but is not able to physically sign) letter supporting original County proposal |
| March 14, 2008 | 3 property owners sign letter dissenting with community position |
| April 1, 2008 | Meeting with Murphy and consulting engineer to discuss sheeting & shoring |
| April 2, 2008 | Community meeting to discuss tree preservation techniques |
| April 23 & 24 2008 | Individual meetings held on-site with 19 of the 22 properties affected |
| May 7, 2008 | Arborist excavates roots of Scott's English Walnut to identify tree preservation opportunities (none identified) |
| May 12, 2008 | On-site investigation of sheeting & shoring with Murphy's engineer |
| April – September 2008 | Temporary easement acquisition |
| October – February 2009 | County froze construction projects due to economic conditions |
| April 2009 | Invitation for bid was issued |
| June 13, 2009 | Board considers award of contract for construction |
| July 2009 – March 2010 | Construction and work with residents to design landscape plans |
| March – May 2010 | Implement landscape plans for LPR residents |

