Holmes Run/Chambliss Crossing Study & Stream Bank Stabilization/Restoration Project

Final Community Meeting

September 24, 2009
Ramsay Recreation Center
Purpose/Agenda

• Project review & update

• Review options for stream bank stabilization/restoration and crossing

• Review city’s preferred alternative

• Next steps
Study Boundaries
First Public Meeting (March 2009) included:

- Review of initial project intent ("To explore a possible bike/pedestrian crossing")
- Review of possible crossing types
- Strong community sentiment to include stream bank stabilization/restoration as part of the project
Project Recap

May 28th public meeting:
• Expanded project scope for 350 linear feet of stream bank stabilization/ restoration
• Reviewed crossing options and, using a criteria-based approach, recommended a crossing that is technically feasible and would not create a rise in the flood plain

May 30th public meeting:
• Site visit and “101” session on stream bank restoration/ stabilization
• Established plan to coordinate with Fairfax County
Recent Events

• **Staff/consultants finalize study (modeling & due diligence) and complete coordination with Fairfax County**

• **August- Community petition stressing key points:**
  1) Crossing will not contribute to or cause flooding.
  2) Remaining open green space be conserved.
  3) Adjacent stream bank be restored and stabilized.

• **September- City response:**
  1) Protection of existing property shall be maintained (no rise)
  2) Crossing is a necessary connection for regional trail network
  3) Stream bank will be stabilized and restored
  4) Meadow will be maintained to the maximum extent possible while meeting the primary goal of stream bank stabilization
Stream Bank Stabilization/Restoration
How Erosion Happens...

Erosive Unstable Stream Banks
- Water Quality and Habitat
- Loss of Property
  - Infrastructure
  - Trees
- Safety
- Aesthetics

- Problem Is Getting Worse
How Do We Fix It?

Potential Solutions

- Bank Stabilization
  - Hard Engineering
    - Rock
    - Concrete block
  - Bio-engineering
    - Stabilize with natural materials and vegetation
    - Some Rock Usually Incorporated

- Stream Restoration
  - Natural Channel Design
  - In-Stream Structures
  - “Reference Reach” approach
Why is this location a good candidate?

- To enhance the protection of adjacent real property from flooding events

- To stabilize the stream bank and prevent further erosion

- To increase in-stream habitat and improve water quality

- To create a safer bank edge

- To beautify the project area
Scenario 1 – “Do Nothing”

- Bank will continue to erode
- Meadow will disappear
- Edge will remain unsafe
- Erosion will continue to introduce pollutants into stream
Scenario 2 – Stabilization

• More “engineered” solution

• Will not look as natural as the stabilization option

• Limit of disturbance is less than restoration option
Scenario 2 – Stabilization Cross Section Looking Downstream
Scenario 3 – Restoration

• More natural solution with a combination of hard materials and planting

• Brings the stream to its natural state

• Limit of disturbance is greater than stabilization option
Stream Bank Stabilization/Restoration

Scenario 3 – Restoration Cross Section Looking Downstream
Typical Plant Material for Restoration Option

Keys are:

• Variety
• Use of natives
• Planting Zones
• Develop a natural look
Crossing
Crossing Recap Options

- Bridge
- Fair Weather Crossing
- Low Profile Crossing
# Crossing Design Matrix

## DESIGN MATRIX FOR CROSSING OPTIONS

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>FAIR WEATHER CROSSING</th>
<th>LOW PROFILE CROSSING</th>
<th>BRIDGE CROSSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYDRAULIC IMPACT</td>
<td>Has no impact to flood elevations. Least amount of stream flow impact.</td>
<td>Has no impact to flood elevations. Has slightly more impact to stream flow than fair-weather crossing. Also has more potential to gather debris.</td>
<td>A bridge set at the bank elevation causes a rise in the flood plain which is not permissible per FEMA and local regulations.</td>
</tr>
<tr>
<td>ENVIRONMENTAL IMPACT</td>
<td>Creates the most environmental impact since slab is directly on stream bed. Requires the most significant grading along the approaches to the crossing.</td>
<td>Creates moderate impact since piers are exposed. The base is covered by 1 ft of natural material. Requires moderate grading on the approaches.</td>
<td>Least environmental impact. Avoids stream all together. Bridge footings can be placed along streambanks. Requires minor grading along streambanks.</td>
</tr>
<tr>
<td>ACCESSIBILITY</td>
<td>Least accessible. Only allows limited crossing during non event times. Will be slippery due to buildup of algae over time.</td>
<td>Moderate accessibility. Will be designed to stay dry for one year events. Will flood during larger events.</td>
<td>Most accessible. Designed to span flood zone.</td>
</tr>
<tr>
<td>AESTHETICS</td>
<td>Will have the least visual impact along the stream, but moderate visual impact along the approaches</td>
<td>Will have moderate visual impact along the stream. Can be kept low to hide most of the structure from houses.</td>
<td>Is the most visual option due to height and size of structure.</td>
</tr>
<tr>
<td>COST</td>
<td>Least expensive.</td>
<td>Moderately expensive. Construction will utilize pre-fabricated pieces.</td>
<td>Most expensive due to height elevation. Cost is not feasible for the project.</td>
</tr>
</tbody>
</table>
Crossing – Key Points

- Important and necessary to City and Fairfax County for regional trail connectivity

- Low profile option will not create a rise in the flood plain elevation

- Low profile crossing will be designed to limit disturbance to the existing area
Crossing
Low Profile Option

• Preferred Option

• Crossing elevation 3-4 ft above low flow

• Designed to not increase flood elevation even if completely blocked by debris

• Designed to limit visual impact to surrounding area.
Crossing

Low Profile Option
Project Schedule...Next Steps

- **September 24** – Final Community Meeting for Study to present preferred option for crossing and stream bank stabilization/restoration
- **Fall 2009** – Design development & PE (formal engineering) phase of preferred option and begin agency permitting
- **Winter-Spring 2010 (Pending VDOT and federal agency comments):** Finalize permits and spring construction meeting for public to review schedule
  - Project renewed in City CIP
- **Summer 2010** – Bid and Award Construction Contract
- **Spring/Summer 2011** – Construction
Holmes Run/ Chambliss Crossing Study
Public Information Session
THANK YOU.