River Towers Meeting

Flood Risk Management Study Alternatives Overview

September 23, 2014

Background and Purpose of Meeting

- There is no "proposed" flood risk management solution for this area at this time
- Fairfax County is still in the early stages of evaluating various potential project alignments
- Purpose of this meeting is to provide information regarding potential project alignments and receive feedback from residents

Background

- **Initial Report Completed Feb 2008 – Flood Damage Reduction Analysis for Belle Haven Watershed (*by U.S. Army Corps of Engineers, USACE*)**
  - Fairfax County requested that USACE conduct a study to evaluate various flood damage reduction alternatives to determine if they are technically feasible
  - Conducted under technical services program; was not a USACE study authorized by Congress
  - Evaluated various alternatives; identified most cost-effective solution

Plan 1b (2008 Study) - Levee/Floodwall Alternative

Background

- **Concerns raised by residents and NPS, including:**
  - Impacts to view/aesthetics
  - Impacts to trees
  - Impacts to Dyke Marsh
  - Impacts to property
  - Impacts to environment
  - FEMA certification & the need for insurance
  - Global warming/sea level rise

Background

- **2009 – County conducted field survey and tree survey for study**
- **2010 – 2012 – New alternatives developed and evaluated**
  - Team identified various new alignments
  - Coordinated alignments with NPS and made revisions
  - Investigated portable flood barriers
  - Developed concept plans, costs and benefits for the new plans
  - Completed a preliminary sea level rise analysis
  - Coordinated with community leaders
  - Held public meeting in October, 2012

Background

- **2012 – 2014 - Following public meeting, a Citizen Task Force was established**
  - Citizen Task Force met with County, USACE, NPS multiple times
  - Asked USACE to develop and evaluate concept plans for wall/levee down the median of the GWMP and on the east side of GWMP

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Background

- **2014** - Supervisor Hyland asked the Citizen Task Force to meet with the various communities to hear their thoughts/concerns/views regarding the various potential alignments and to determine if there is any consensus on a possible project
- The County has been coordinating with National Park Service (NPS) throughout this process; there are challenges with any project that will impact the GWMP and the National Environmental Policy Act (NEPA) process would have to be followed

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- **Show video simulation of Hurricane Isabel**

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Communities are at Risk of Flooding

1% Annual Chance Floodplain* Based on Storm Surge Elevation 11.2 ft (NGVD29)

***1% annual chance flood is the flood that has a 1% chance of occurring in any given year, sometimes referred to as the 100-year flood**

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Flood Inundation Areas to Elevation 14 Feet (NGVD29)

- **Sea Level Rise will increase chance of flooding**
- **Floods higher than the 1% chance flood DO occur**

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Elevation Data

- **Many building low openings/first floors: elevation 6-11 feet**
- **Majority of ground elevation is 8-9 feet in Belle View, 4-9 feet in New Alexandria and Riverview**
- **River Towers first floor elevations are at approximately 11 feet**
- **2% annual chance (50 year/Hurricane Isabel) storm surge: 9.6 feet**
- **1% annual chance (100 year) storm surge: 11.2 feet**
- **0.2% annual chance (500 year) storm surge: 16.2 feet**

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Height of Protection Overview

- **1% annual chance flood elevation (100-yr elevation based on storm surge) = 11.2 feet**
- **FEMA - for certification of project (no flood insurance requirement), FEMA requires the project be 3 feet higher than the 1% annual chance elevation = 14.2 feet**
- **USACE – for USACE built projects, wall must be built higher than the design event to account for risk and uncertainty (varies per project, but for the 1% annual chance flood design, typically 3-4 feet higher than the 1% annual chance flood elevation) plus sea level rise must be considered = 14.2-15.2 feet + SLR consideration (for 1% annual chance design)**

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Height of Protection (Cont.)

- **Sea level rise predictions by the year 2100**
  - Based on historic rate = 1 foot
  - Based on Intergovernmental Panel on Climate Change (IPCC 2007) study = between 0.6 - 1.9 feet
  - Based on "Updating MD's SLR Projections" (June 2013) = between 2.1-5.7 feet
- **Height of potential floodwall/levee has not been decided; initially top of protection at elevation 12 feet has been used for concept plan so that is can be compared with original plan. However, typically 3 heights of protection are evaluated and compared for the final alignment; higher protection is recommended to account for risk and uncertainty and sea level rise**

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Corps' Vegetation/Tree Setback Requirements

- **Trees can adversely impact floodwalls and levees and cause the flood protection system to fail**
- **Vegetation/tree-free zone (except grass) extends 15 feet on each side of a floodwall**
- **If a large tree has the potential to damage the wall if it overturns, then it should be removed. General rule of thumb - trees should be a minimum distance of half their height from a floodwall**
- **County surveyed trees along potential alignments; arborist preliminarily identified highest priority trees based on species/condition**
- **Tree setback will be based on tree height and risk; we are currently showing a 40-foot setback**

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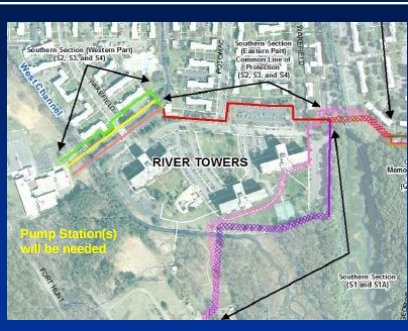
Review the GWMP Alternatives Map and the Sep 2014 Comparison Document

Southern Area



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Southern Area (near River Towers)

- **Alternative S1 – Levee/wall along south side of River Towers (original alignment)**
- **Alternative S1A – Levee/wall along south side of River Towers closer to building**
- **Alternative S2 – Wall adjacent to Belle View Condo north of West channel**
- **Alternative S3 – Wall along southern curb of BV parking lot north of West channel**
- **Alternative S4 – Wall along northern curb of parking lot south of West channel**

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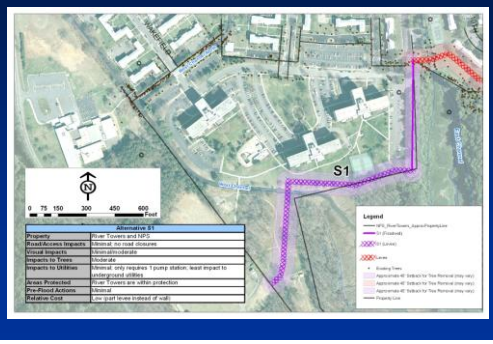
Alternative S1



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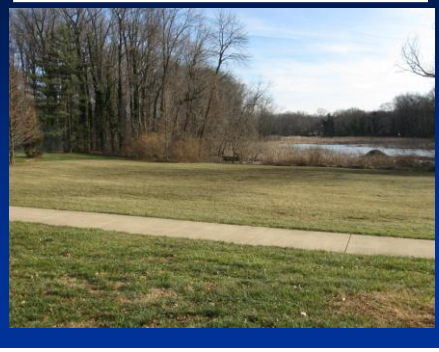
Looking South from River Towers



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Concept View of S1 Looking South
Levee Elevation 12 Feet

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Concept View of S1 Looking South
Levee Elevation 14.5 Feet

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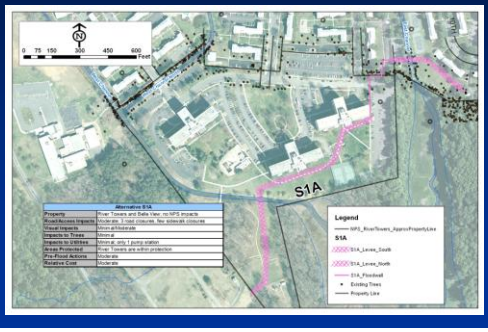
New Alignment - Alternative S1A



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Looking West Behind Eastern River Tower

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Looking South Behind Eastern River Tower

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Looking West Behind Center River Tower

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Looking South Behind Center River Tower

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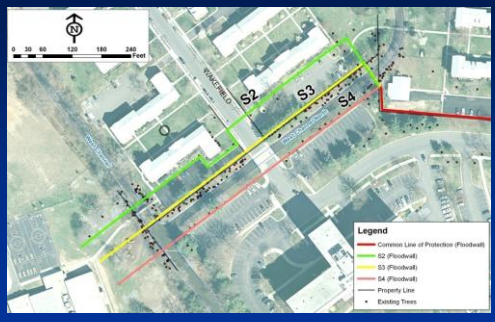
Alternatives S2, S3, and S4



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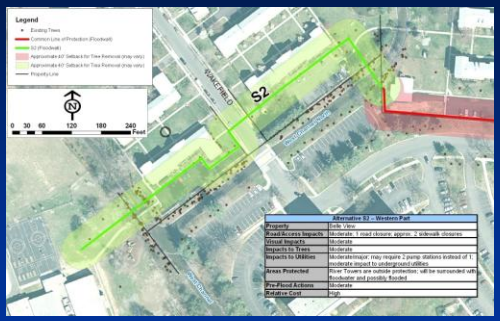
Alternative S2 – Western Part



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Southern Area Looking East Between Belle View Condo and West Channel

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Concept View of S2 Looking East Floodwall Elevation 12 Feet

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Concept View of S2 Looking East Floodwall Elevation 14.5 Feet

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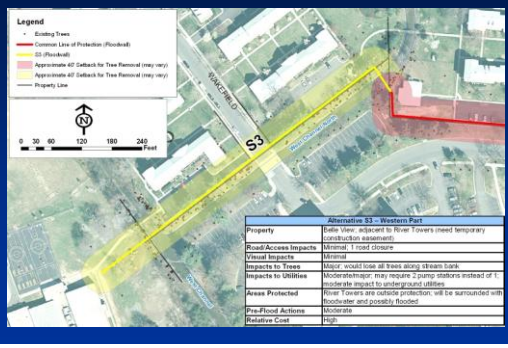
Alternative S3 – Western Part



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Concept View of S3 Looking East Floodwall Elevation 12 Feet

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Concept View of S3 Looking East Floodwall Elevation 14.5 Feet

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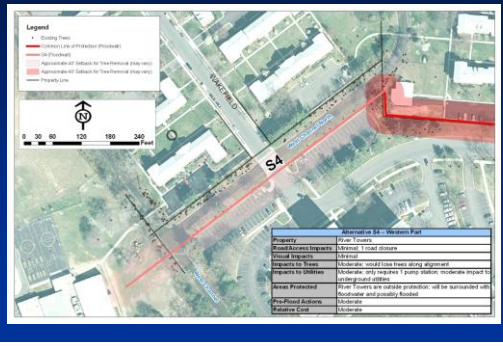
Alternative S4 – Western Part



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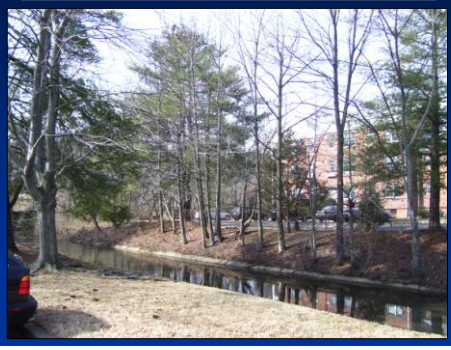
Southern Area Looking Northwest across West Channel



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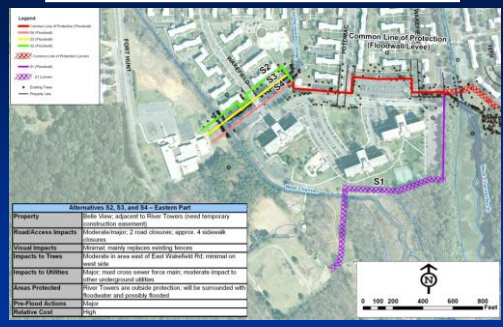
Eastern Part of Alternative S2, S3, S4



Alternatives S2, S3, and S4 – Eastern Part	
Property	Belle View; adjacent to River Towers (need temporary construction easement)
Road/Access Impacts	Moderate/major; 2 road closures; approx. 4 sidewalk closures
Visual Impacts	Minimal; mainly replaces existing fences
Impacts to Trees	Moderate in area east of East Wakefield Rd; minimal on west side
Impacts to Utilities	Major; must cross sewer force main; moderate impact to other underground utilities
Areas Protected	River Towers are outside protection; will be surrounded with floodwater and possibly flooded
Pre-Flood Actions	Major
Relative Cost	High

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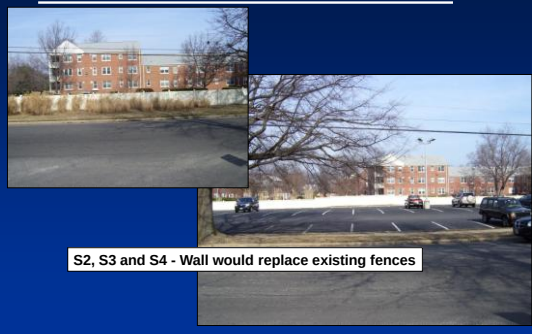
Southern Area (Eastern Part) Looking North from River Towers



S2, S3 and S4 - Wall would replace existing fences

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Southern Area (Far Eastern Part)

S2, S3 and S4 - Wall would extend along this area

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Access to Materials:

To access the Comparison of Plans document presented tonight:

http://bit.ly/FairfaxStudy

To access the presentation slides, see Planning Projects Section on the webpage below:

http://bit.ly/NABCivilWorks

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Questions?