6e
5-14-11

City of Alexandria, Virginia

MEMORANDUM

DATE: APRIL 28, 2010

TO: THE HONORABLE MAYOR AND MEMBERS OF CITY COUNCIL

THROUGH: JAMES K. HARTMANN, CITY MANAGER

FROM: RICHARD J. BAIER, P.E., LEED AP, DIRECTOR, TRANSPORTATION AND ENVIRONMENTAL SERVICES

SUBJECT: POTOMAC WATERFRONT FLOOD MITIGATION STUDY

This memo is an update on the ongoing Potomac Waterfront Flood Mitigation study, being conducted by T&ES. The flood mitigation study is complimentary to, and is being coordinated with the Waterfront planning process being conducted by P&Z.

The scope of the Flood Mitigation Study is to identify the flooding problem, determine the cause(s) of the flooding problem, identify potential solutions, analyze these potential solutions and recommend the best solutions.

A draft report has been completed and is available for public viewing on the City's website at alexandriava.gov/Waterfront. This memo summarizes the findings of the draft report and discusses the next steps.

Report Summary

For the purposes of the report, the study area was divided into four focus areas: Jones Point, King Street, Waterfront Commercial, and North Union.

Twenty-seven mitigation measures were identified and discussed in a series of public and staff meetings that occurred from October 2007 through November 2008. During that process, a numerical scoring system was developed to select mitigation measures to consider further. The following nine mitigation measures were selected for detailed evaluation using this scoring system.

Structural measures: provide dry floodproofing; acquire properties; elevate structures; construct engineered structural barriers (i.e., waterfront floodwall and Jones Point berm) construct an elevated walkway that would also be a floodwall structure; and increase the inlet and road elevation in the vicinity of the Lower King Street area.

Nonstructural measures: relocate internal supplies, products/goods above the flooding depth; improve the City's floodplain and zoning ordinances; and improve the sandbag programs or provide other temporary flood deterrents

Conceptual designs were developed for the floodwall, Jones Point berm, the elevated walkway, and roadway improvements.

A benefit-cost analysis (BCA) was performed for the six structural mitigation measures. A BCA was not computed for the proposed nonstructural mitigation measures. Therefore, nonstructural mitigation measures were evaluated only for applicability and technical feasibility. The historic nature of the City adds to the cost and complexity of the mitigation measures considered.

The report does not recommend a single flood mitigation solution, but rather a series of measures is recommended to provide protection against flood events on the Potomac River. Three structural measures are recommended: the elevated walkway, floodproofing, and the inlet and roadway improvements. These measures require significant capital expense and cooperation from private property owners. In addition, these projects call for significant effort to comply with applicable regulations.

Three flood levels were examined in this study, Nuisance (4 feet NAVD88), Intermediate (8 feet NAVD88) and Extreme (100-year, 10.2 feet NAVD88). The recommended solutions tend toward the lower end of these flood levels. *The most cost-effective level of protection and one which staff will be recommending is 6 feet NAVD88, which has a recurrence interval of approximately 10 years.* While "6 feet" sounds high, understand that high tide (mean high water) is 2.2 feet NAVD88, and that the Alexandria existing shoreline elevations range from 2 to 4 feet NAVD88. The flood prioritized solution to meet this level would entail creating low level grassy berms in parks, installation of "pop up" closure structures only several feet high in the unit block of a few streets and the installation of low seating walls into the park landscape. It would likely be difficult for the untrained eye to actually see these type structures as flood protective infrastructure. At higher protection elevations, the physical size and cost of the works increase dramatically, and BCA drops quickly. Also, higher protection would be visually obtrusive and effectively wall off the river from the shoreline which would damage the public's beneficial use of the waterfront. These recommended solutions do not address the 100-year flood, and will not change the requirement or rates for flood insurance along the Potomac River waterfront.

It should also be noted that some of the most cost-beneficial measures, including nearly all manner of building floodproofing, would be carried out by private property owners, not by the City. The City role in these efforts would be public outreach and education.

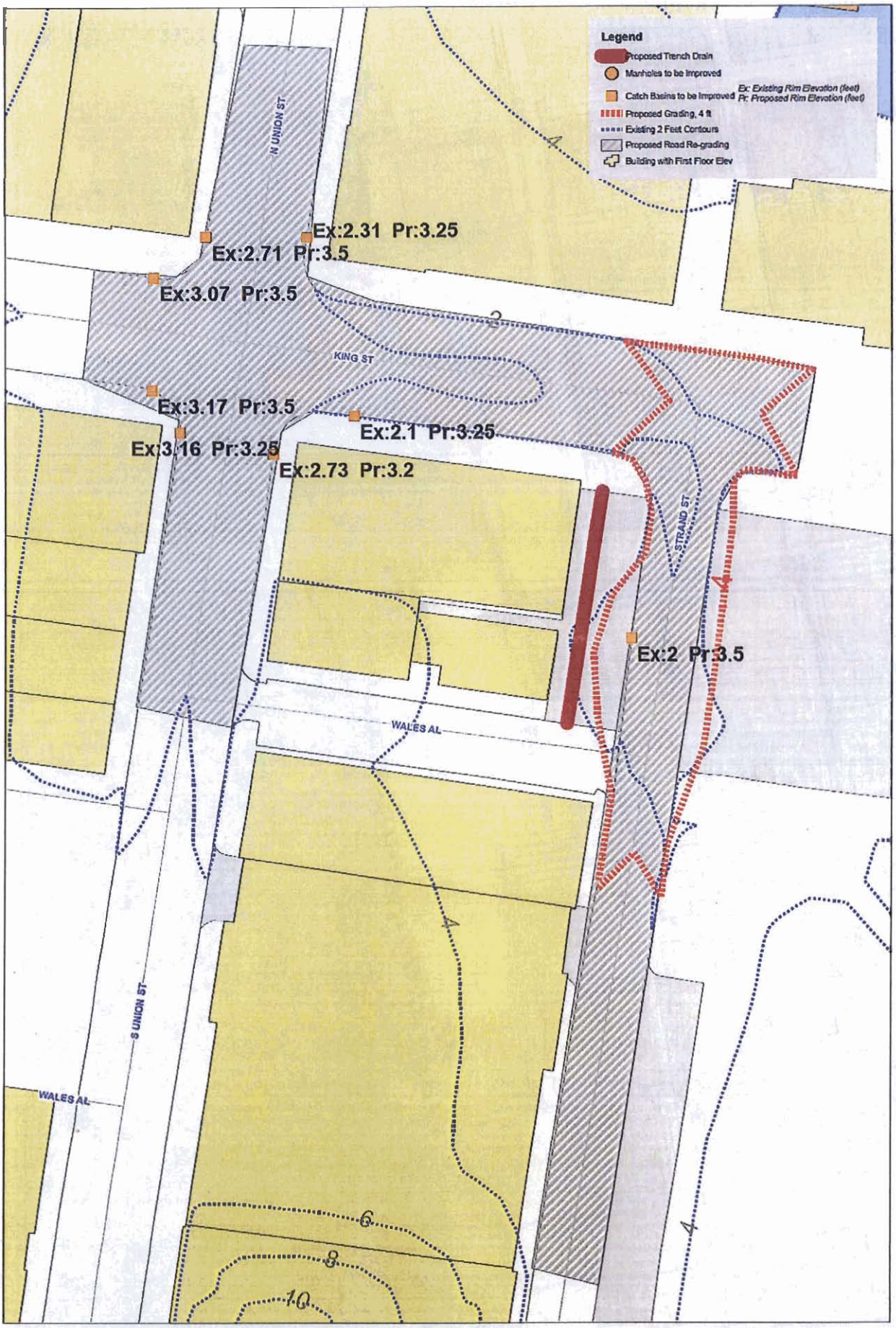
To further safeguard all properties, numerous nonstructural recommendations are made, which include improvement of the City's floodplain ordinances and the existing sandbag program. Proceeding with implementation of the recommended flood mitigation measures is essential to reduce the extensive flood damage in the City.

T&ES held a public meeting on March 16, 2010 at 7:00p-9:00p in the Lee Center to discuss the study findings and educate residents about what they can do to avoid flood damages to their properties. In addition, the findings of this study will be integrated into the Waterfront Plan.

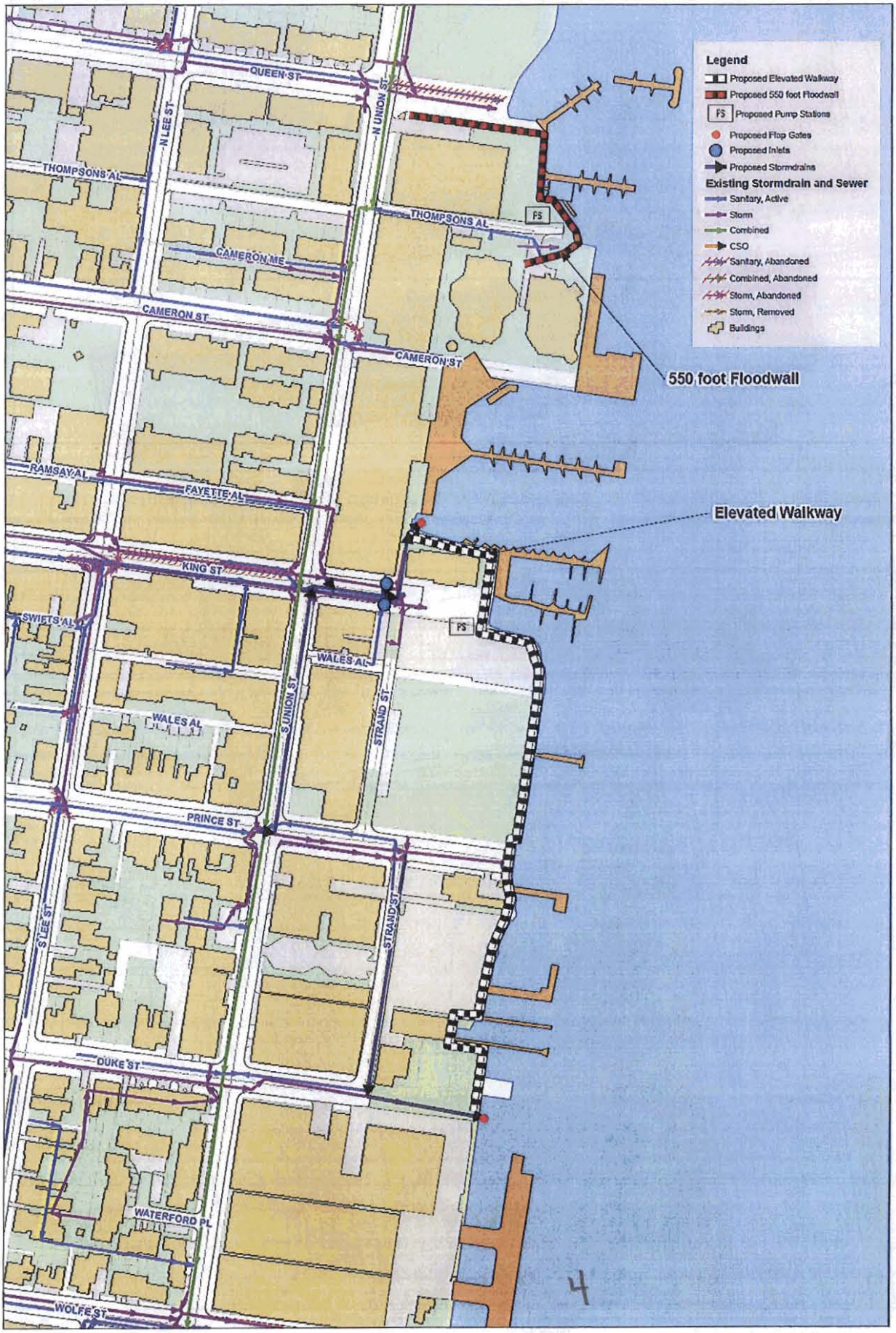
If you have any questions about this study, please contact me at 703-746-4025.

cc: Mark Jinks, Deputy City Manager
Michele R. Evans, Deputy City Manager
Emily Baker, City Engineer, T&ES Engineering
Faroll Hamer, Director, Planning & Zoning

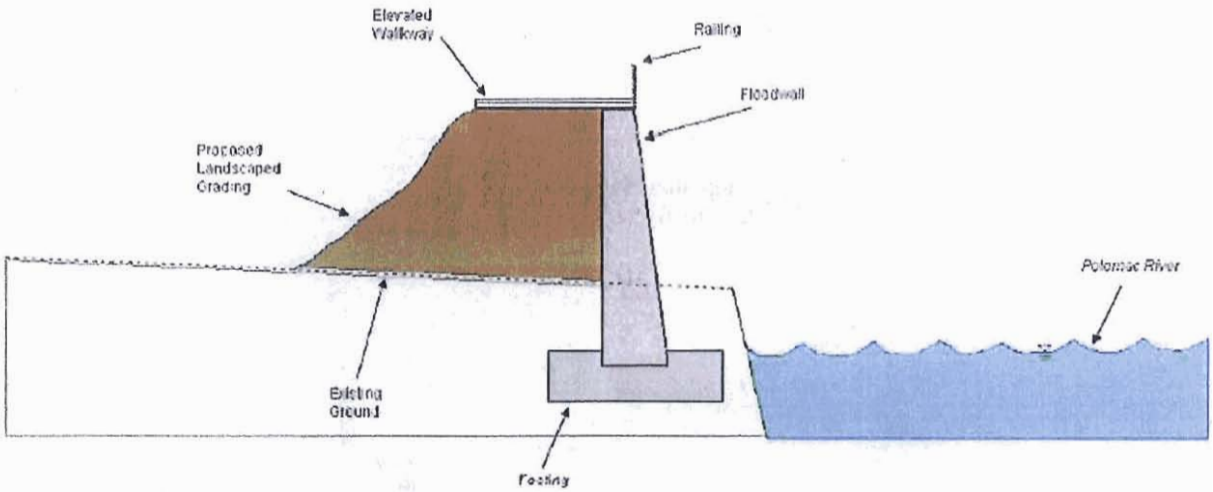
Elevated Pavement



Walkway and Floodwall Proposed by URS Flood Mitigation Study



Section and Perspective of the Elevated Walkway in Waterfront Park



Integrated Flood Control