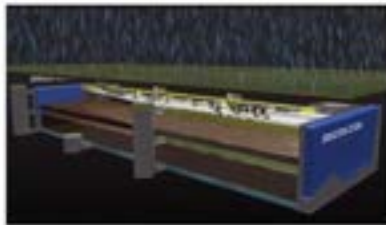
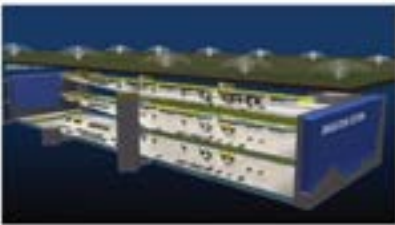


NATIONAL MALL UNDERGROUND

Access, Flood Protection, and Sustainability under the National Mall



- FLOOD PROTECTION
- SUSTAINABILITY
- WELCOME CENTER
- BUS & CAR PARKING

www.nationalmallunderground.org

Centrally located in the heart of the nation's capital, the National Mall Underground will provide access to our national museums and cultural events while reducing congestion on city streets. It will feature a welcome center with restrooms and food service, as well as systems to collect rainwater for Mall irrigation. In the event of heavy rains, the facility will be evacuated and lower levels retain floodwater, protecting surrounding public buildings and museums.

National Mall Underground

presented by the
National Mall Coalition
before the
Commission of Fine Arts
October 21, 2021



Source: Carol Highsmith





Federal Triangle area



IRS Building

June 25th-26th, 2006



Visualization of 2006 flood



Pooling of stormwater

7th Street, NW



June 3, 1889



U.S. Capitol

Washington Navy Yard, 1936

Source: U.S. Naval Historical Center

Washington
Monument



Hains Point, East Potomac Park, 1985



July 8, 2019



Tidal Basin, 2008

Federal Triangle Stormwater Drainage Study
July 2011

dc
water is life

prepared by
GREELEY AND HANSEN
in association with
LimnoTech

DC
Water

National Park Service
U.S. Department of the Interior

Sea Level Rise and Storm Surge Projections for the National Park Service

Natural Resource Report Series NPS/NR55-NRR-2010/1648

NPS

NOAA Technical Report NOS CO-OPS 073

Sea Level Rise and Nuisance Flood Frequency Changes around the United States

Silver Spring, Maryland
June 2014

noaa National Oceanic and Atmospheric Administration
U.S. DEPARTMENT OF COMMERCE
National Ocean Service
Center for Operational Oceanographic Products and Services

NOAA

FEMA
Washington DC Potomac Park Levee CLOMR - 09-03-0629R

FEMA

PROPERTY OF THE UNITED STATES GOVERNMENT
COPYING, REPRODUCTION, AND DISTRIBUTION OF THIS REPORT FOR UNLAWFUL PURPOSES IS PROHIBITED
No warranties are made
Property (includes) documents when no longer needed

GSA

Flood Mitigation and Prevention
Draft Study

GSA FEDERAL
MANAGEMENT
SYSTEMS
DEPARTMENT
OF FURTHER
SERVICES

January 15, 2013

General Services Administration
National Capital Region
Washington, D.C.

PROPERTY OF THE UNITED STATES GOVERNMENT
COPYING, REPRODUCTION, AND DISTRIBUTION OF THIS REPORT FOR UNLAWFUL PURPOSES IS PROHIBITED
No warranties are made
Property (includes) documents when no longer needed

GSA

U Md

**THE GROWING PAIN OF URBAN FLOODING:
A NATIONAL CHALLENGE
2018**

U Md



SILVER JACKETS

Many Partners, One Team

HOME

STATE TEAMS

RESOURCES

CONT

DC & Federal Agencies

WASHINGTON, D.C.

Federal

- [U.S. Army Corps of Engineers \(USACE\), Baltimore District](#)
- [U.S. Federal Emergency Management Agency \(FEMA\), Region III](#)
- [National Park Service \(NPS\)](#)
- [National Oceanic and Atmospheric Administration's National Weather Service \(NOAA/NWS\)](#)
- [U.S. Geological Survey \(USGS\)](#)
- [U.S. Army, Military District of Washington \(MDW\)](#)
- [U.S. Navy, Naval District Washington \(NDW\)](#)
- [U.S. Navy, Joint Base Anacostia/Bolling \(JBAB\)](#)
- [General Services Administration \(GSA\)](#)
- [U.S. Environmental Protection Agency \(EPA\)](#)
- [National Capital Planning Commission \(NCPC\)](#)
- [District of Columbia National Guard](#)

District of Columbia

- [Department of Energy and Environment \(DOEE\)](#)
- [DC Homeland Security and Emergency Management Agency \(HSEMA\)](#)
- [DC Office of Planning \(OP\)](#)
- [Deputy Mayor for Public Safety and Justice](#)
- [Department of Public Works \(DPW\)](#)
- [Department of Consumer and Regulatory Affairs \(DCRA\)](#)
- [District Department of Transportation \(DDOT\)](#)
- [Department of Insurance, Securities and Banking \(DISB\)](#)

Regional

- [DC Water and Sewer Authority \(DC WATER\)](#)
- [Washington Metropolitan Area Transit Authority \(WMATA\)](#)
- [Metropolitan Washington Council of Governments \(MWCOCG\)](#)

Academia







GEOTHERMAL WELLS

National Mall Underground

Congress White House

Federal Agencies

Architect of the Capitol
Army Corps of Engineers
Commission of Fine Arts
Council on Environmental Quality
EPA
Federal Emergency Management Agency (FEMA)
IRS
National Archives
National Capital Planning Commission
National Gallery of Art
National Park Service
Smithsonian Institution
USDA
U.S. Dept. of Commerce

U.S. Dept. of Homeland Security
U.S. Park Police
U.S. Secret Service

District of Columbia

DC Councilmembers (staff) Wells (sits on NCPC) and McDuffie (sits on COG)
DC Department of Transportation
DC Water (WASA)
DC Department of Environment
Office of the Mayor
DC Office of Planning
WMATA

Architects, Civic Groups

American Institute of Architects, DC Chapter
American Bus Association
Committee of 100 on the Federal City
Destination DC
DC Historic Preservation League
Dutch Embassy
Federal City Council
Guild of Professional Tour Guides of Washington DC

Louis Berger Group
Newseum
Penn Quarter Association
SmithGroup
Trust for Public Land
Trust for the National Mall (NPS fundraising partner)
Washington Post Editorial Board



GEOTHERMAL WELLS



Washington Monument

Natural History

Capitol

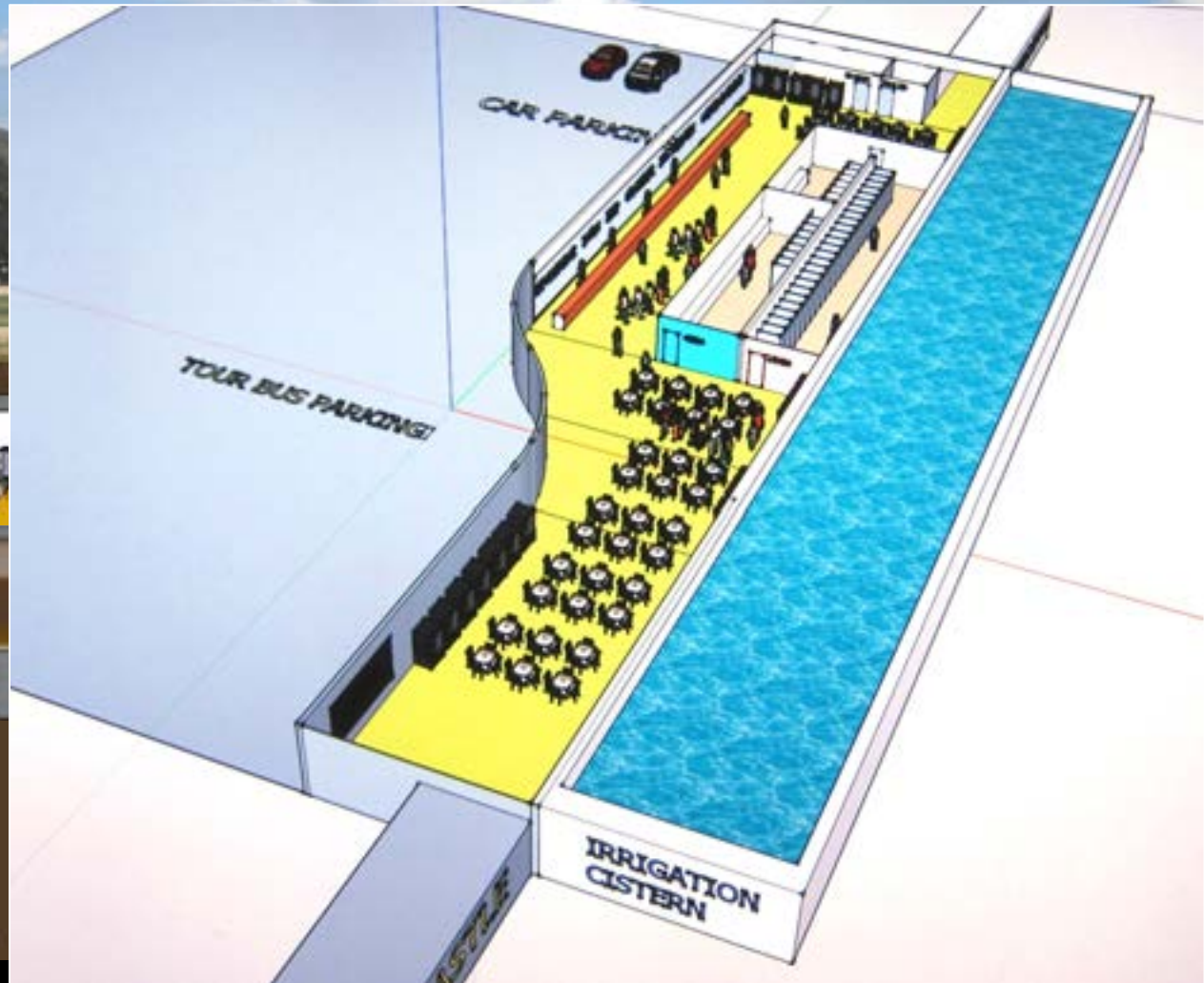
Smithsonian Castle



GEOTHERMAL WELLS









GEOTHERMAL WELLS





Castle



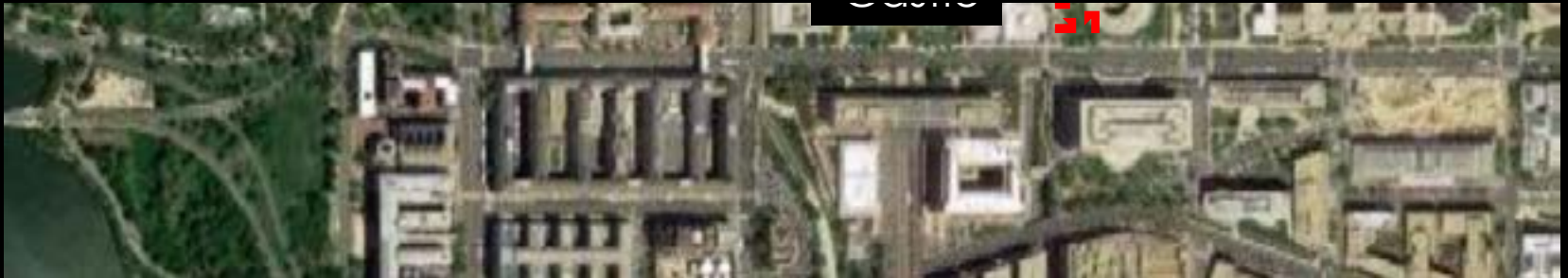
Castle



Castle



\$260 - \$320 million

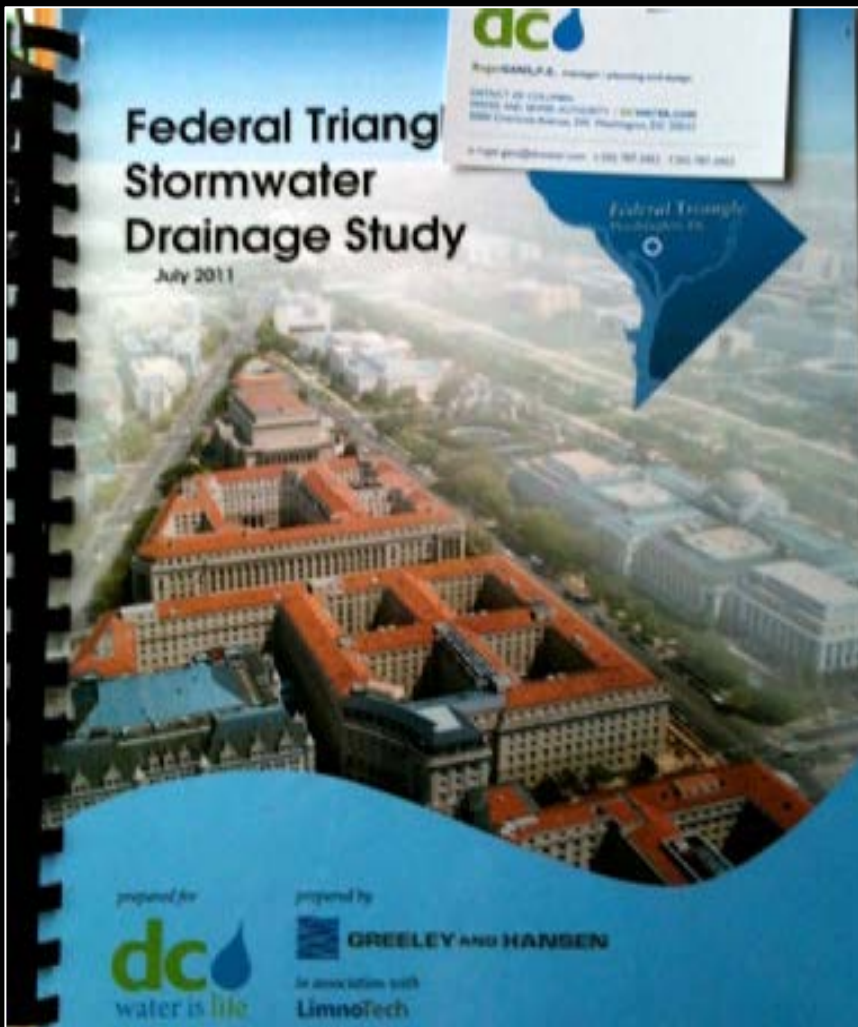


Federal Triangle Stormwater Drainage Study

July 2011

Members of the Stormwater Working Group:

- General Services Administration (GSA)
- District of Columbia Office of Planning (DCOP)
- DC Department of the Environment (DDOE)
- DC Homeland Security and Emergency Management Agency (DC HS&EMA)
- DC Water and Sewer Authority (DC Water)
- Federal Emergency Management Administration (FEMA)
- National Archives and Records Administration (NARA)
- National Capital Planning Commission (NCPC)
- National Gallery of Art (NGA)
- National Park Service (NPS)
- Smithsonian Institution (SI)
- U.S. Department of Justice (US DOJ)
- U.S. Environmental Protection Agency (US EPA)
- Washington Metropolitan Area Transit Authority (WMATA)



Federal Triangle Stormwater Drainage Study

July 2011

Federal Triang
Stormwater
Drainage Study





5/2/17

Legislative Meeting

YOU ARE WATCHING THE COUNCIL OF THE DISTRICT OF THE AYE HAVE IT UNANIMOUSLY

May 2, 2017

NATIONAL MALL UNDERGROUND USACE TECHNICAL REVIEW



*Sectional view represents an early stage concept from 2014. The revised 2017 concept reviewed by USACE has two stories: the upper story for cars would not be flooded; the lower bus level would be used for stormwater storage.

Prepared for: National Mall Coalition

Official Address:

Joseph D. West, Registered Agent
c/o Gibson Dunn & Crutcher LLP
1050 Connecticut Avenue, N.W.
Washington, D.C. 20046

Mailing Address:

P. O Box 4709
Rockville, MD 20849

Prepared by: U.S. Army Corps of Engineers, Baltimore
District

2 Hopkins Plaza
Baltimore, MD 21201

FINAL SEPTEMBER 2018

“Flood risk from a storm of the intensity that flooded the Federal Triangle area in 2006 could be reduced significantly during a flood event by implementation of the Underground.

... revenue potential from parking fees and water credits may offer self-financing opportunities that attract a public-private partnership.”



SILVER JACKETS

Many Partners, One Team

HOME

STATE TEAMS

RESOURCES

CONTACT

WASHINGTON, D.C.

Federal

- [U.S. Army Corps of Engineers \(USACE\), Baltimore District](#)
- [U.S. Federal Emergency Management Agency \(FEMA\), Region III](#)
- [National Park Service \(NPS\)](#)
- [National Oceanic and Atmospheric Administration's National Weather Service \(NOAA/NWS\)](#)

R JACKETS

am comprised of



1. Aren't there alternatives?



1. Riverine

National Capital Planning Commission (NCPC): "Interior Flooding in the District of Columbia" (Urban Stormwater Workgroup Meeting, February 20, 2018):

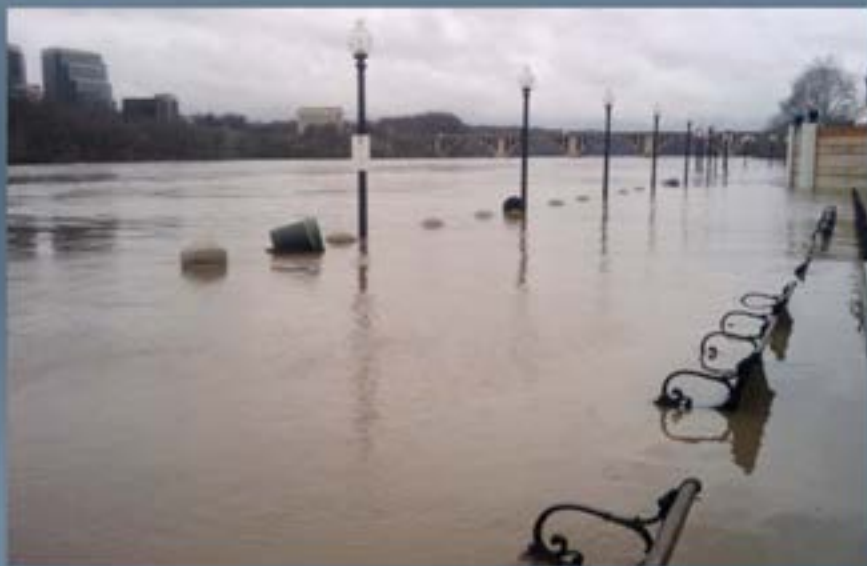
https://www.chesapeakebay.net/channel_files/25880/interior_flooding_for_epa_20180215.pdf



1889



1936



2010



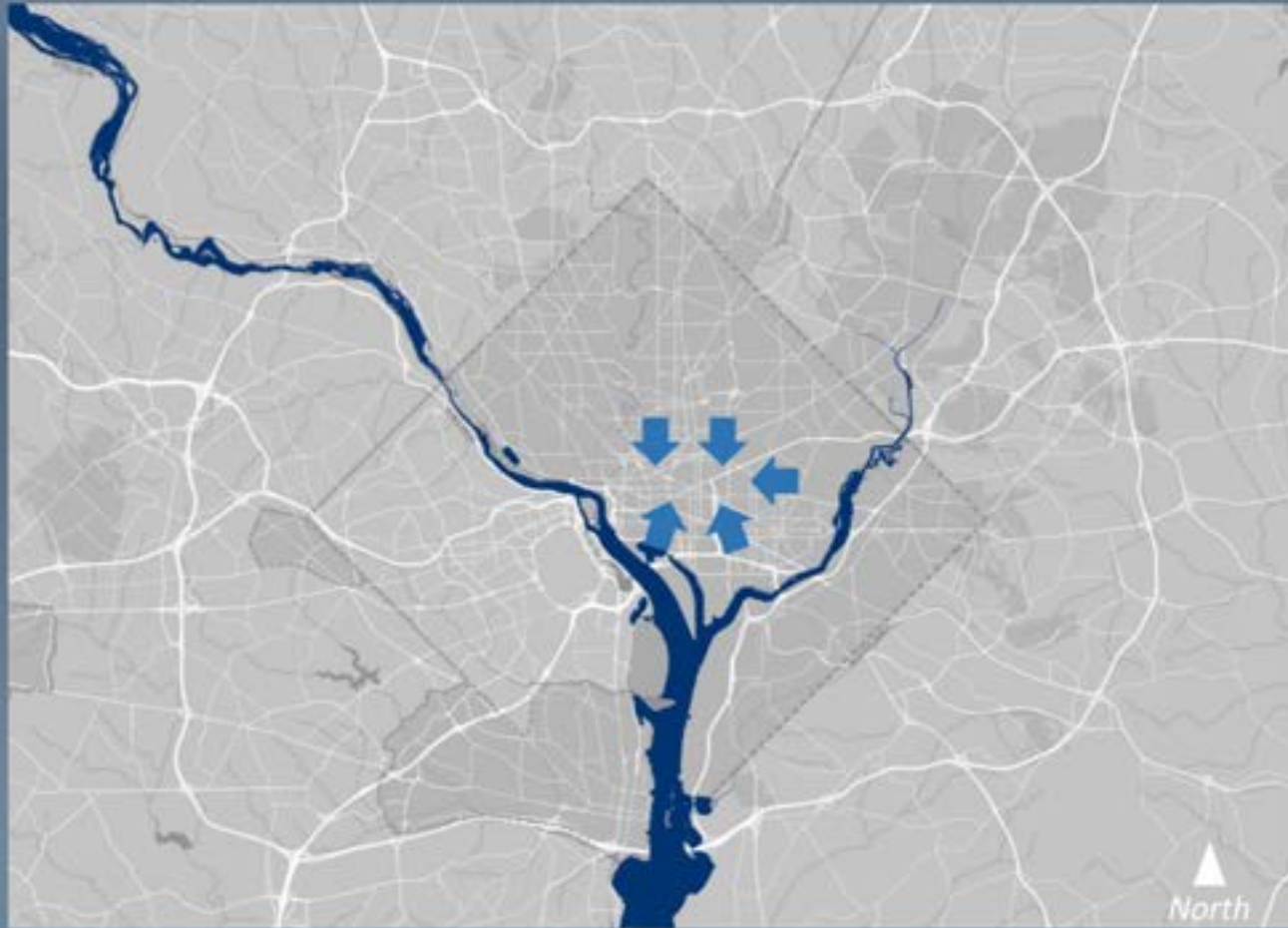
1. Riverine
2. Coastal

2015



Source: Courtney Elkins

1. Riverine
2. Coastal
- 3. Interior**



2006



Source: General Services Administration



2006

Today





**FEDERAL TRIANGLE AREA
FLOOD WORKSHOPS AND STRATEGY REPORT
WASHINGTON D.C.**



Report prepared by: District of Columbia Silver Jackets Team

FINAL REPORT
OCTOBER 2019

FINAL REPORT
October 2019



FEDERAL TRIANGLE AREA
FLOOD WORKSHOPS AND STRATEGY REPORT
WASHINGTON D.C.



Morning Presentations

Federal Triangle Stormwater Drainage Study Alternatives - Brandon Flora, DC Water (Greeley and Hansen), presented the findings from the 2011 Federal Triangle Stormwater Drainage Study. He provided information on the following preliminary solutions: low impact development/green practices Federal Triangle (not a viable standalone solution), storage under the National Mall (viable solution), pumping station serving the Mall (viable solution), and a tunnel to Main and O Pumping Stations (no longer viable due to recent construction projects).

FINAL REPORT
OCTOBER 2019



FEDERAL TRIANGLE AREA
FLOOD WORKSHOPS AND STRATEGY REPORT
WASHINGTON D.C.



Morning Presentations

Federal Triangle Stormwater Drainage Study Alternatives - Brandon Flora, DC Water (Greeley and Hansen), presented the findings from the 2011 Federal Triangle Stormwater Drainage Study. He provided information on the following pre (not a viable standalone solution), storage **“storage under the National Mall”** solution), using the GSA condensate line (not a viable solution), storage under the National Mall (viable solution), pumping station serving the Mall (viable solution), and a tunnel to Main and O Pumping Stations (no longer viable due to recent construction projects).

FINAL REPORT
OCTOBER 2019



Natural History

Capitol

Smithsonian Castle



Source: Clark Construction



Source: Clark Construction

2. Won't the Underground increase traffic congestion?



Amsterdam's Museumplein park



Washington National Cathedral



Washington, DC

Washington-Baltimore-Arlington, DC-MD-VA-WV-PA

If you live in Washington, DC, the air you breathe puts your health at risk.

Ozone



Particle Pollution 24-hour



Particle Pollution Annual



The air you breathe needs your support.

You can make a difference in the air that you breathe.





Regional Bus Staging, Layover, and Parking
Location Study

final
report

prepared for

Metropolitan Washington Council of Governments

prepared by

Cambridge Systematics, Inc.

& Sabra, Wang & Associates, Inc.

March 7, 2015

www.camsys.com

Metropolitan Washington
Council of Governments
2015





Regional Bus Staging, Layover, and Parking
Location Study

final
report



“... The proposed National Mall Underground would be the most dramatic improvement in bus parking capacity if constructed.”

Cambridge Systematics, Inc.
& Sabra, Wang & Associates, Inc.

March 7, 2015

www.camsys.com





Federal Triangle Area Flood Charrette

Hosted by the DC Silver Jackets Team

February 21, 2020 at the DC Water Headquarters



General Overview

Purpose of Charrette

The Federal Triangle Area (FTA) experienced severe flooding in June 2006 resulting in millions of dollars in damages to buildings, utilities and the Metro system. It also caused major disruption in operations at agencies and businesses. The area also flooded again in July 2019. The DC Silver Jackets interagency flood risk management team has hosted a number of events focused on this interior flooding risk for the FTA. These events included two workshops (June and September 2018), a number of working group meetings, and a May 2019 stakeholder leadership meeting. The leadership meeting assembled leaders from across the multiple agencies associated with the FTA with the goal of building consensus towards a comprehensive solution to address the FTA flooding issue and to gain funding for the next short term tasks.

One of those follow-on tasks from the stakeholder leadership meeting was to host a multi-agency charrette to identify the most effective and plausible comprehensive options that should be considered further to address the FTA interior flooding. The public agency charrette attendees included District of Columbia (District), federal, and regional agencies with facility management and/or operational responsibilities in the study area. The charrette was held on February 21, 2020 and the agenda is included as Attachment 1. This report is a summary of the charrette.

Executive Summary of the Charrette

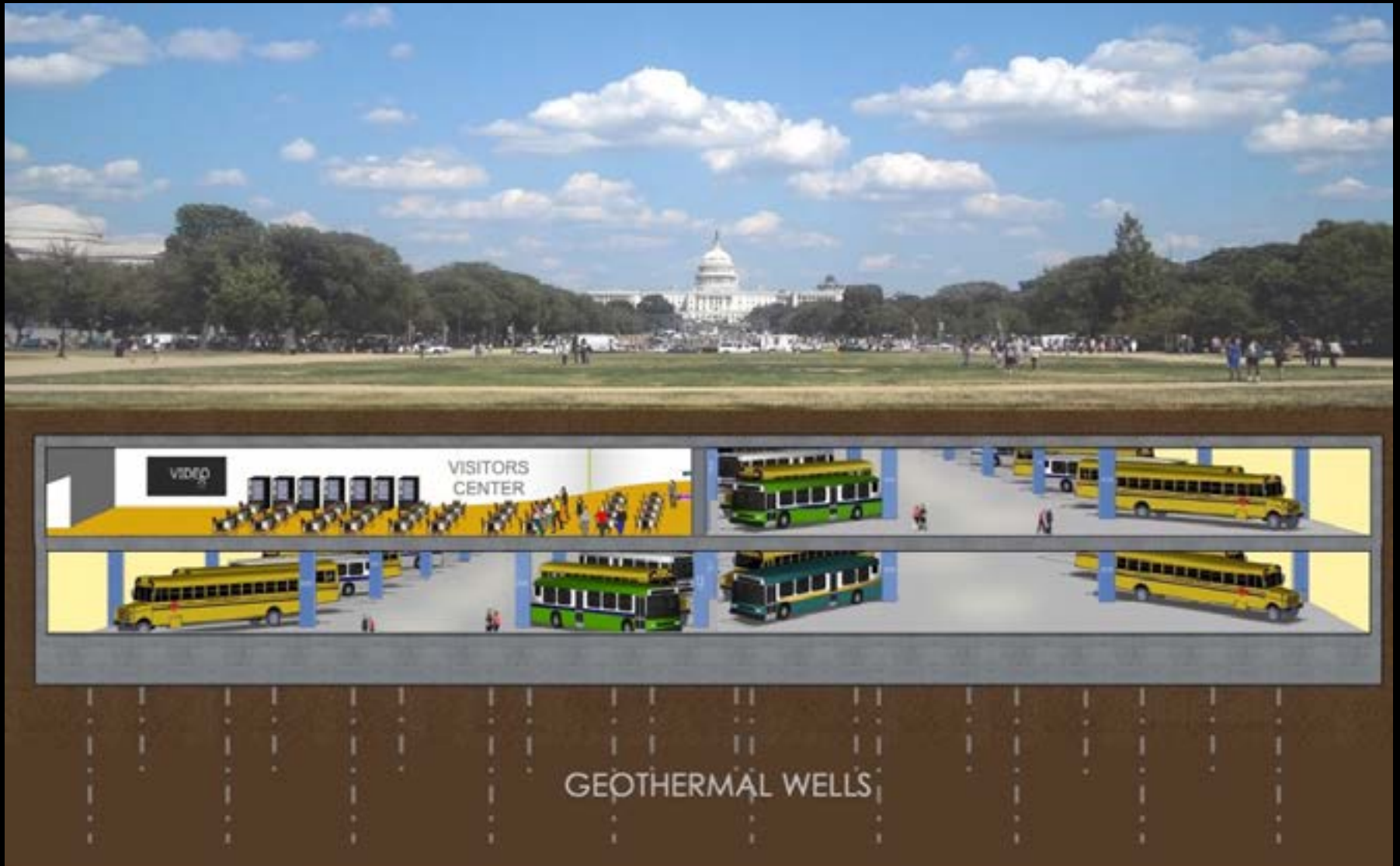
The charrette was attended by facility managers, planners, engineers, historic and cultural specialists, environmental specialists, emergency managers and more representing thirteen different agencies. A list of participants is included as Attachment 2. Prior to the charrette, the multi-agency planning group had narrowed down 13 potential options down to a list of five for the charrette. Many of the options had been reviewed in an earlier study and lacked the ability to control the significant stormwater volumes equal to the 2006 flood event and other options have been precluded by other development activities. All options to be pursued must address the unique cultural and historic resources, dense urban environment, and operational issues in this area of the nation's capital. The workshop was intended to consider system-wide solutions and did not address the status quo option of continuing to implement individual flood risk management measures.

The 44 persons in attendance were split by discipline into seven to eight person working tables for the first half of the day. Using a set of 35 criteria, each of the five potential options were evaluated by the attendees at each table. For the second half of the day, the teams were re-arranged to achieve multi-discipline groups which then summarized the results of the first half of the day, and further elaborated on the strengths, weaknesses of the top options identified and listed additional considerations.

A clear consensus was reached during the charrette. The option which achieved the most sweeping support was a new pumping station serving the National Mall and FTA. The second highest ranked option was the option for passive water storage beneath the Mall (with no parking included).



“Water storage beneath the Mall (with no parking)”



“Alternative A”: no cars, all buses

3. Who will pay for it?

National Mall Coalition

formerly National Coalition to Save Our Mall

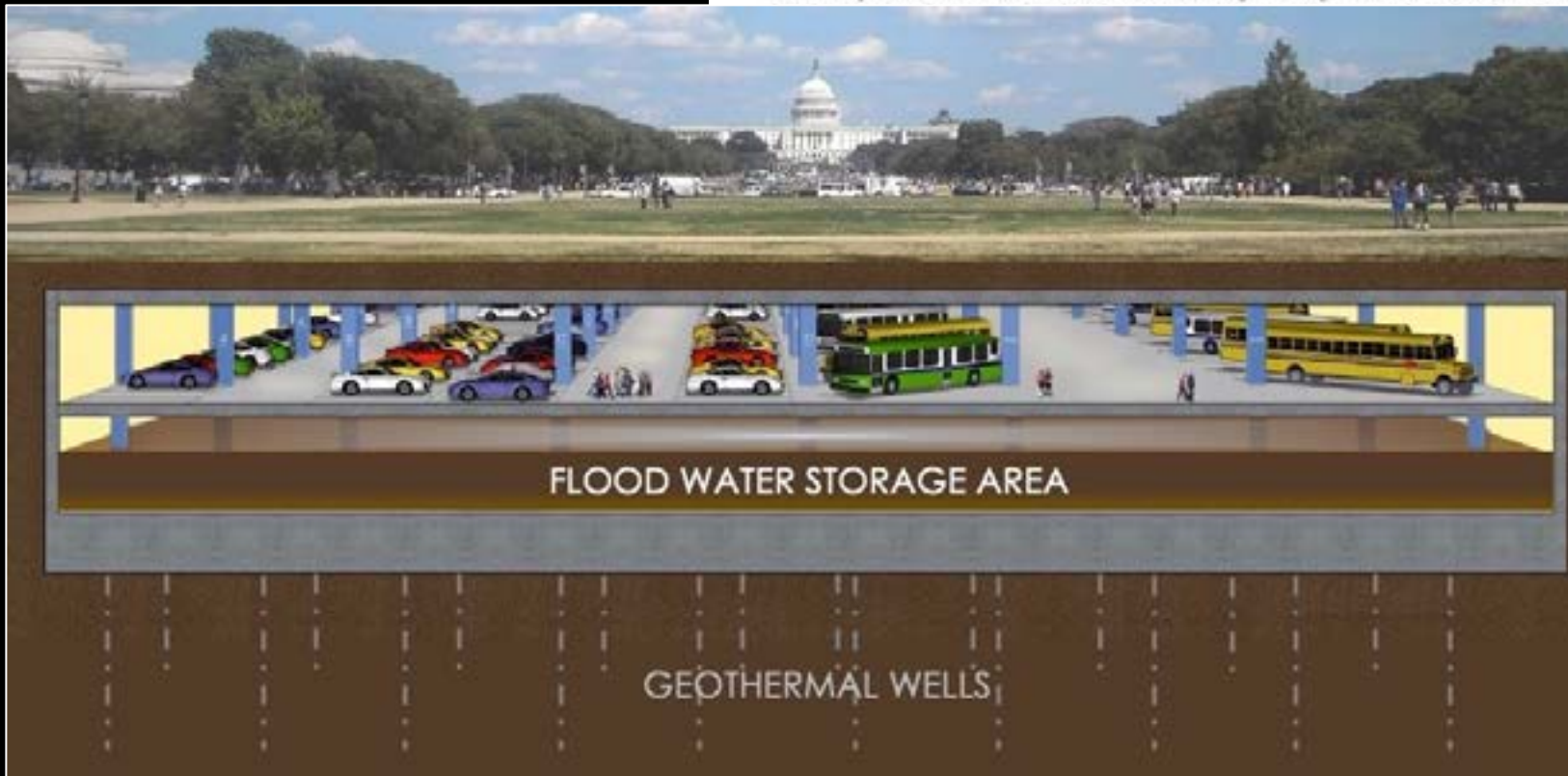
National Mall Underground Preliminary Financing Plan Executive Summary November 2019

Introduction

The National Mall Coalition (the "Coalition") convened in 2014 a group of volunteers having varied expertise in the areas of architecture, engineering, construction, law, finance, real estate

(") of plans to
(the "Mall")
National Mall

mmodate 150
more visitors



National Mall Coalition

formerly National Coalition to Save Our Mall

National Mall Underground
Preliminary Financing Plan
Executive Summary
November 2019

“For federal and DC stakeholders, the National Mall Underground can achieve a stormwater mitigation solution at significant cost savings in comparison to the other alternatives thus far identified. Of equal value to these federal stakeholders is that the financing plan is expected to make use of existing federal contracting authorization programs to pay for the project over time, avoiding the need for a substantial upfront appropriation.”

GEOTHERMAL WELLS

Irrigation water



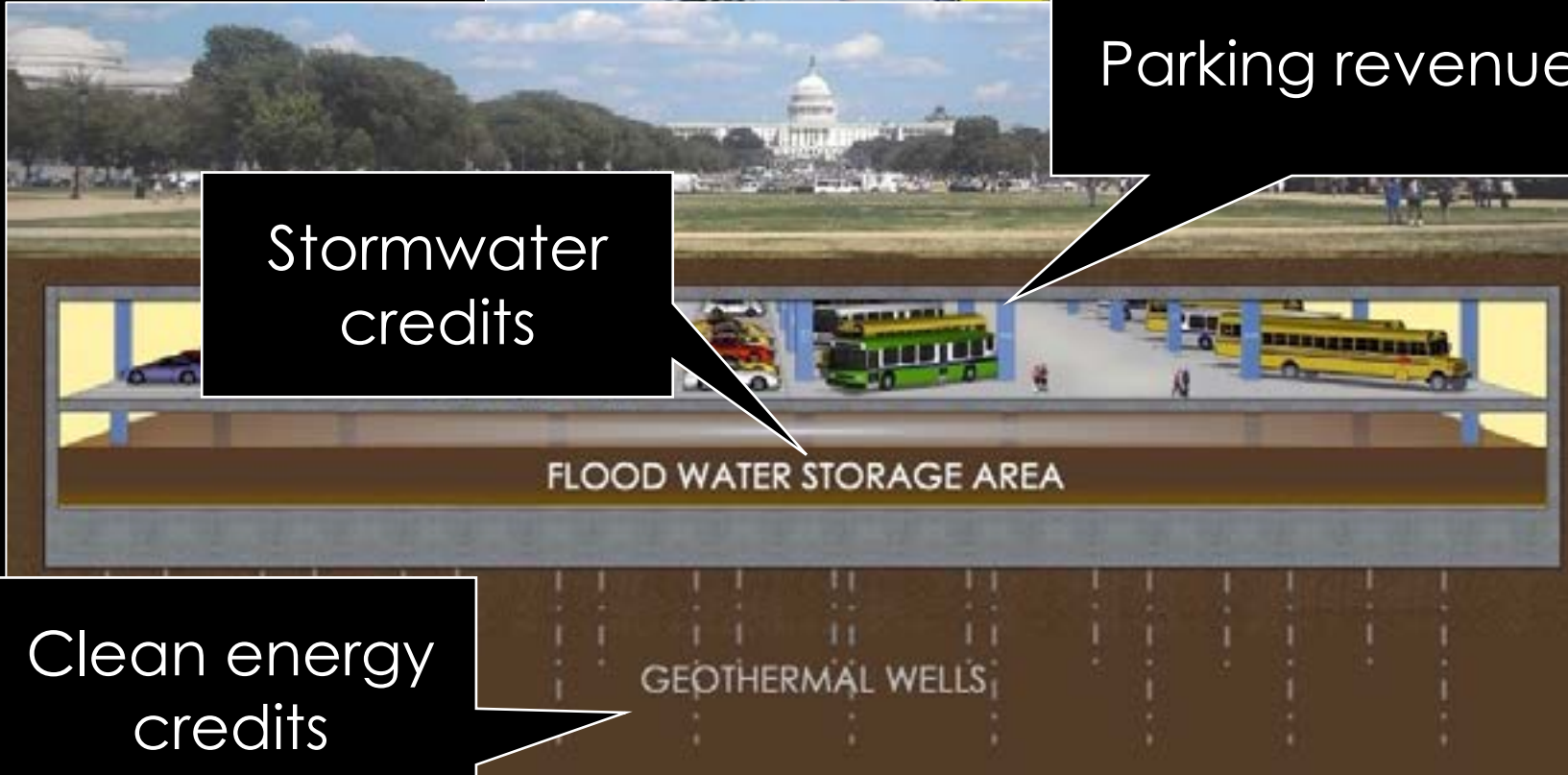
Parking revenue

Stormwater credits

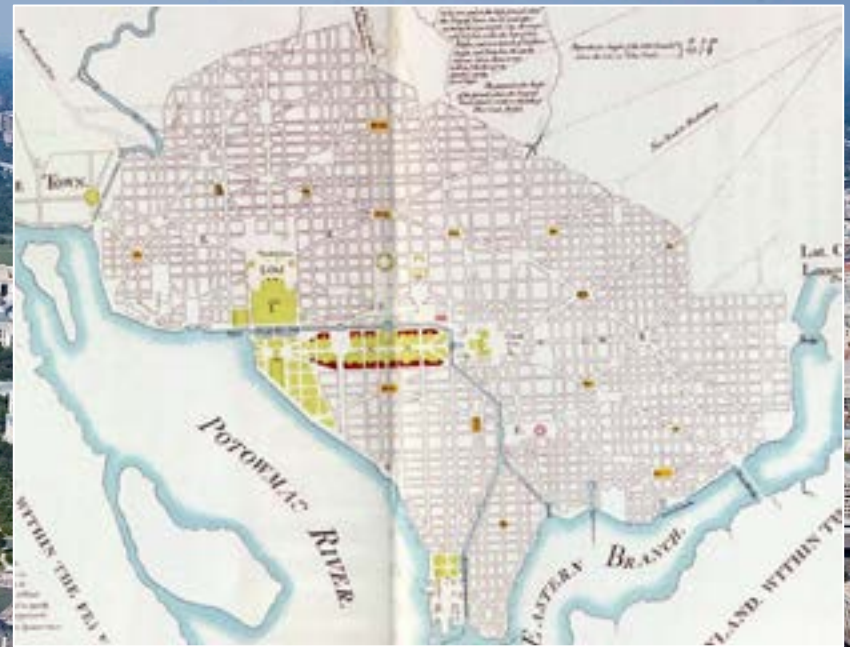
FLOOD WATER STORAGE AREA

Clean energy credits

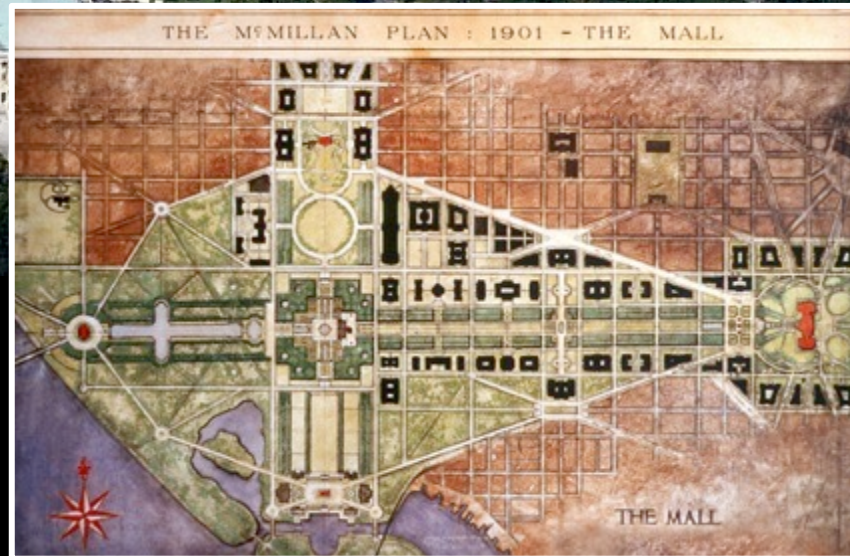
GEOTHERMAL WELLS



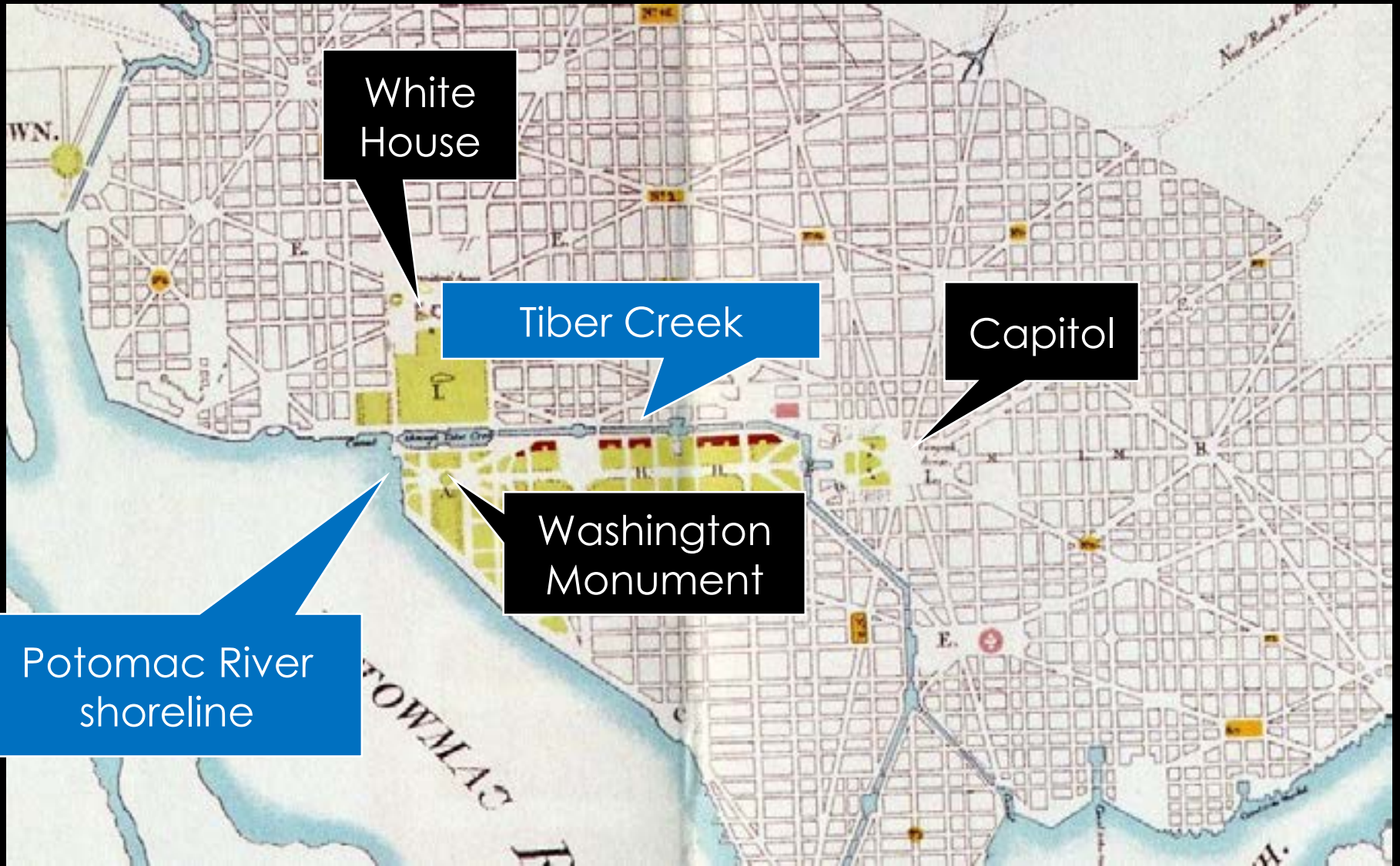
4. Is the flooding danger really so great?



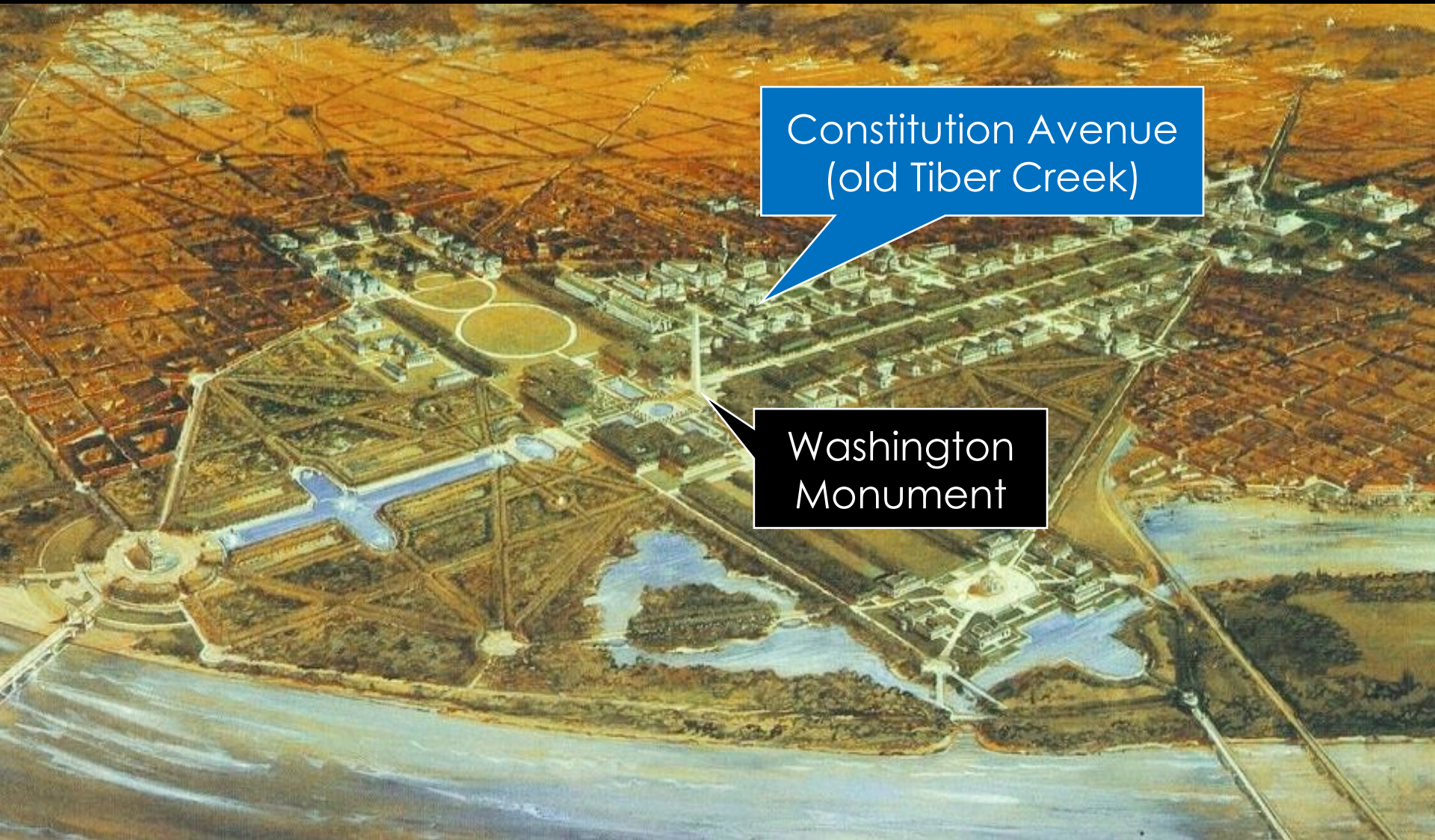
1791 L'Enfant Plan



1901 McMillan Plan



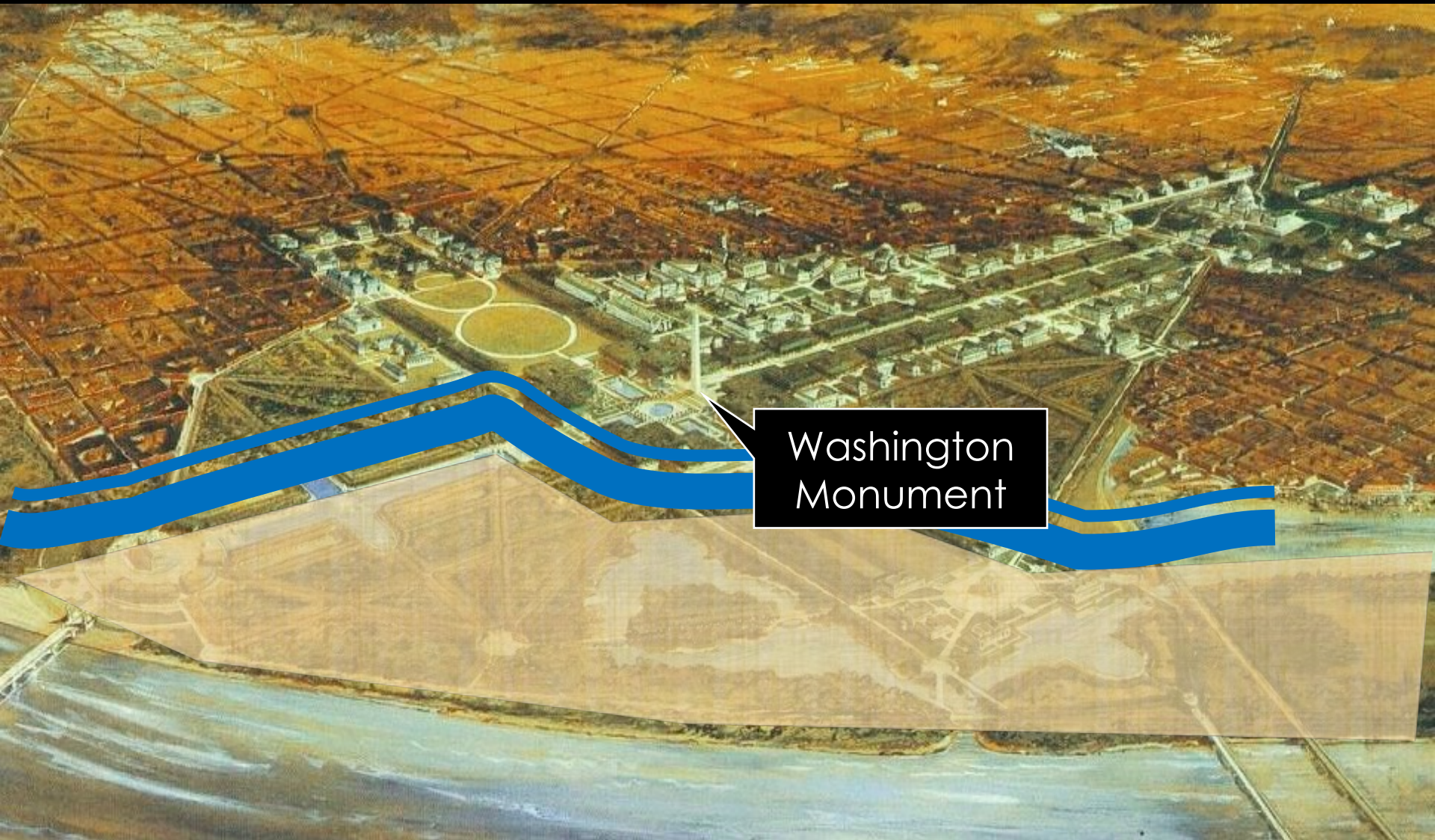
1791 L'Enfant Plan



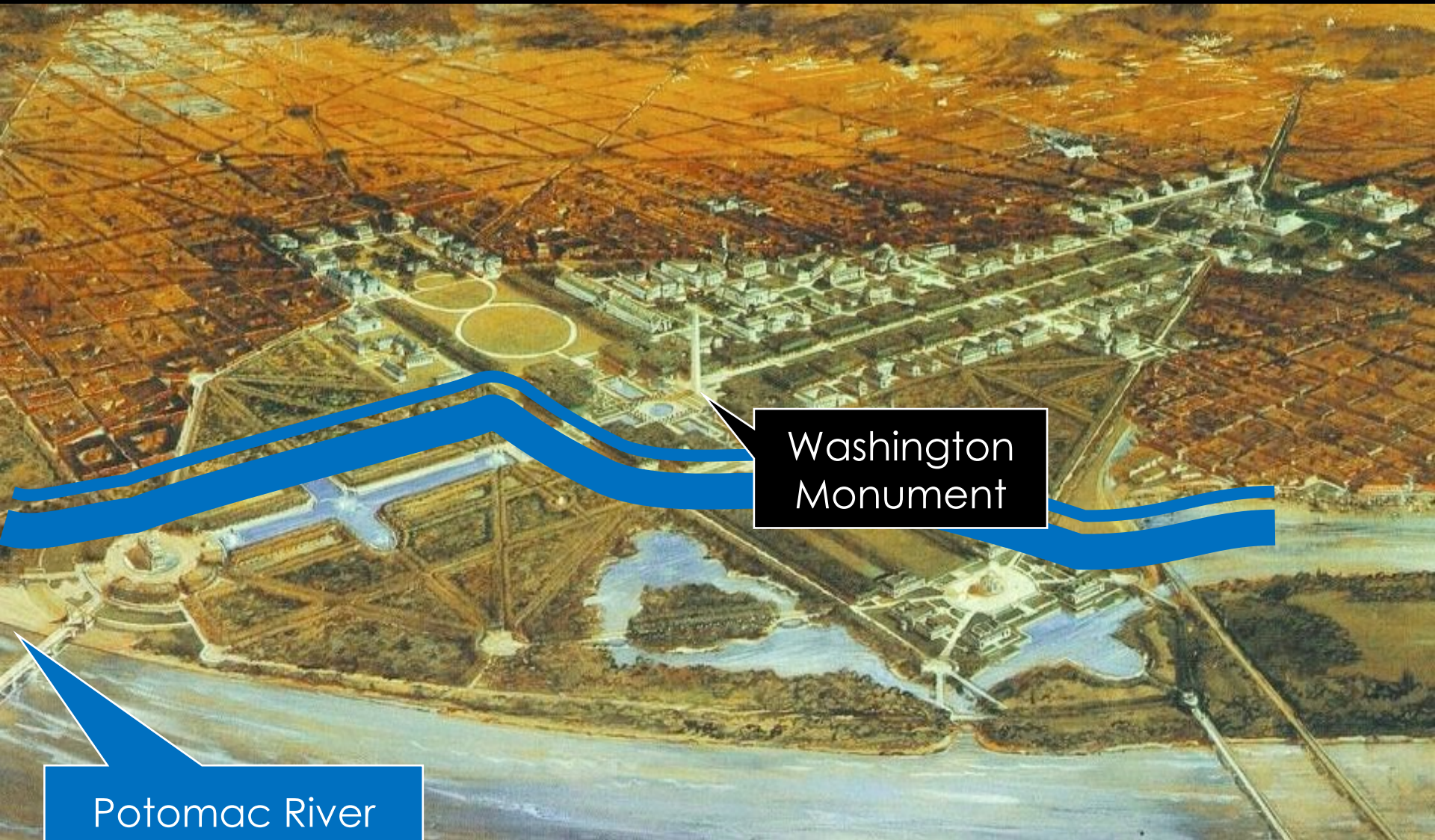
Constitution Avenue
(old Tiber Creek)

Washington
Monument

1901 McMillan Plan

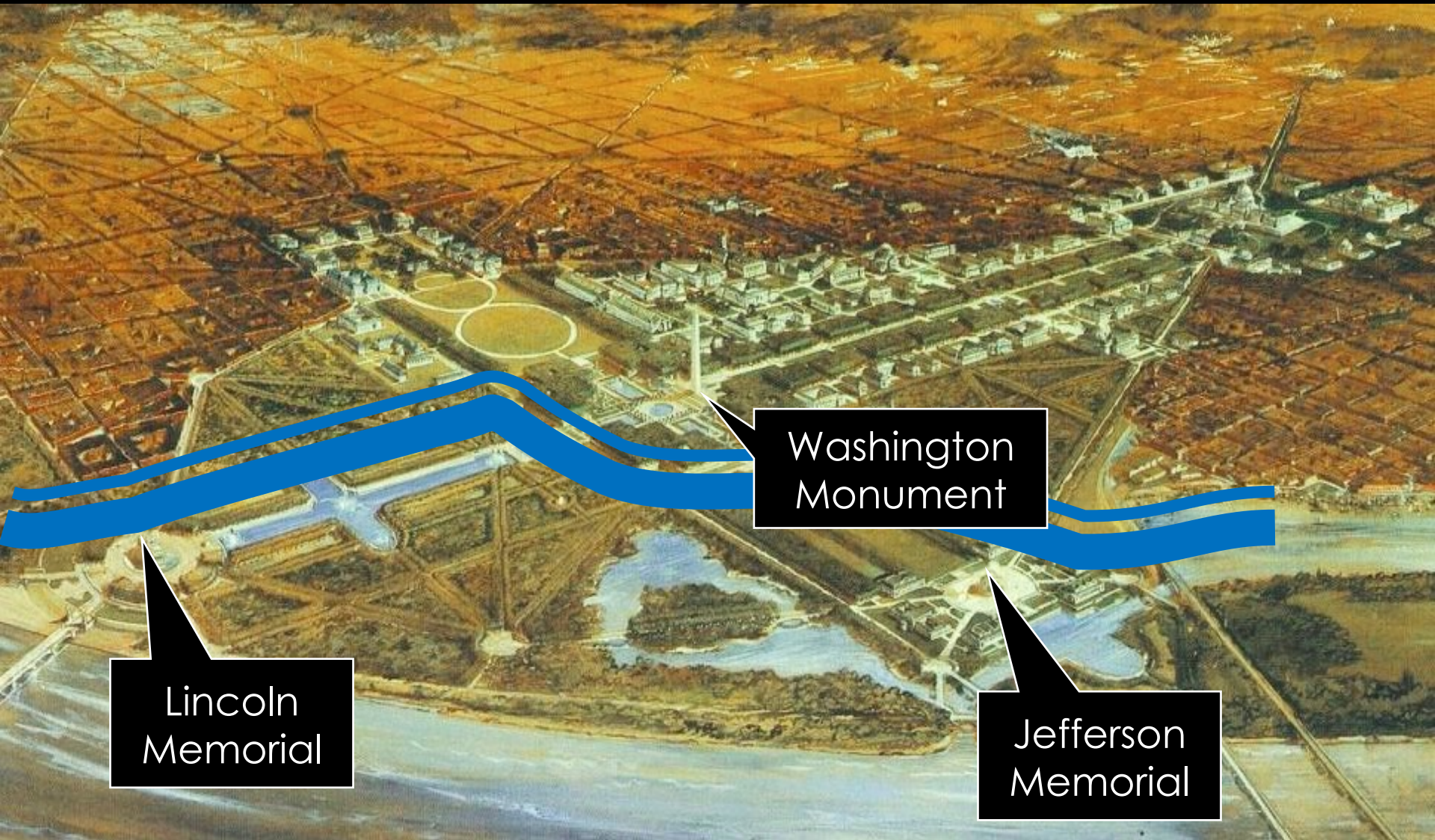


Washington
Monument



Washington Monument

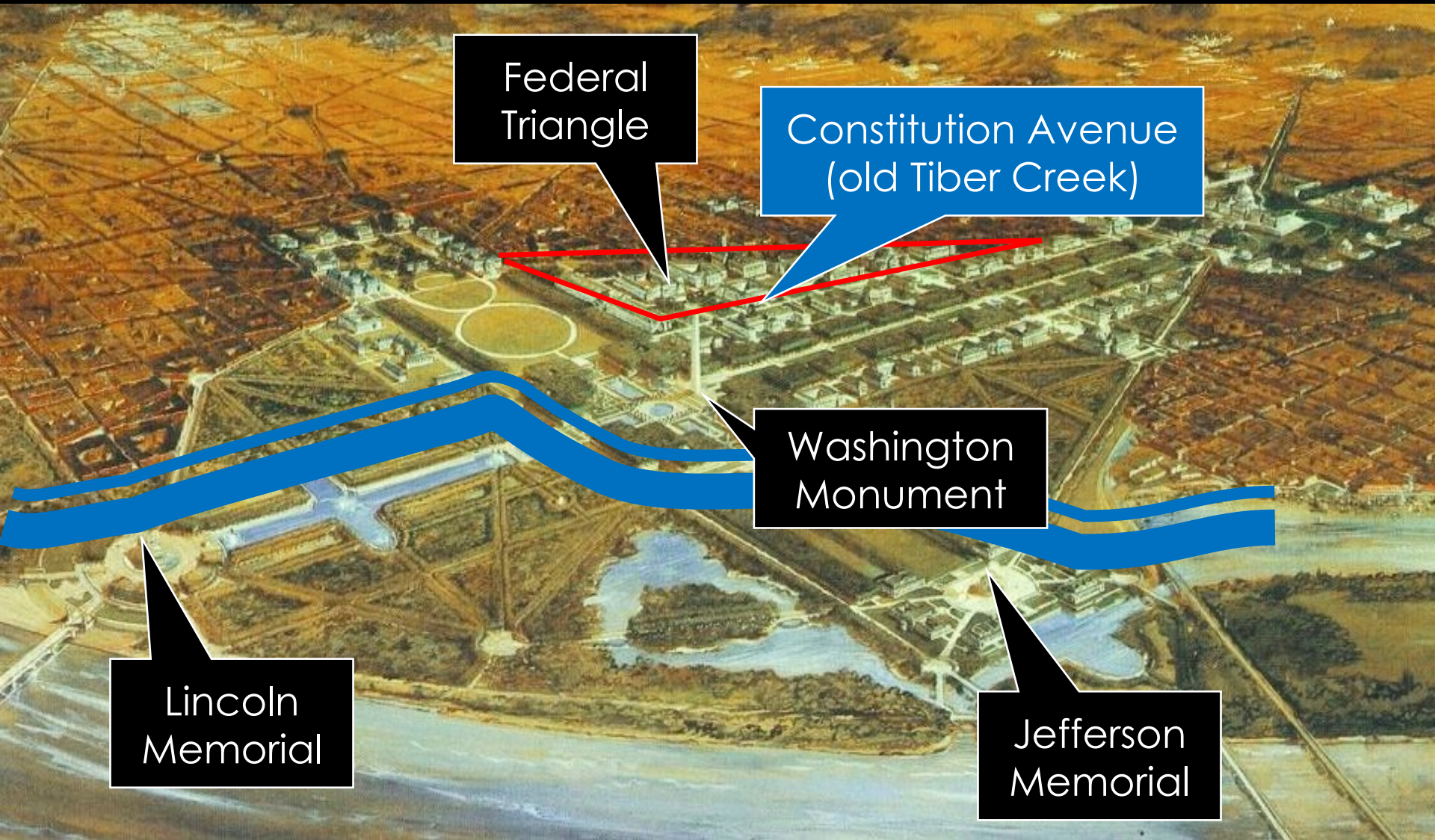
Potomac River shoreline



Washington Monument

Lincoln Memorial

Jefferson Memorial






Federal Triangle

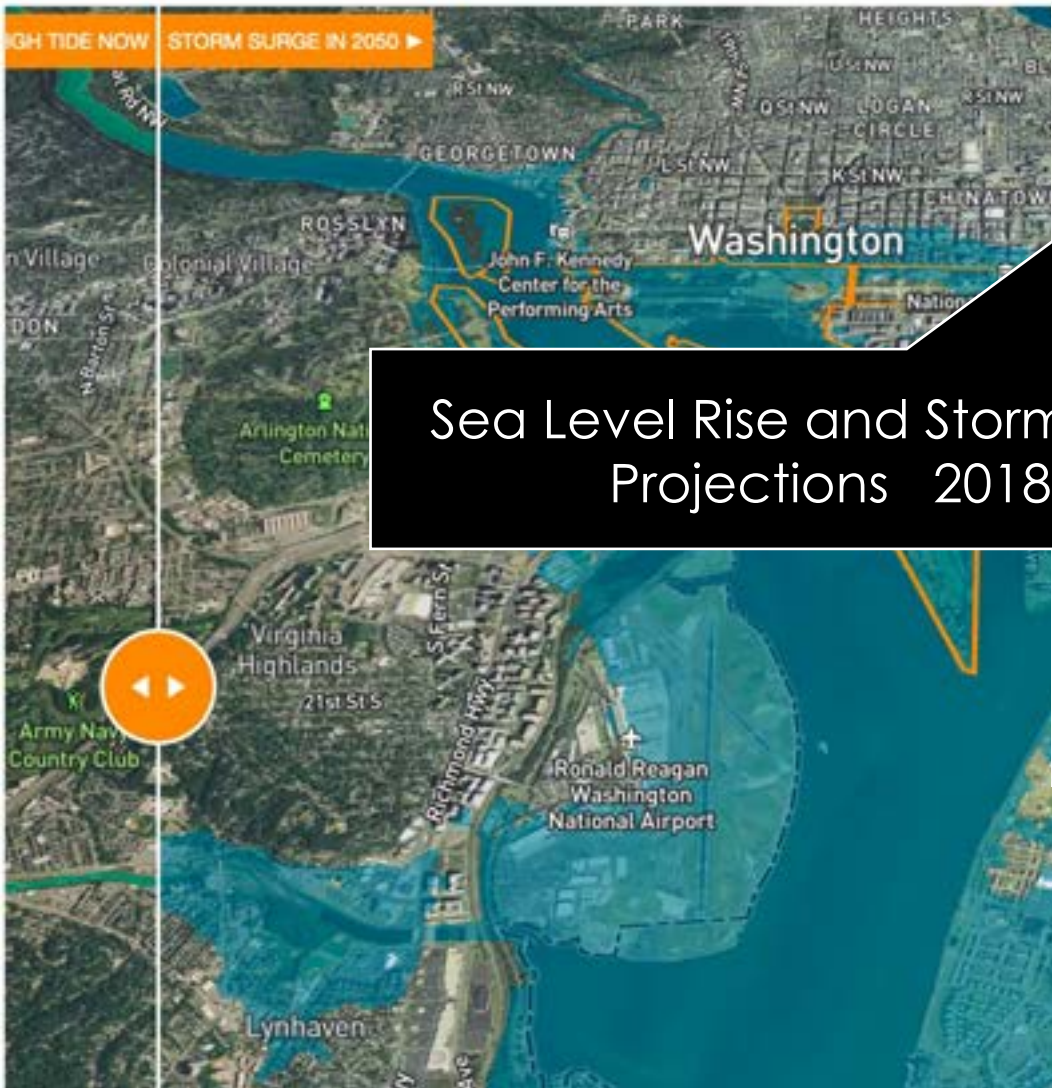
Constitution Avenue
(old Tiber Creek)

Washington Monument

Lincoln Memorial

Jefferson Memorial

-  Park boundary
-  Current high tide level
-  Projected flooding in 2050 from a category 3 hurricane if greenhouse gas emissions keep rising



Sea Level Rise and Storm Surge Projections 2018



Sea Level Rise and Storm Surge Projections for the National Park Service

Natural Resource Report Series NPS/NRSS/NRR—2018/1648

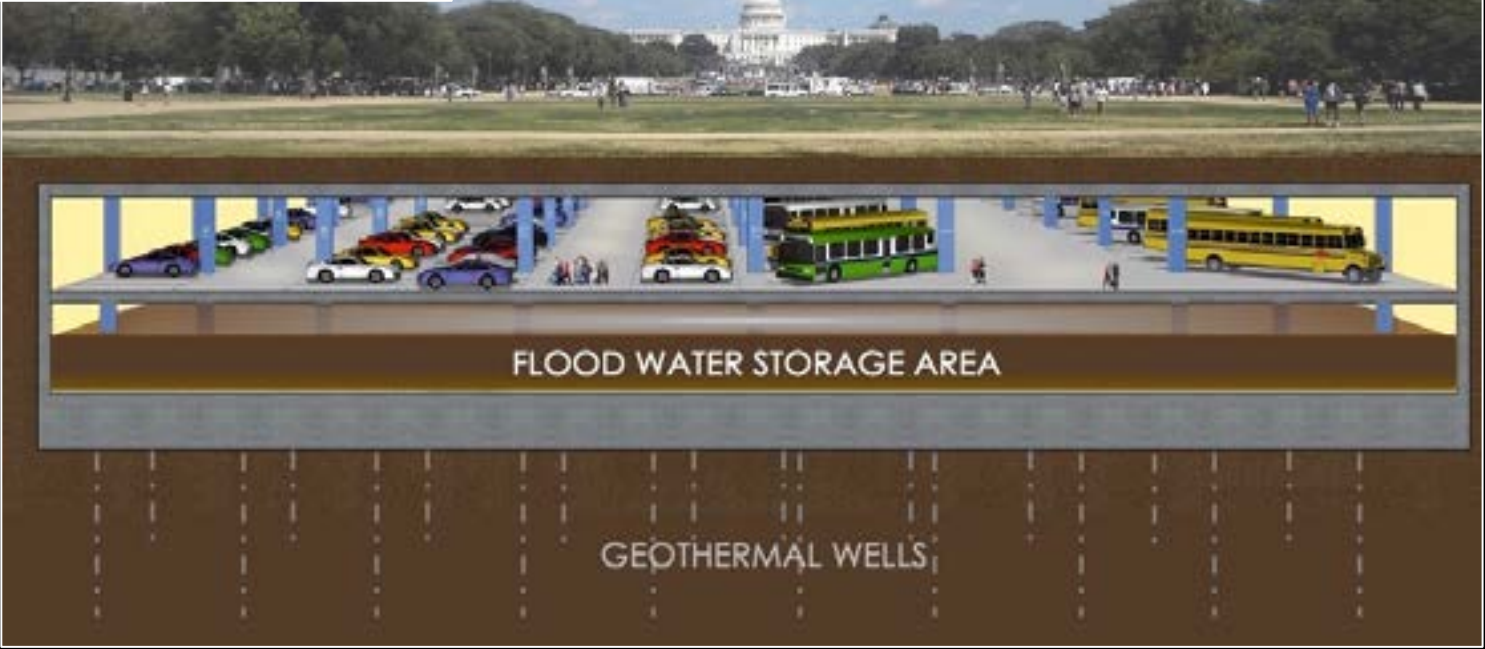


Projected flooding in 2050 from a category 3 hurricane if greenhouse gas emissions keep rising. Based on calculations by the National Park Service.



Projected flooding in 2050 from a category 3 hurricane if greenhouse gas emissions keep rising. Based on calculations by the National Park Service.







Smithsonian Institution

Revitalization of the Historic Core (RoHC)

Underground Construction, Cooling Towers,
Gardens and Grounds

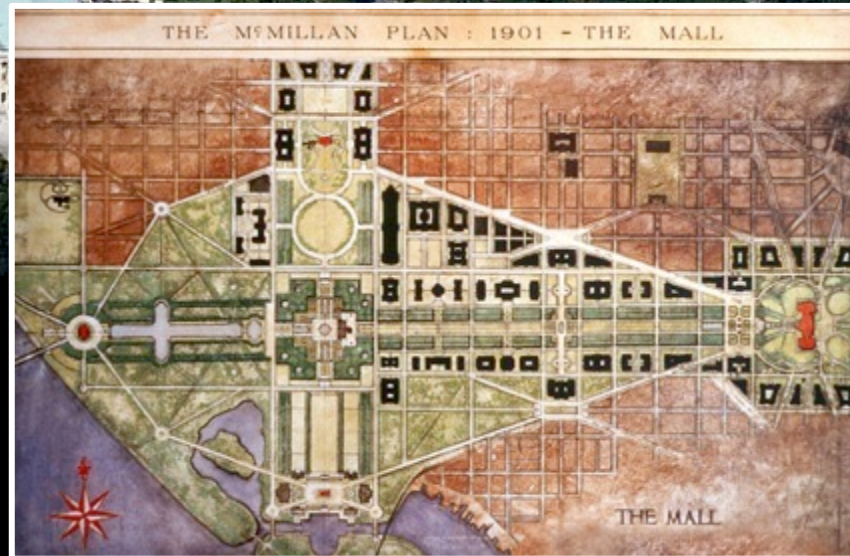
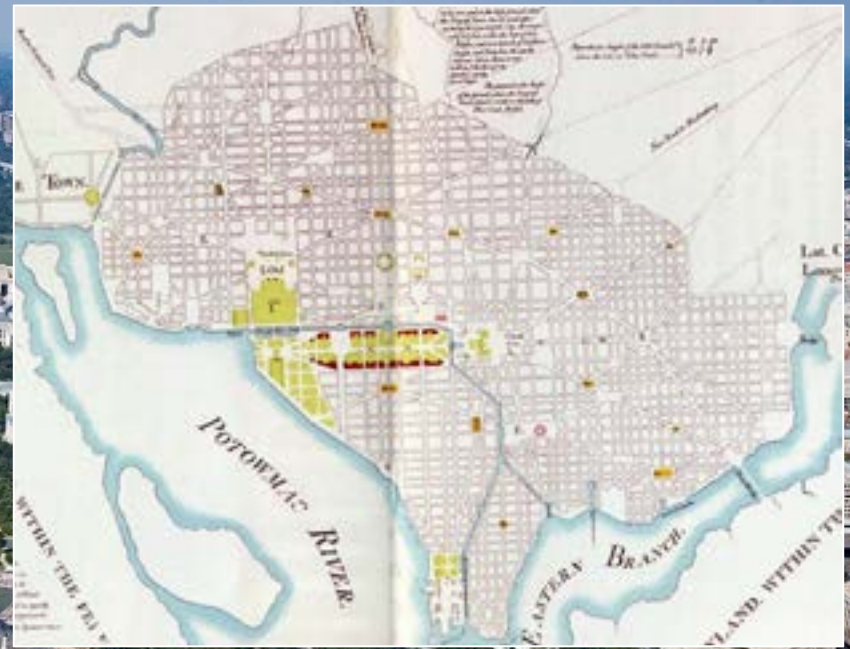
Consulting Parties Meeting 2

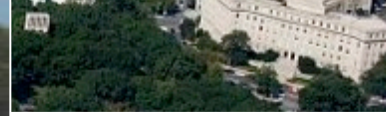
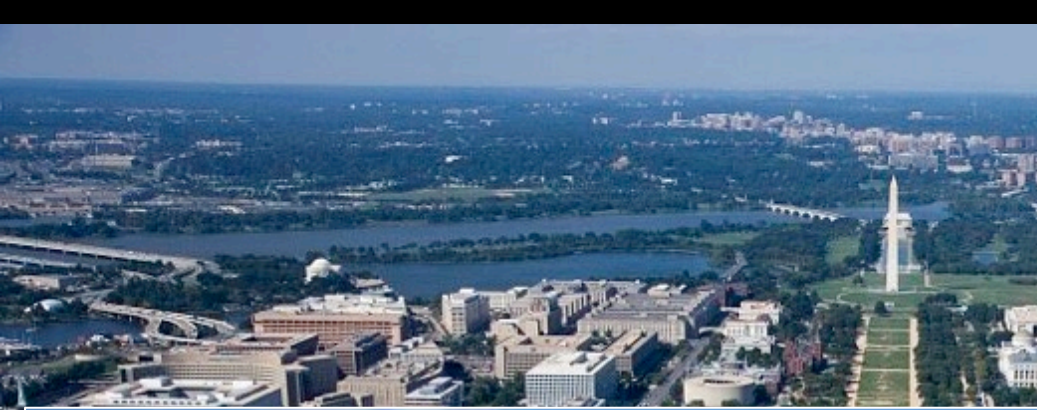
27 May 2021



FLOOD WATER STORAGE AREA

GEOTHERMAL WELLS





FLOOD WATER STORAGE AREA

GEOTHERMAL WELLS



National Mall Coalition

Contact: jfeldman@nationalmallcoalition.org