

Passaic River Basin General Reevaluation

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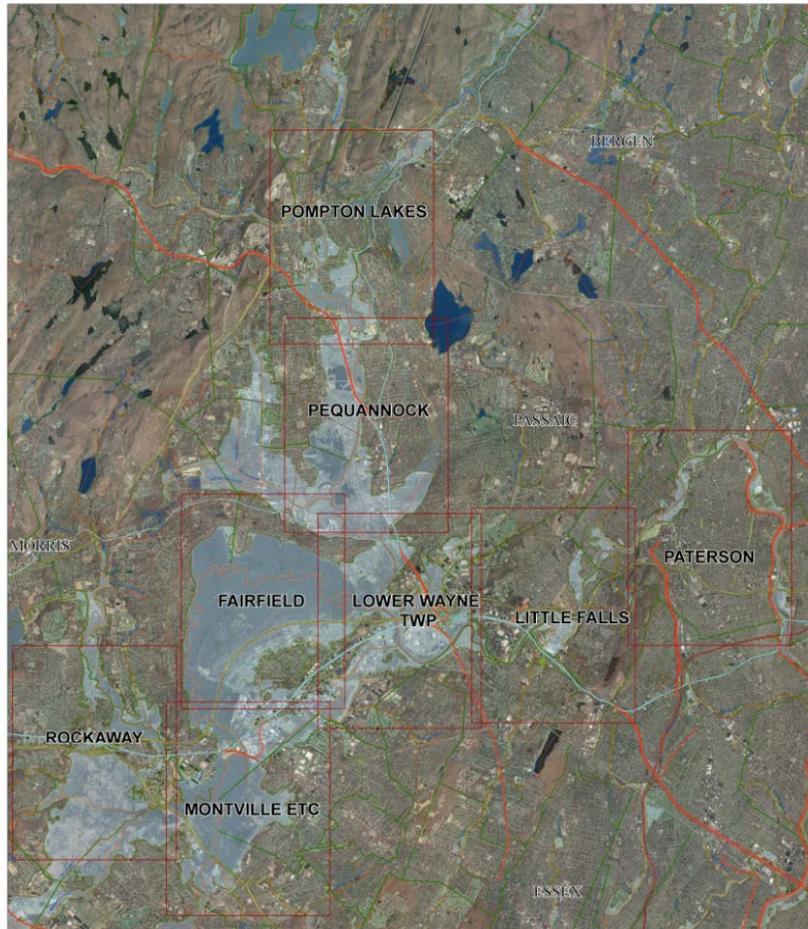
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13 September 2012
Wayne, NJ

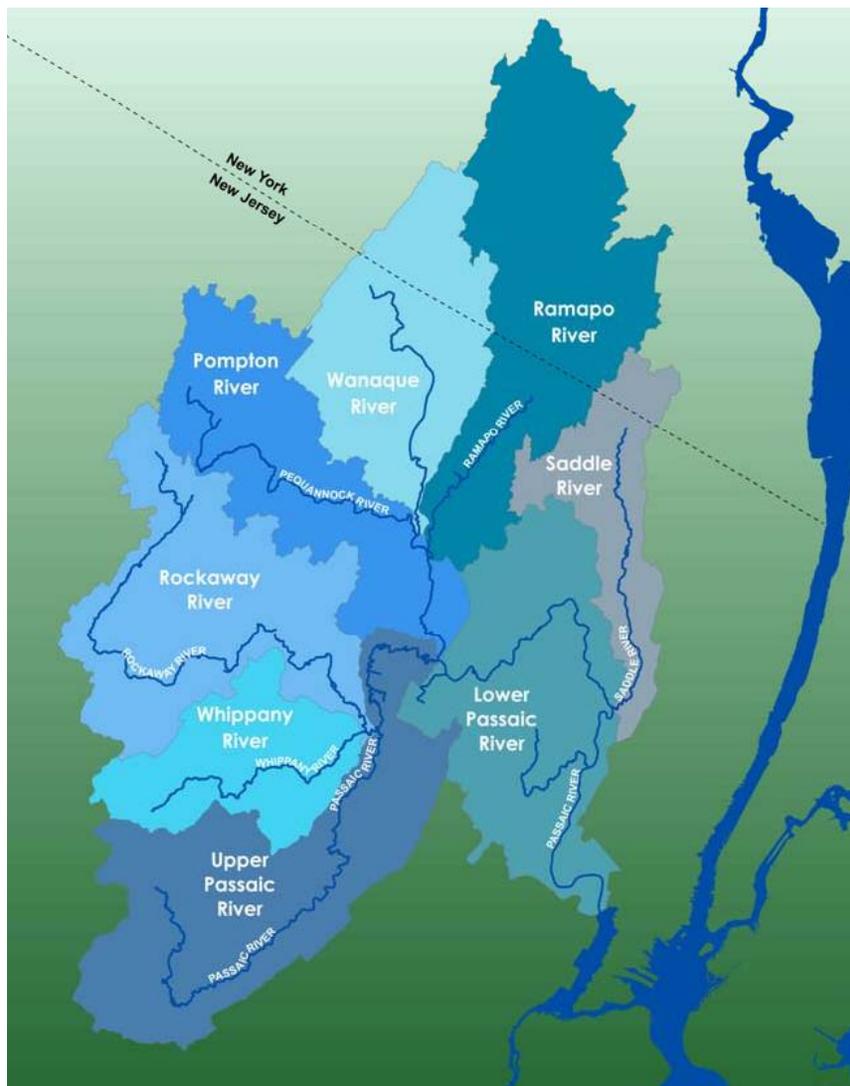
PASSAIC RIVER BASIN FLOOD ADVISORY COMMISSION MAP INDEX



US Army Corps of Engineers
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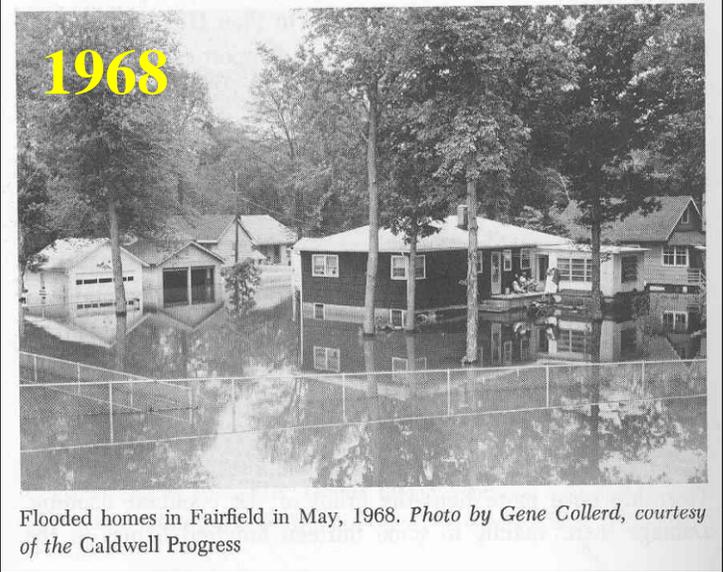
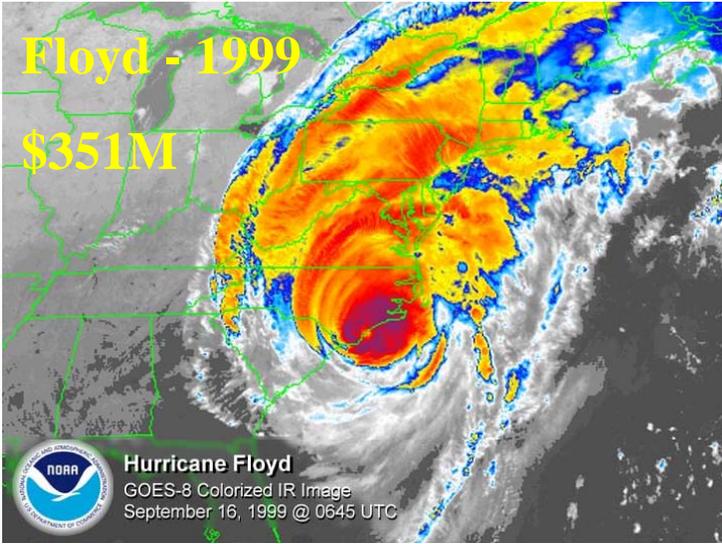
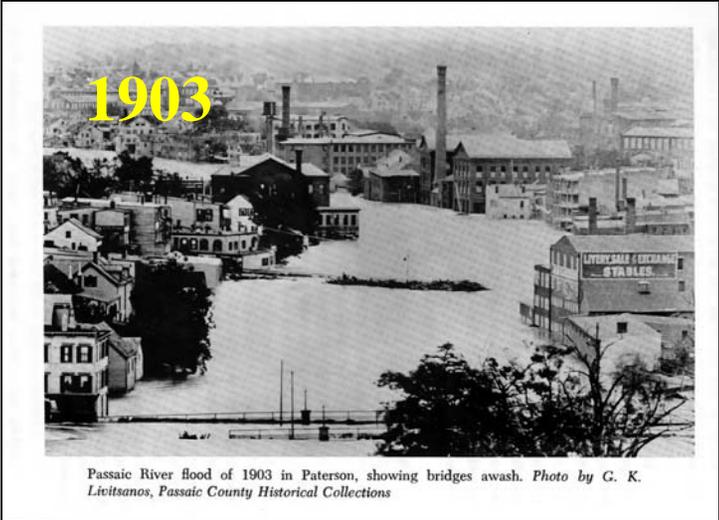
Passaic River Basin Facts



- 983 square mile basin
- ~2.5 million people (2000 census)
- ~50,000 people are in floodplain
- 20,000 homes, businesses, & public buildings in over 100 municipalities
- Main Stem & major tributaries 100 year floodplain covers 40,000 acres (~60 mi²) of which half is fully developed
- One of the most densely developed floodplains on the eastern seaboard
- Extensive environmental degradation to river system coupled with significant repetitive flooding
- Nine Congressional Districts in basin



Passaic River Basin - Flooding History



Passaic River Basin - Flooding History



April 2007

\$780M



March 2011

\$700M



March 2010

\$772M



Irene 2011

\$1B



Passaic River Basin Flood Facts

- 15 Federal disaster declarations since 1968
 - 6 of those since 2005
- Since 1900 - 26 lives lost & over **\$6 billion** in losses
- Since 1990 – over **\$3.5 billion** in losses

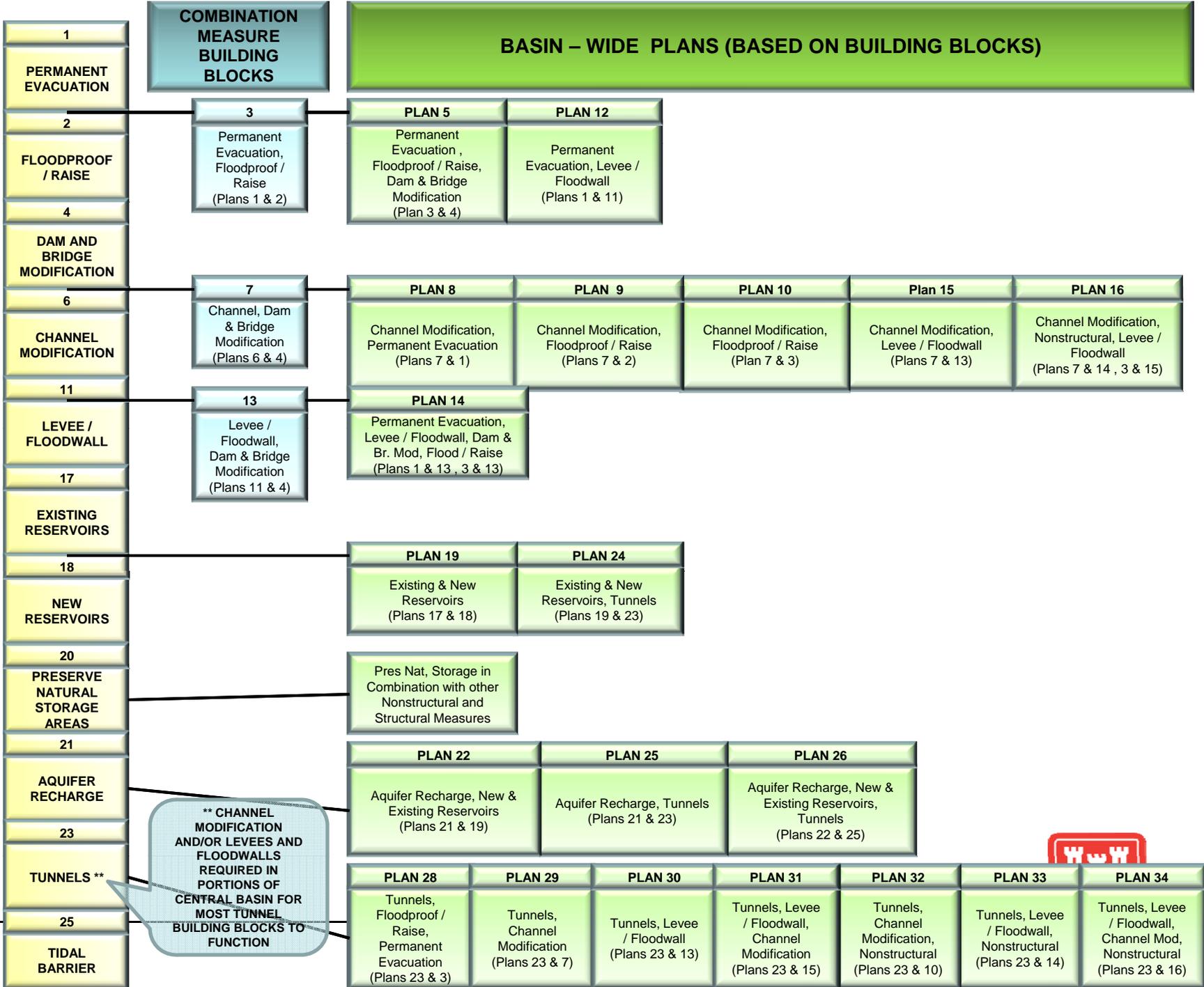


Passaic River Basin – Previous Studies

- 1900 - 1940 ----- 8 State Studies
- 1936 - 1973 ----- 5 Federal Reports
- 1976 ----- New Basin Study Authorized
 - 150 alternatives studied including buy-outs, flood plain regulations, channels, levees, floodwalls, reservoirs, tunnels, and multiple combinations
 - Consider environmental impacts (NEPA) and Public Acceptance
- 1987 Feasibility General Design Memorandum (GDM) and 1989 Chief's Report
- 1989 Beatties Dam Reconnaissance Report – No Federal Interest
- WRDA 1990 Project Authorization
- September 1995 – Passaic River draft GDM (authorized project)
- September 1995 – Passaic River Buyout Study Report BCR of 0.1 (100 year)
- October 1995 – Passaic River Floodway Buyout Study Report BCR of 0.2
- WRDA 2000, Section 327(i) Restriction on use of funds
- February 2011 – Governor's Flood Advisory Commission Report



SINGLE MEASURE BUILDING BLOCKS



Passaic River Basin – Plans Compared

Plan	Cost (Millions)	Structures Protected/Acquired
100 Year Floodplain Buyout	\$7,350	~13,300
50 Year Floodplain Buyout	\$5,880	~11,100
25 Year Floodplain Buyout	\$4,704	~9,500
10 Year Floodplain Buyout	\$3,381	~7,400
Floodway Buyout	\$294	~800
100 Year Authorized Tunnel Diversion Plan	\$2,793	over 14,000
Levees, Floodwalls, Nonstructural Measures, some Bridge and Dam Modifications (14A)	\$840	10 to 100 year level of protection
Levees, Floodwalls, Nonstructural Measures and Channel Modification, some Bridge and Dam Modifications (16A)	\$961	10 to 100 year level of protection

October 2011 Price Levels

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Passaic River Basin Next Steps

- Continue to Support New Jersey as they implement the recommendations made by the Governor's Flood Advisory Commission (Jan 2011)
- Execute Feasibility Cost Sharing Agreement with NJDEP for a reevaluation for the Passaic River Basin (13 June 2012)
- Conceptual Phase Draft Report (Jun/Jul 2013)
- Public Outreach (Jul – Oct 2013)



Passaic River General Reevaluation Conceptual Phase – 6 Alternatives

- Comprehensive system of levees, floodwalls, nonstructural measures, some bridge and dam modifications (alternative 14A from 1987)
- Comprehensive system of levees, floodwalls, nonstructural measures, channel modification, some bridge and dam modifications (alternative 16A from 1987)
- 1990 authorized plan (dual inlet tunnel, alternative 30E)
- Improvements to Beatties Dam and Two Bridges
- Nonstructural – 10 year
- No Action

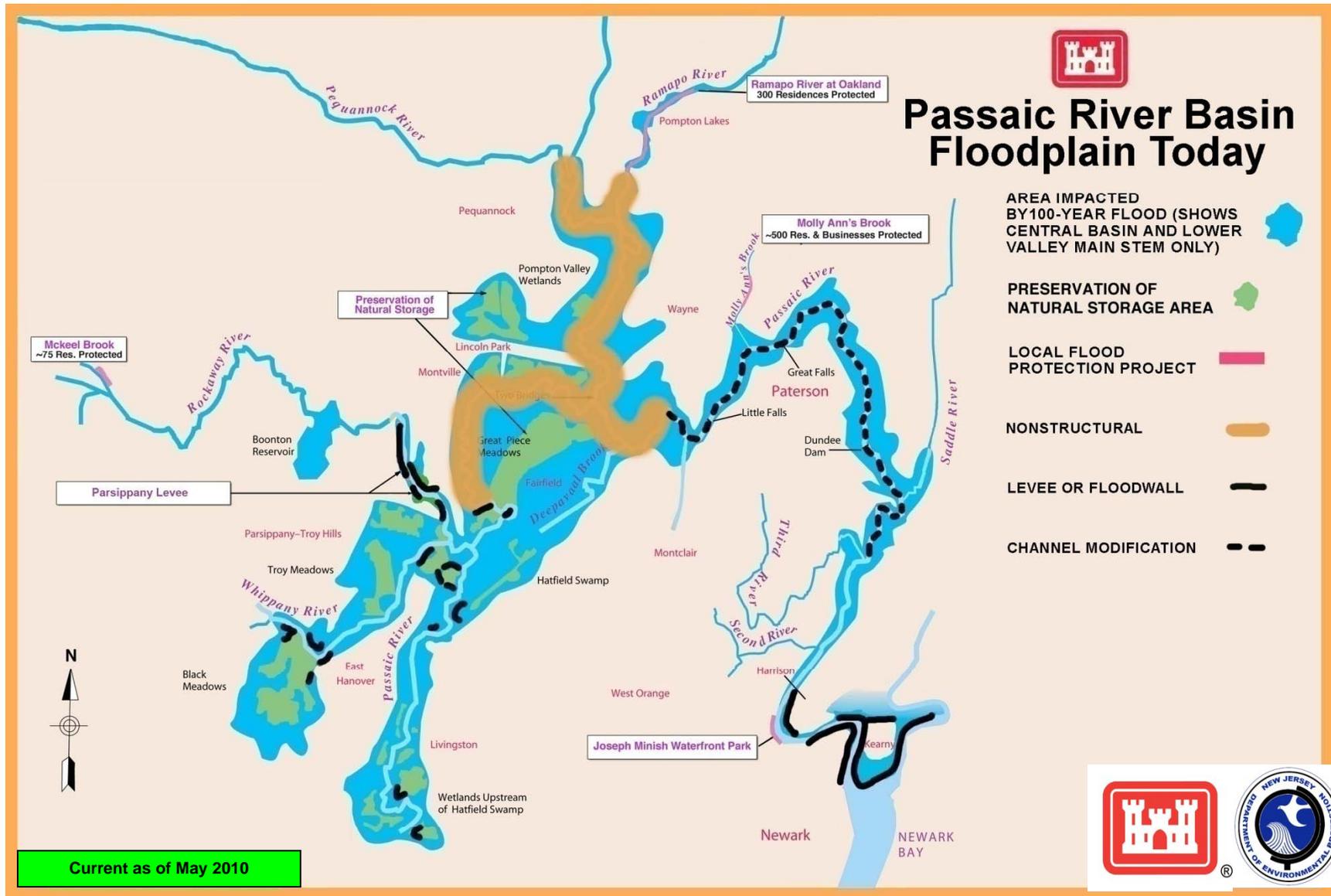


Plan 14A – Levee/Floodwall, Nonstructural, some Dam and Bridge Modification

- Nonstructural measures (flood proofing, raising, buyout) for 6,000 structures
- No channel improvements
- 24 miles of levees
 - Heights ranging from 3' to 17'
- 17 miles of flood walls
 - Heights ranging from 5' to 22'
- 46 pump stations



Plan 16A – Levee/Floodwall, Nonstructural, Channel Modification, some Dam and Bridge Modification

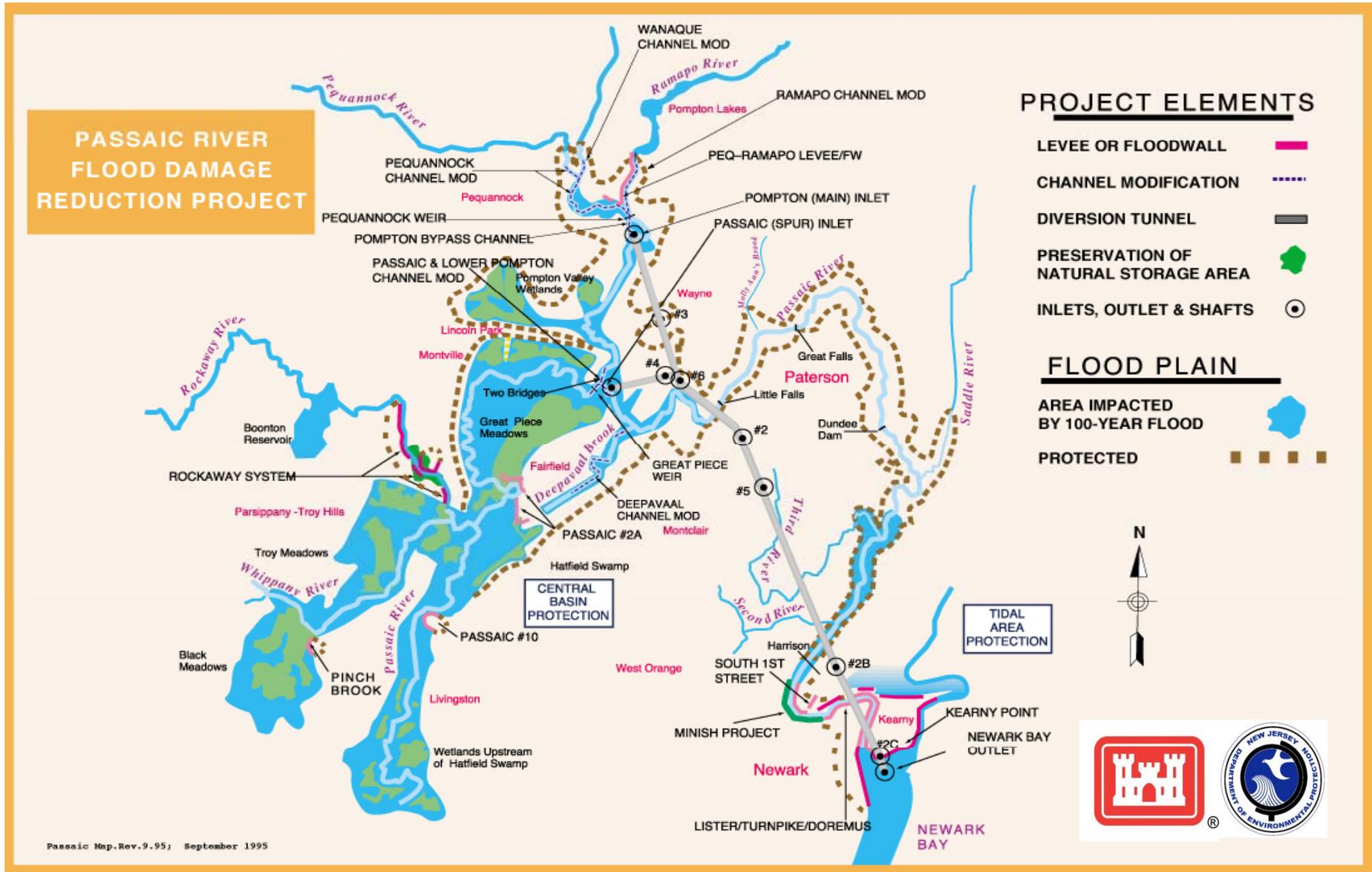


Plan 16A – Levee/Floodwall, Nonstructural, Channel Modification, some Dam and Bridge Modification

- Nonstructural measures (flood proofing, raising, buyout) for 6,000 structures
- 16.5 miles of channel improvements
- 20 miles of levees
 - Heights ranging from 4' to 17'
- 9 miles of flood walls
 - Heights ranging from 7' to 14'
- 22 pump stations



Passaic River Basin WRDA 1990 Authorized Plan (30E) as designed in September 1995



***Passaic River Basin
WRDA 1990 Authorized Plan (30E)
as designed in September 1995***

- 20 mile, 42 ft. dia. main diversion tunnel
- 1.2 mile, 23 ft. dia. spur tunnel
- 7 miles of channel improvements
- 7 miles of levees
- 13 miles of flood walls
- 15 pump stations



Modification of Beatties Dam and Two Bridges

- The following will be considered:
 - Removing a portion or all of Beatties Dam
 - Placing gates on Beatties Dam
 - A weir or structure near the confluence of the Pompton and Passaic Rivers to regulate the flow
 - Channel modification



Passaic River General Reevaluation Conceptual Phase

- NJDEP will have the opportunity to determine alternative(s) on which to proceed on the basis of conceptual costs and economics, environmental requirements and public input
- **Public Outreach with NJDEP:**
 - Two Public Study Kick-off Meetings:
 - July 11, 2012
 - September 13, 2012
 - Ten Public Outreach Meetings (Jul-Oct 2013)
 - Plan Sheets and Posters geared towards different areas of the Basin
 - Visual Renderings



Passaic River General Reevaluation Conceptual Phase Major Tasks

- Update floodplain based on 1990s UNET model and current FEMA HEC-RAS models
- Model each alternative for reduction in water surface levels (level of protection may have changed)
- Comparative cost estimates
- Economic screening of alternatives
 - Damages prevented (benefits) vs project cost
- Identify threatened or endangered species, known historic resources and potential wetland and riverine habitats.
- Review existing literature
- Coordinate with NJDEP, USFWS, other NGOs, etc
- Architectural renderings, photographs and cross-section posters of typical project features
- Public Outreach



Passaic River General Reevaluation Conceptual Phase Recent Tasks

- 11 July 2012 Public Information Session
- Passaic River Website
- Technical Tasks:
 - Hydrology:
 - Received FEMA HMS models from NJDEP
 - Rainfall data was collected from Irene
 - Developing calibrated runs for Irene
 - Coordination with the NJ Silver Jackets Team
 - Hydraulics:
 - 1990s UNET model converted to HEC-RAS
 - Received FEMA HEC-RAS models for the Central/Lower Basin, Pompton and Ramapo Rivers



- Passaic River Resources
 - www.nj.gov/dep/passaicriver
 - <http://bit.ly/passaicstudy>
- Information about the poster boards
- Introduction of the Team Members
- Comment period



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