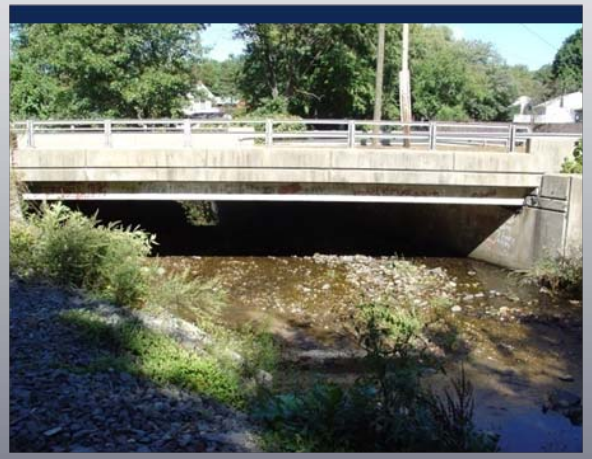
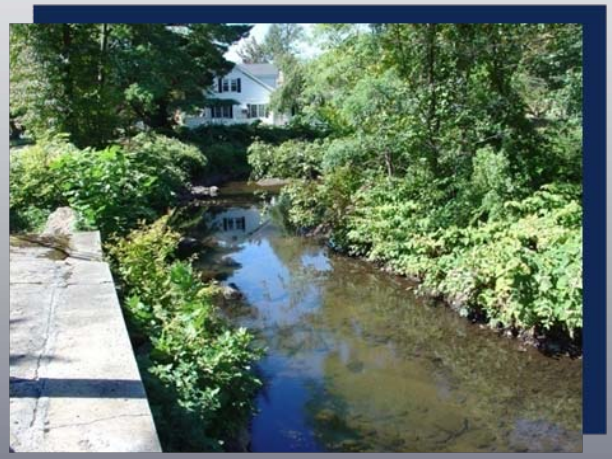
Public Information Meeting
for the
Storm Drainage Study of Copper Mine Brook
Bristol, Connecticut

Presented to:
City of Bristol
Bristol, Connecticut

Presented by:
Milone & MacBroom, Inc.
Cheshire, Connecticut

April 10, 2008

Introductions

- The Honorable Arthur J. Ward
  Mayor, City of Bristol

- James G. MacBroom, P.E.
  Senior Vice President
  Milone & MacBroom, Inc.

- Nicolle E. Burnham, P.E.
  Project Manager / Associate
  Milone & MacBroom, Inc.

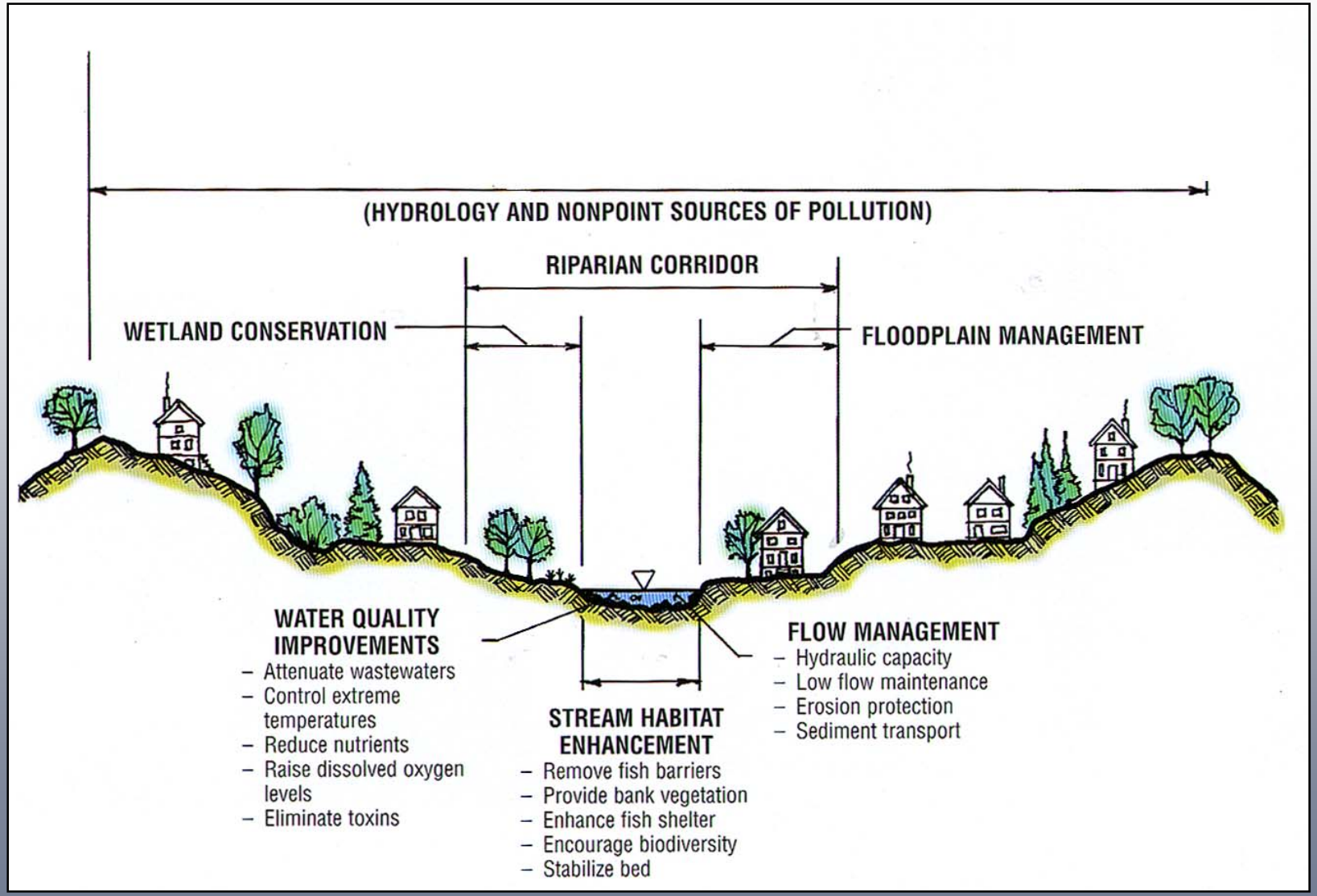
Outline of Presentation

- Factors that Influence Flooding
- Factors that Influence Storm Runoff and Streamflow Rates
- History of Flooding along Copper Mine Brook
- Scope of Current Study
- Schedule for Current Study
- Public Comments / Questions

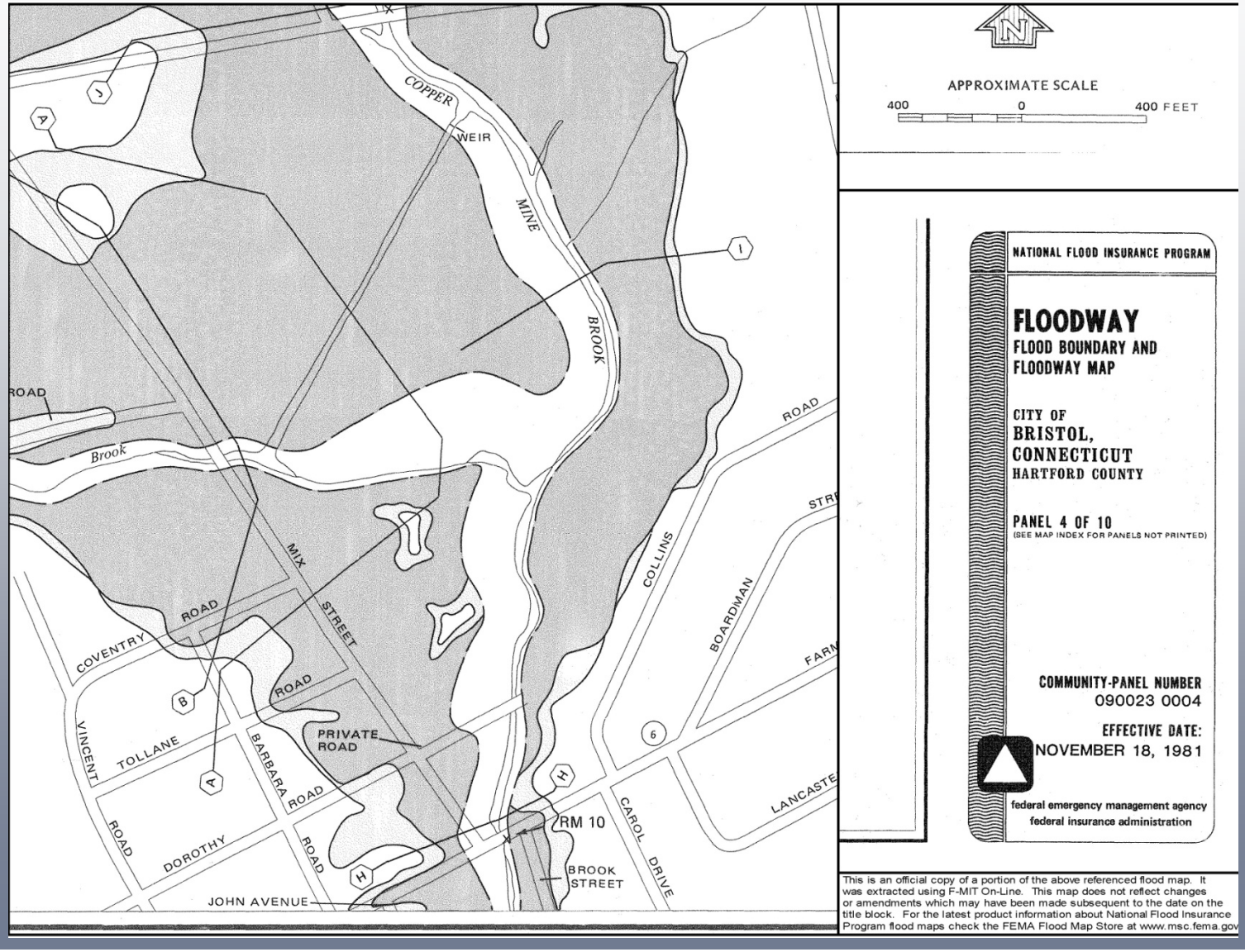
Project Goal

Evaluate channel and watershed to identify causes of flooding and recommend potential solutions

Watershed Considerations



FEMA Floodplains



Floodplain Functions

- Floodwater Conveyance and Storage
- Velocity Reduction
- Sediment Trapping and Storage
- Channel Migration Belt
- Riparian Wetland Habitat
- Groundwater Recharge and Storage (Polkville Wells)

Factors that Influence Flooding

- Precipitation / Excess Runoff
- Snow Melt
- Dam and/or Dike Failures
- Flow Obstructions
- Combination of Factors
- Floodplain Elevation
- Channel Gradient

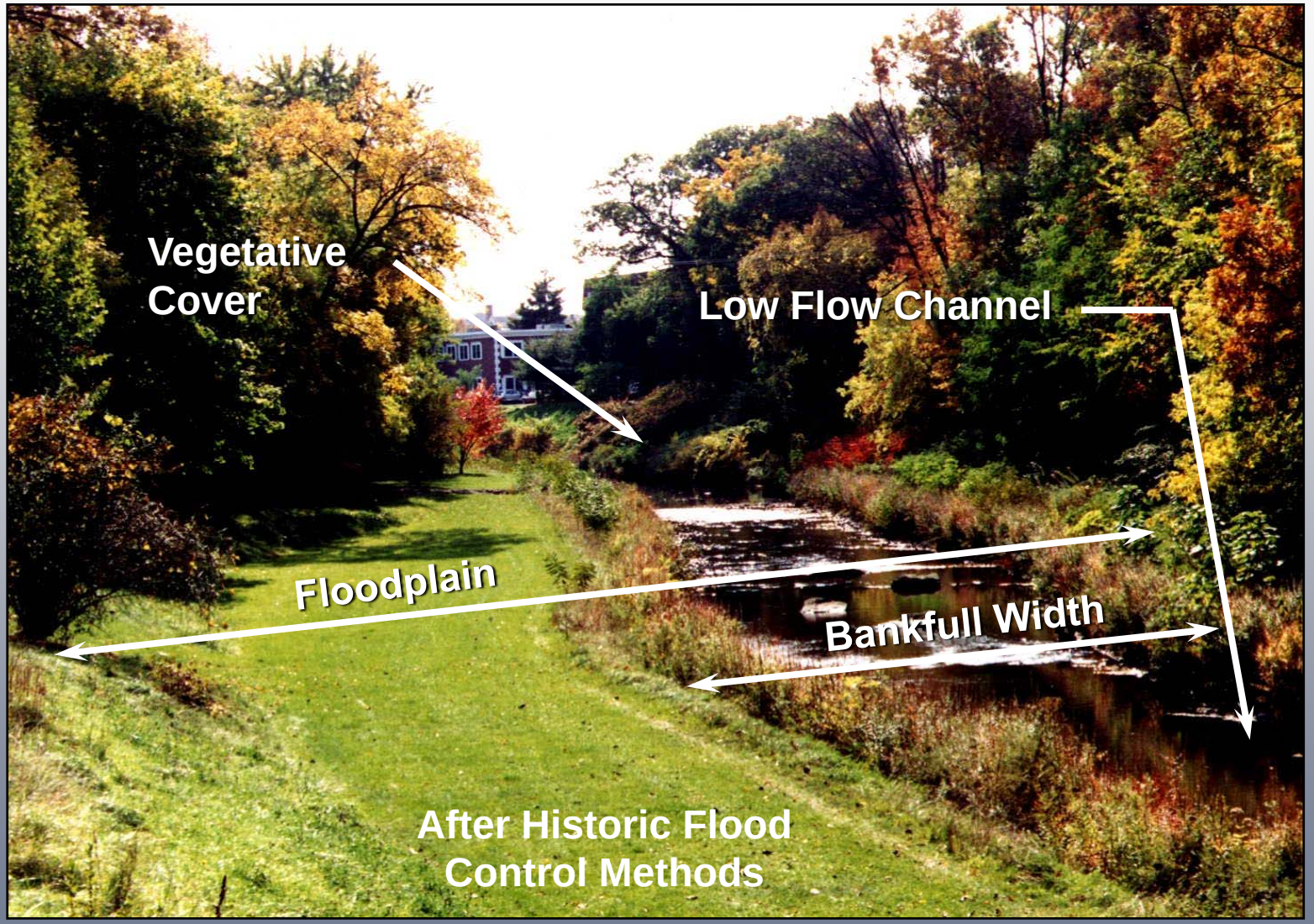
Causes of Flooding

- Natural Rainfall / Runoff Response
- Increased Precipitation
- Watershed Modifications
- Loss of Floodplain Storage / Floodplain Encroachments
- Constrictions at Bridges and Culverts
- Downstream Backwater
- Dams
- Ice & Debris Jams

Historic Flood Control Methods

- Channel and Impoundment Dredging
- Construction of Dikes and Dams
- Diversion of Floodwaters to Non Flood Prone Areas
- Enclose Channel in Conduits or Pipes

Natural Channel and Floodplain



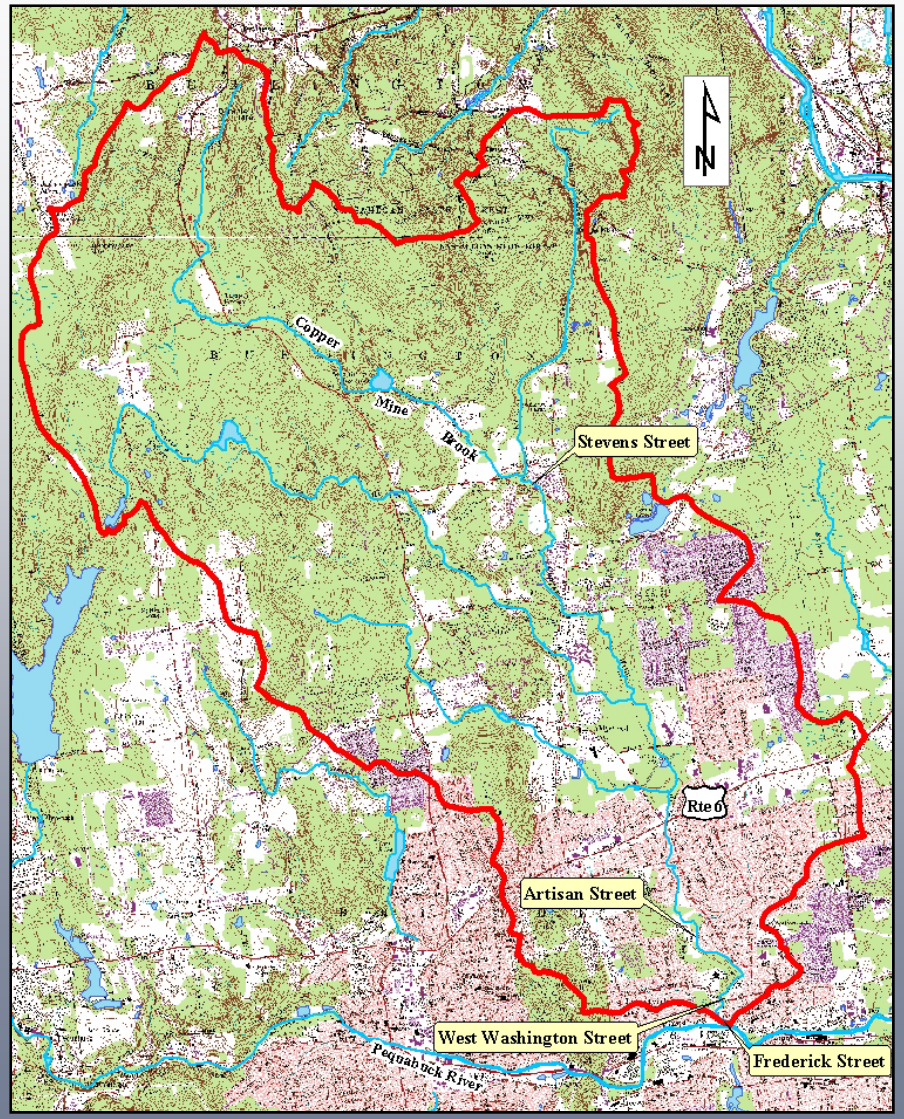
Floodplain Management

- Understanding Watershed Dynamics
- Hydraulic Analysis and Flood Elevations
- Delineate Flood Prone Areas
- Hazard Mitigation Planning
- Identify Riparian Buffers

Factors Influencing Runoff Rates

- Watershed Size and Shape
- Land Use
- Vegetation
- Soil Types
- Rainfall Patterns
- Ponds, Lakes, Reservoirs, Wetlands
- Receiving Stream

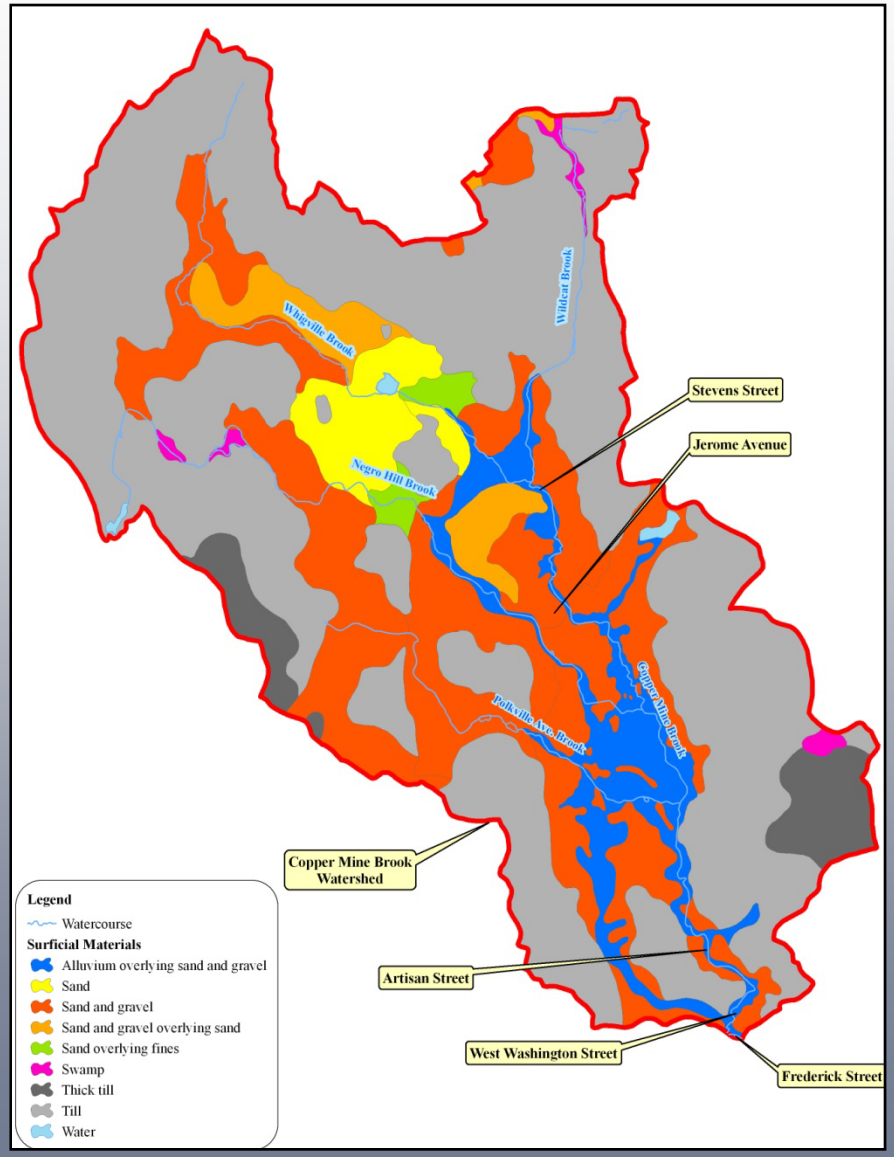
Watershed Area and Land Use



Watershed Area:
18.6 square miles

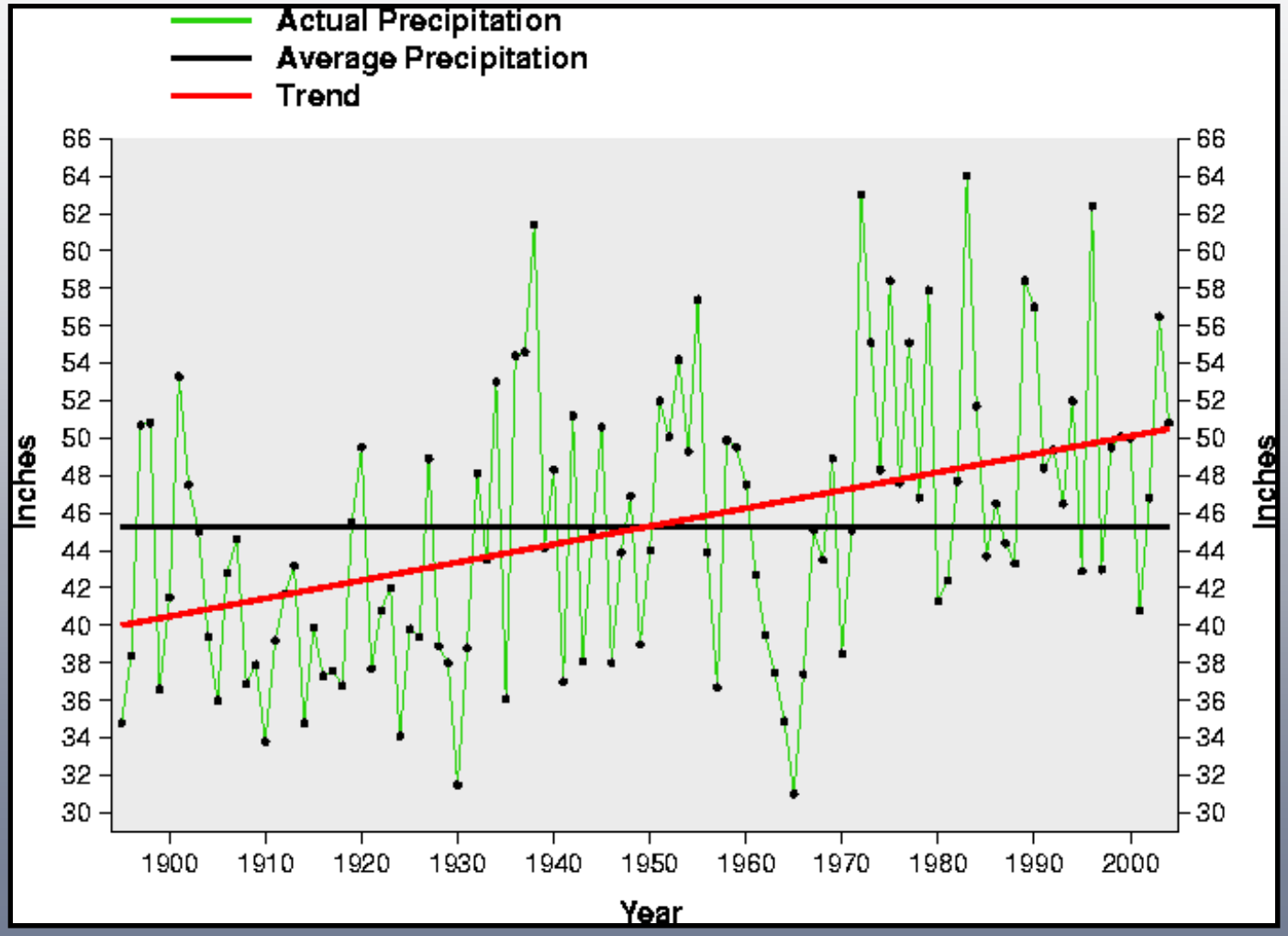
Land Use:
Rural in Upper Watershed
Urban in Lower Reaches

Soil Types


Wildcat Brook
Whigville Brook
Negro Hill Brook
Polkville Ave. Brook
Copper Mine Brook
Stevens Street
Jerome Avenue
Copper Mine Brook Watershed
Artisan Street
West Washington Street
Frederick Street
Legend
Watercourse
Surficial Materials
Alluvium overlying sand and gravel
Sand
Sand and gravel
Sand and gravel overlying sand
Sand overlying fines
Swamp
Thick till
Till
Water

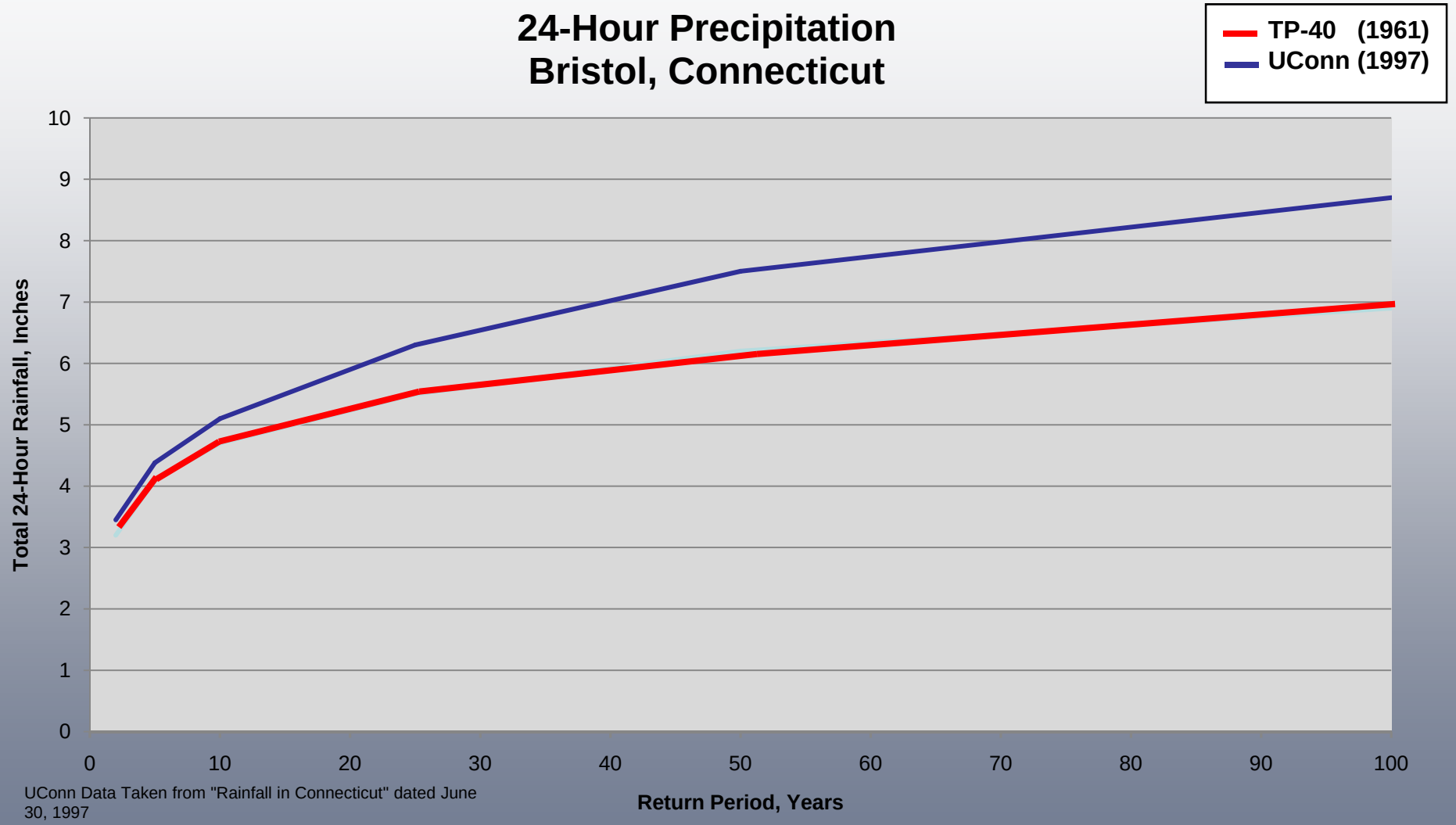
Rainfall Patterns – Annual Trends

Connecticut's Increasing Precipitation



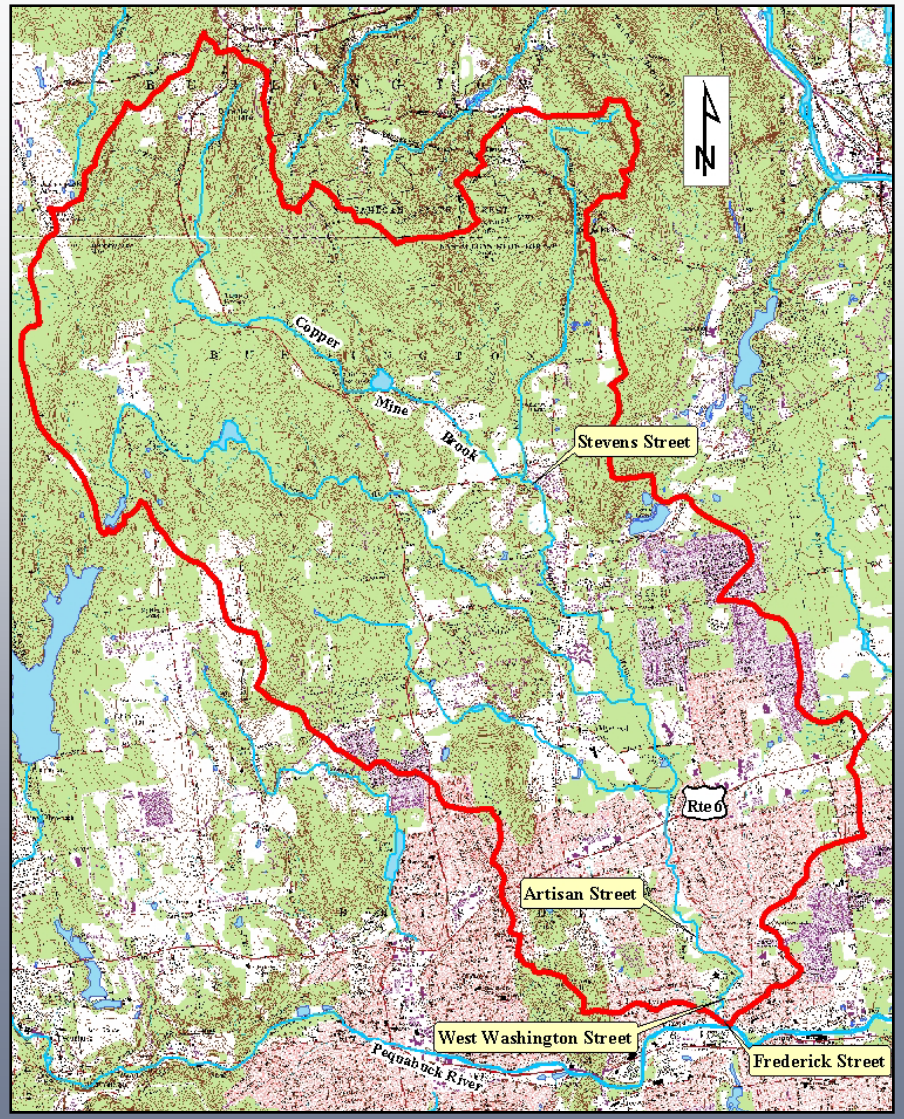
Source: NOAA, NCDC Connecticut Precipitation 1895 through 2004

Rainfall Patterns



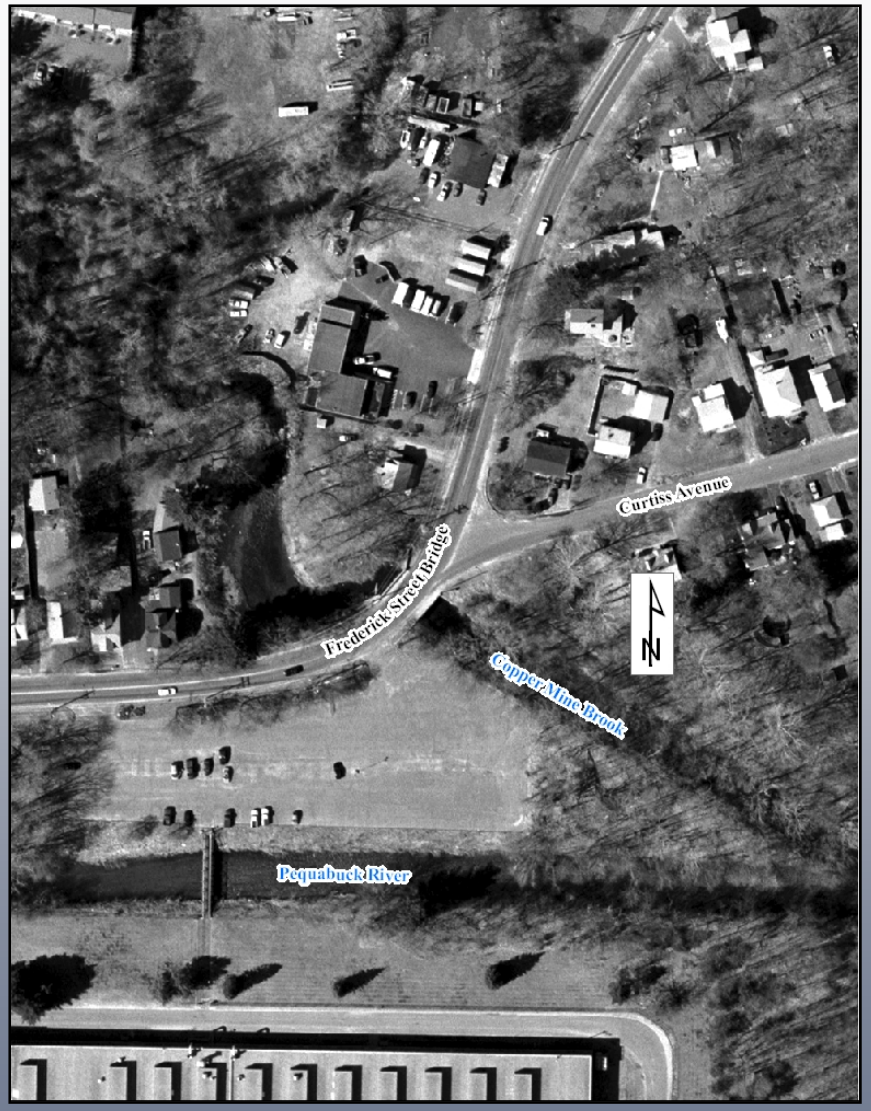
UConn Data Taken from "Rainfall in Connecticut" dated June 30, 1997

Ponds, Lakes and Reservoirs



Flood Storage Areas:
Whigville Reservoir
Maltby Street Wetland
Channel Reaches

Receiving Stream



History of Flooding

- Richards Court / Stevens Street
- Coventry Road
- Farmington Avenue
- Vantana Drive
- Artisan Street
- Frederick Street

Past Work Completed by the City

- Replaced Artisan Street Bridge
- Replaced Pedestrian Bridge to Hubbel School and Construction Bypass Channel
- Replaced West Washington Street Bridge
- Contemplated Channel Realignment at Frederick Street

Scope of Study

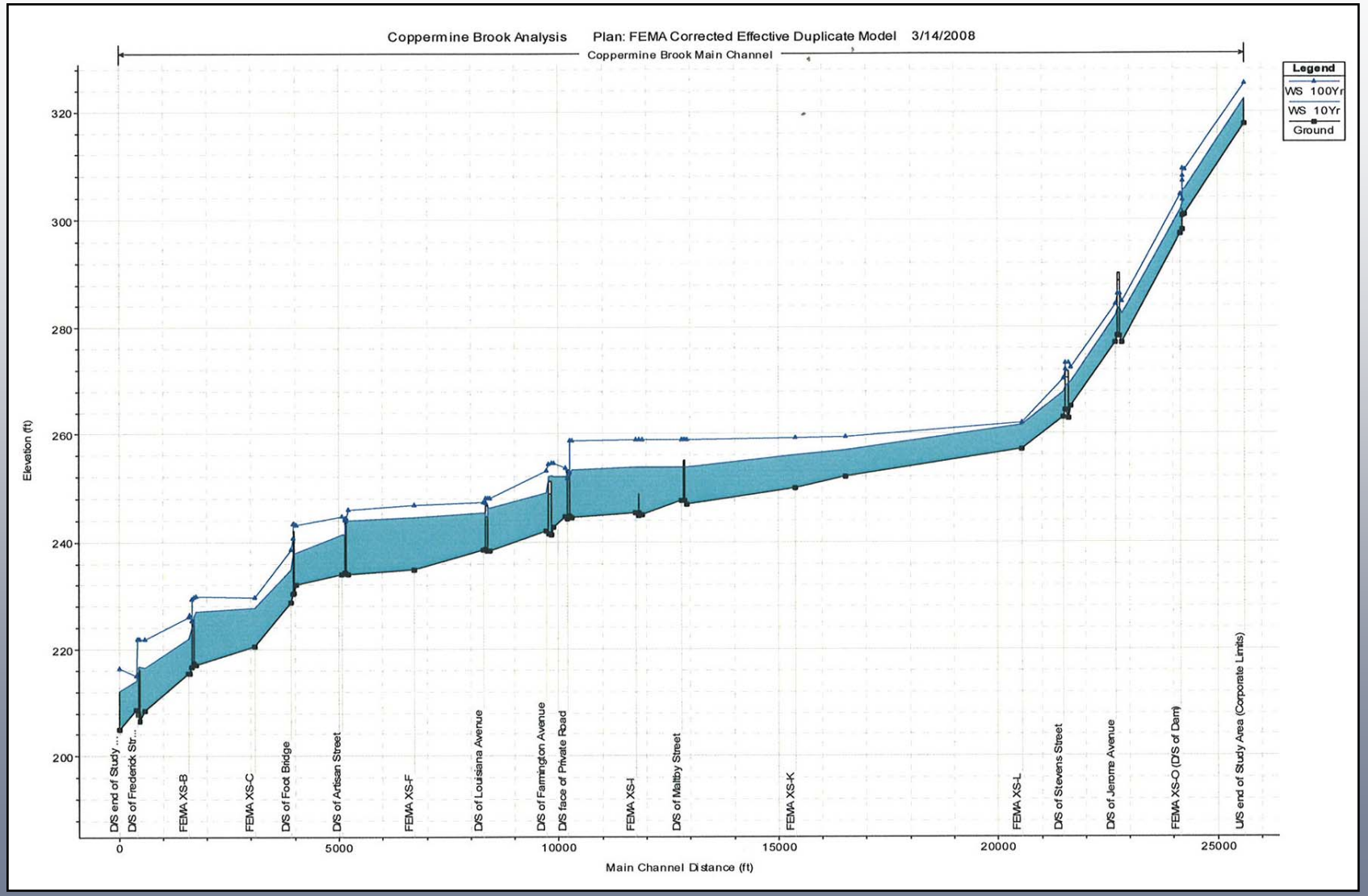
Project Goal: Evaluate channel and watershed to identify causes of flooding and recommend potential solutions

- ✓ **Data Collection**
  - **Compile Existing Data**
  - **Evaluate Bridges**
  - **Perform Channel and Watershed Assessment**
- ✓ **Field Survey**
  - **Review City Topo**
  - **Channel Cross-Sections**
  - **Critical Building Elevations**

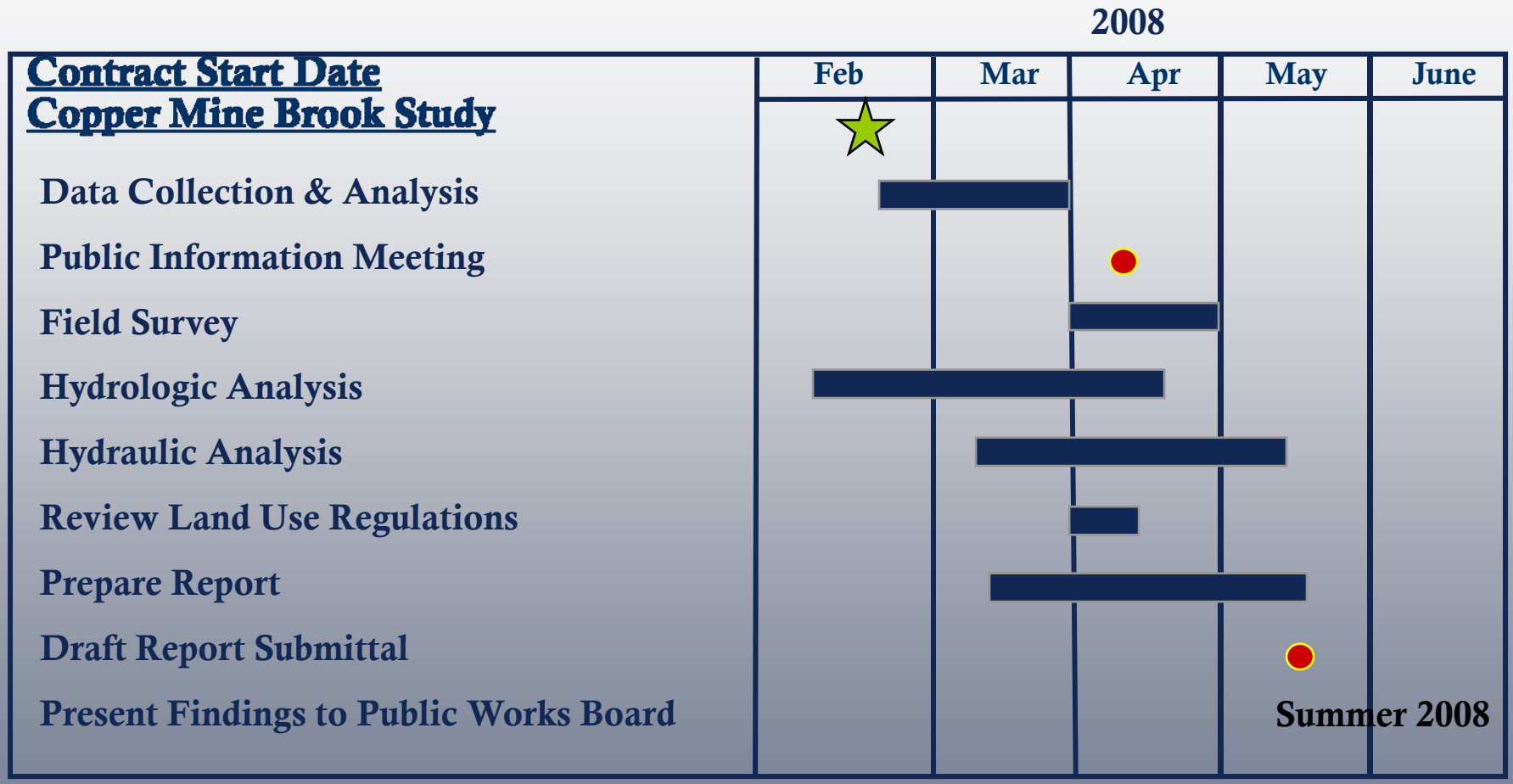
Scope of Study

- ✓ **Hydrology and Hydraulics**
  - **HEC-HMS Hydrologic Model – Existing and Future**
  - **HEC-RAS Hydraulic Model – Existing and Future**
  - **Delineate Floodplain and Floodway**
- ✓ **Watershed / Land Use Evaluation**
  - **Review Bristol and Burlington Regulations**
  - **Recommend Language for Modifications**
- ✓ **Report and Presentation**

Channel Profile



Project Schedule



Target Deliverable Date