



**Presentation to the  
Town of Westport Flood &  
Erosion Control Board**

**Deadman Brook  
Watershed Study**

May 2, 2018

*Employee owned. Client driven.*

Connecticut | Maryland | Massachusetts | New Jersey | New York | Ohio | Pennsylvania | Texas

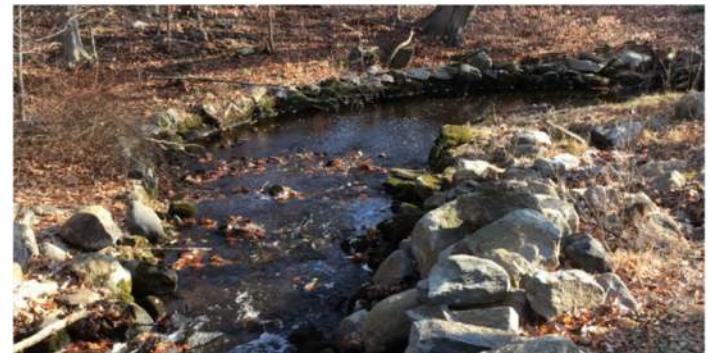


Architecture  
Engineering  
Environmental  
Land Surveying

# Deadman Brook Project Team

- Town of Westport
  - Peter A. Ratkiewich, P.E.
- BL Companies
  - David Cicia, P.E.
  - Michael Fisher, P.E.
  - Chad Perkoski, P.E.

# Deadman Brook



BL Companies, Inc. • Employee Owned. Client Driven.

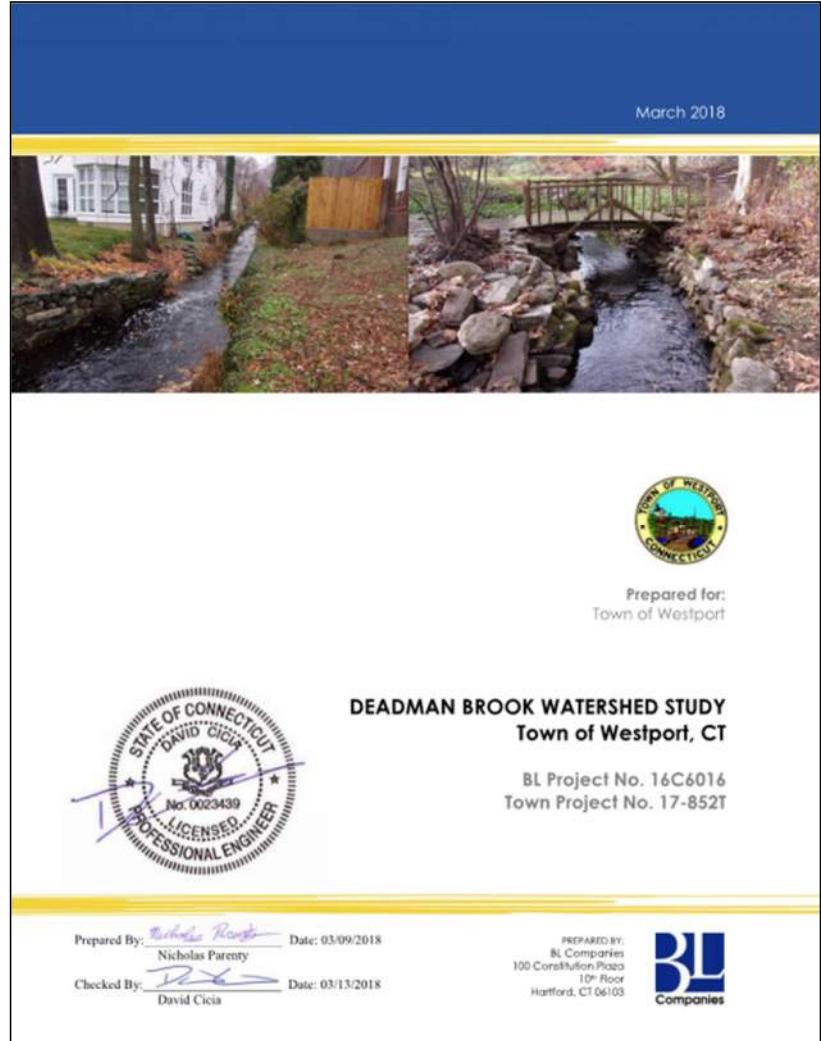
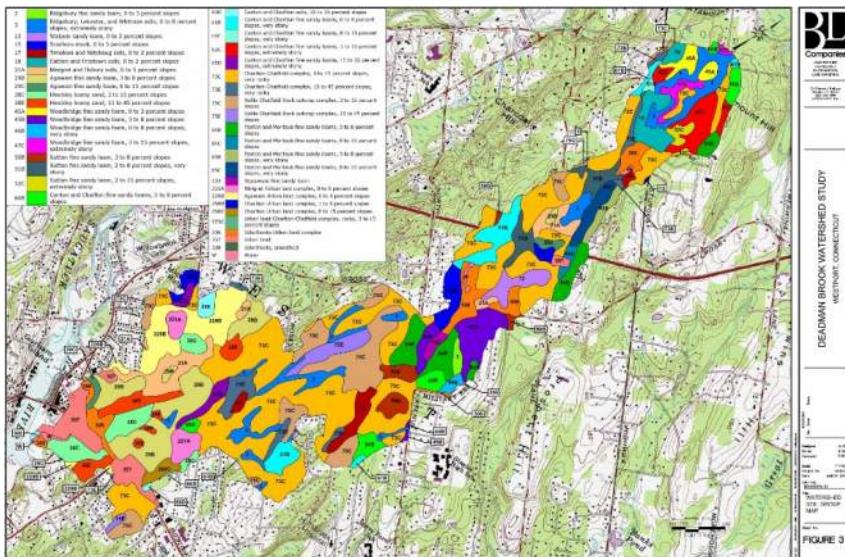
# Project Funding

- Housing and Urban Development's Community Development Block Grant (Disaster Recovery Assistance)
  - Applied for After Superstorm Sandy in 2012
  - Funding received in March 2016

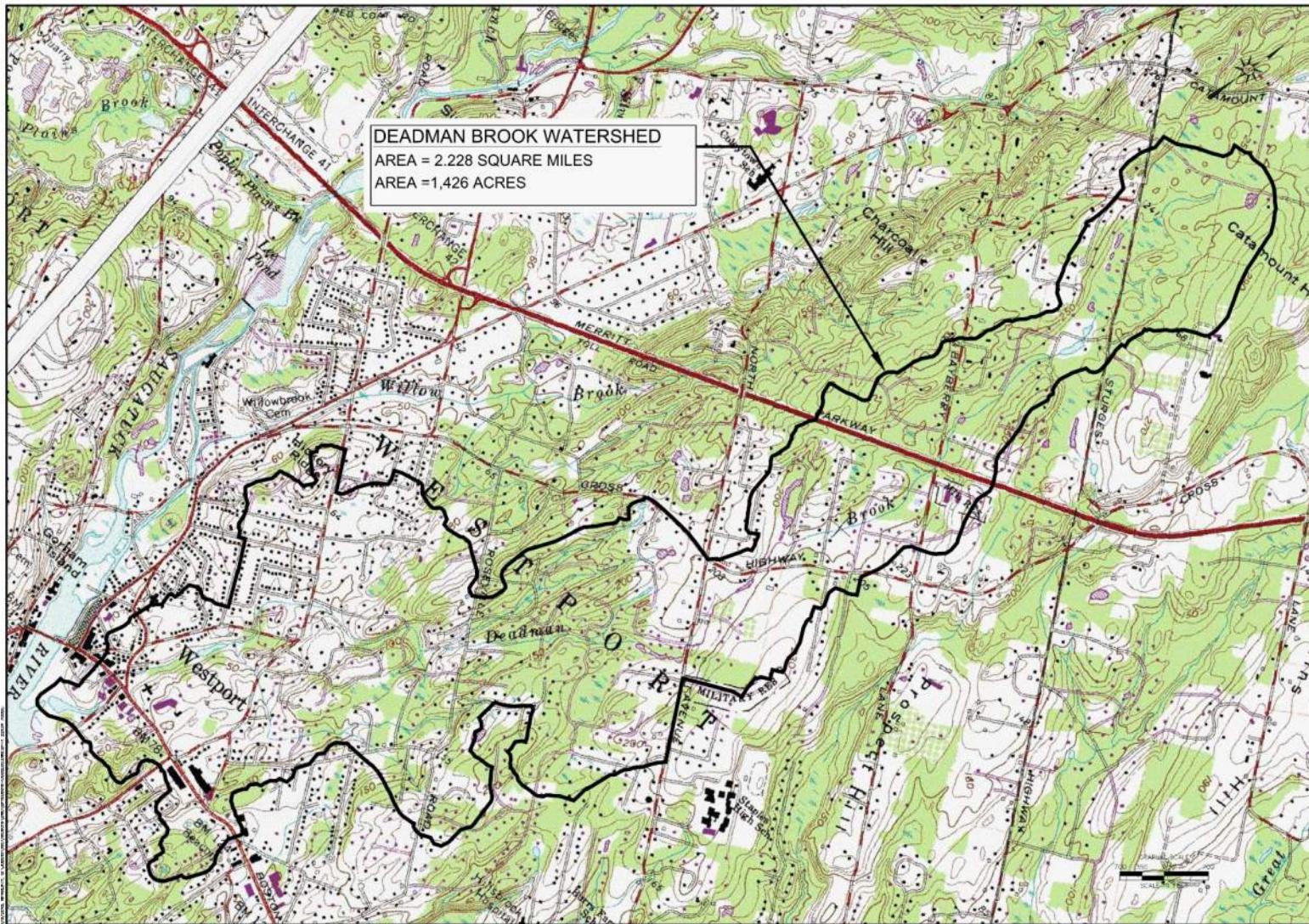


# Deadman Brook Watershed Study

- Determine the Watershed Area
- Compute Hydrologic Flows
- Create a Hydraulic Model
- Apply the Developed Flows
- Determine Existing Areas of Concern
- Evaluate Potential Improvements



# Deadman Brook Watershed Boundary



BL Companies  
ARCHITECTURE  
ENGINEERING  
ENVIRONMENTAL  
LAND SURVEYING

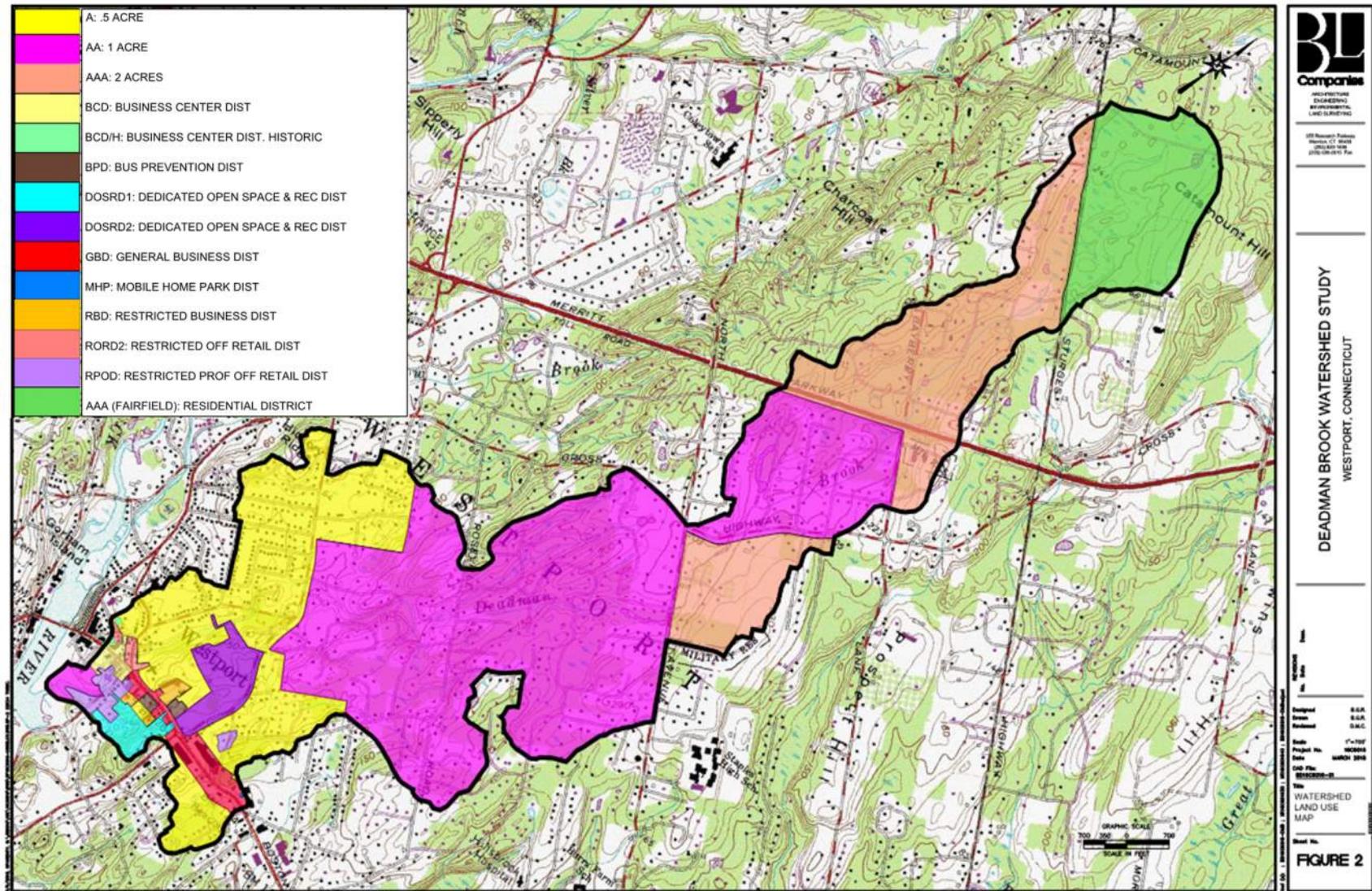
100 Research Parkway  
Westport, CT 06880  
(203) 221-1088  
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DEADMAN BROOK WATERSHED STUDY  
WESTPORT, CONNECTICUT

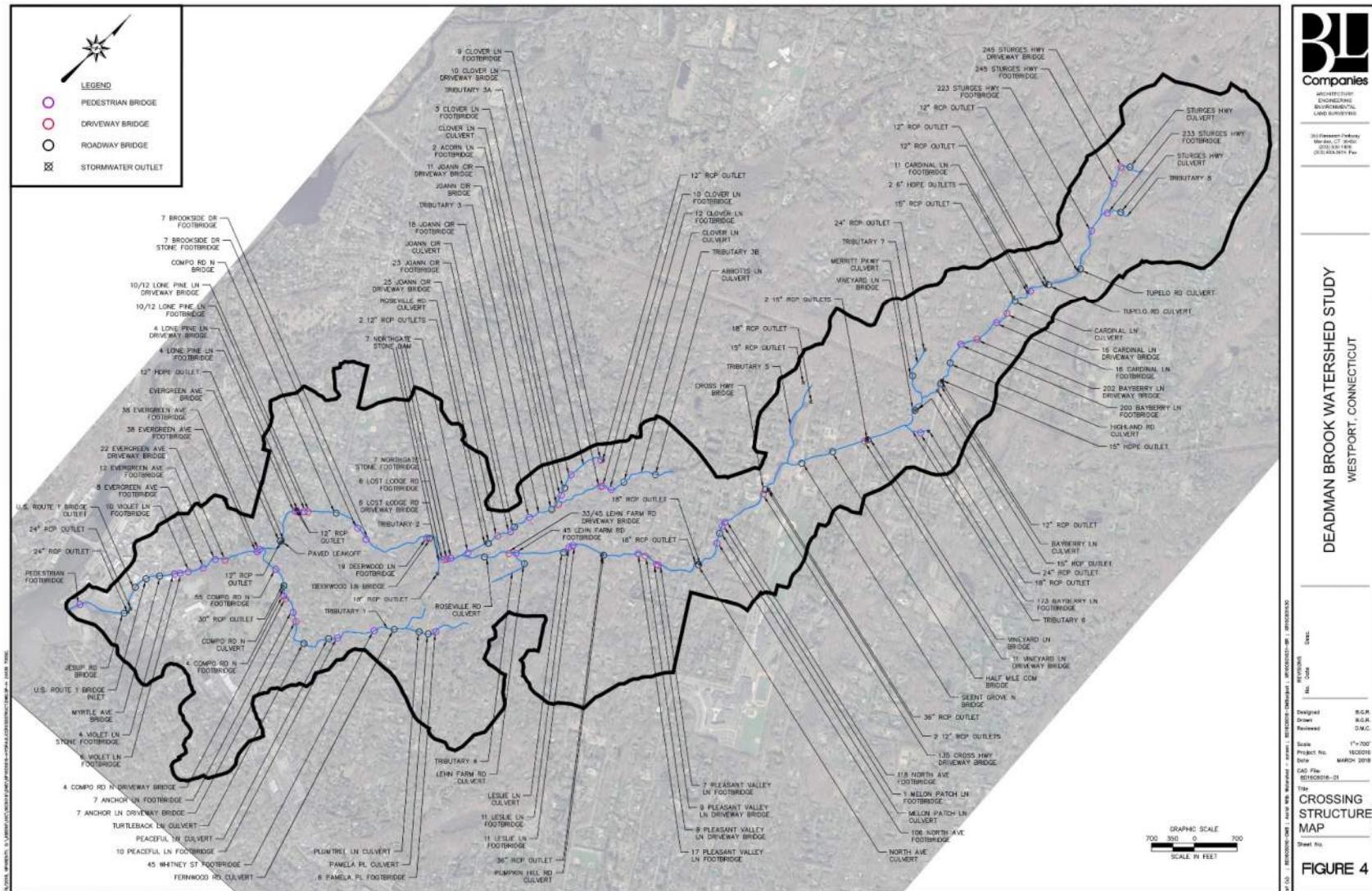
BL Companies  
Architecture  
Engineering  
Environmental  
Land Surveying  
Companies

FIGURE 1

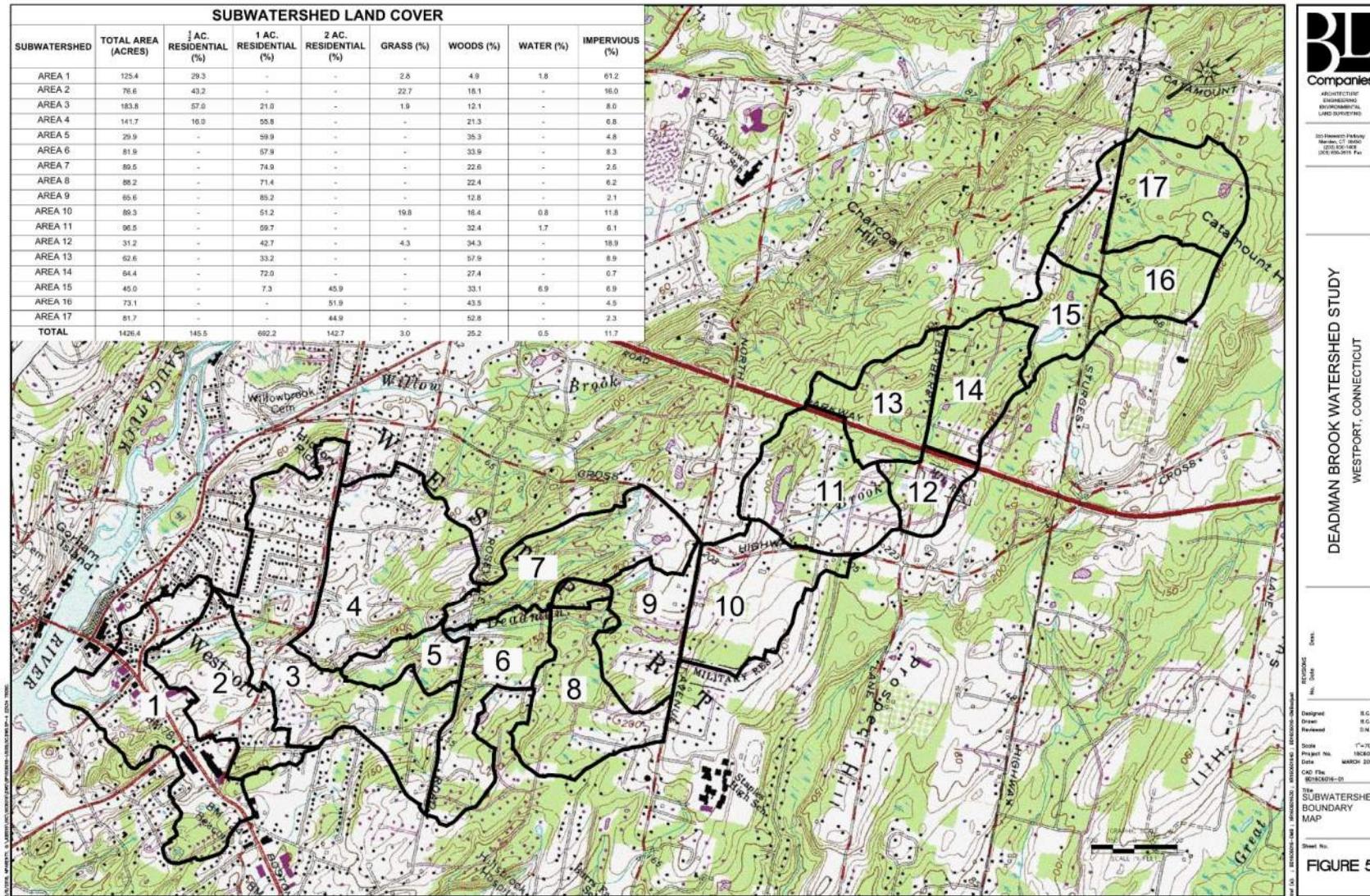
# Deadman Brook Watershed Land Use Map



# Deadman Brook Crossing Structure Map



# Deadman Brook Subwatershed Boundary Map



# Deadman Brook – Flooding During Lower Storm Events

- During 2-Year Storm
  - Sturges Highway
  - Tupelo Road Culverts (2)
  - Highland Road Culvert
  - Bayberry Lane Culverts
  - Roseville Road Culverts
  - Myrtle Avenue Bridge
  - Jesup Road Bridge



- Between 2-Year and 10-Year Storm Events

- Cardinal Lane Culverts
- Deerwood Lane Bridge
- Vineyard Lane Culverts
- Half Mile Common Culverts
- Silent Grove North Culverts
- Cross Highway Box Culvert
- Melon Patch Lane Culverts
- Pumpkin Hill Road Culverts
- Leslie Lane Culverts



# Tributaries – Flooding During Lower Storm Events

- During 2-Year Storm
  - Lehn Farm Road Culvert
  - Abbotts Lane Culvert
  - Joann Circle Culvert (Lower)
  - Sturges Highway Culvert



- Between 2-Year and 10-Year Storm Events
  - Compo Road North Culvert
  - Roseville Road Culvert
  - Clover Lane Culvert
  - Joann Circle Arch Culvert (Upper)

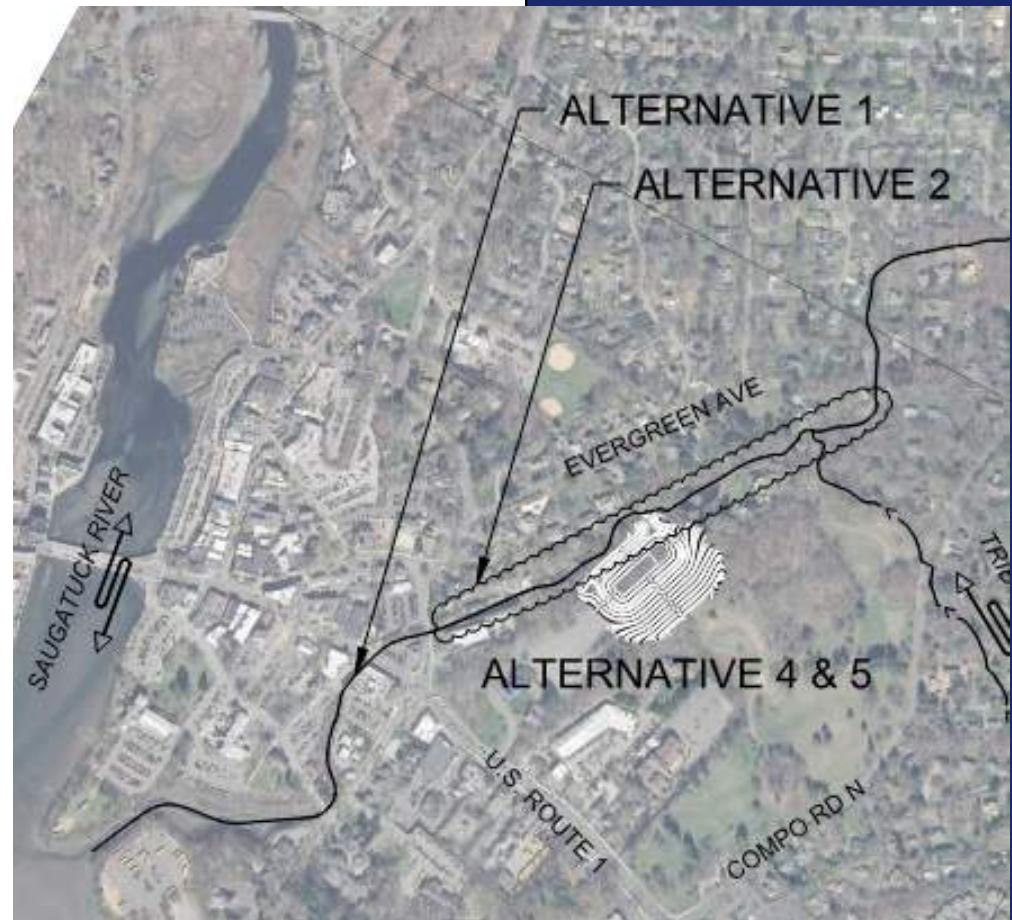


# Potential Improvement Projects

- **Alternative 1: Channel Widening from Myrtle Avenue to U.S. Route 1**
- Alternative 2: Channel Widening from Evergreen Avenue to Myrtle Avenue
- Alternative 3: Channel Widening from Silent Grove North to Bayberry Lane
- Alternative 4: Underground Flood Storage Basin, Winslow Dog Park
- Alternative 5: Flood Storage Basin, Winslow Dog Park
- **Alternative 6: Storage Areas within Tributary 1**
- **Alternative 7: Storage Area downstream of Roseville Road**
- Alternative 8: Storage Area near Leslie Drive
- Alternative 9: Storage Area adjacent to Silent Grove North
- **Alternative 10: Storage Area between Highland Road and Merritt Parkway**
- **Alternative 11: Storage Area at Tupelo Road**
- Alternative 12: Storage Area near Sturges Highway

## Alternative 1: Channel Widening from Myrtle Avenue to U.S. Route 1

- Existing channel begins to overtop during the two-year storm event
- Proposed channel widened to 25-feet to contain the 2-year storm event within its banks
- 10-year and 100-year water surface elevations are slightly reduced or remain the same



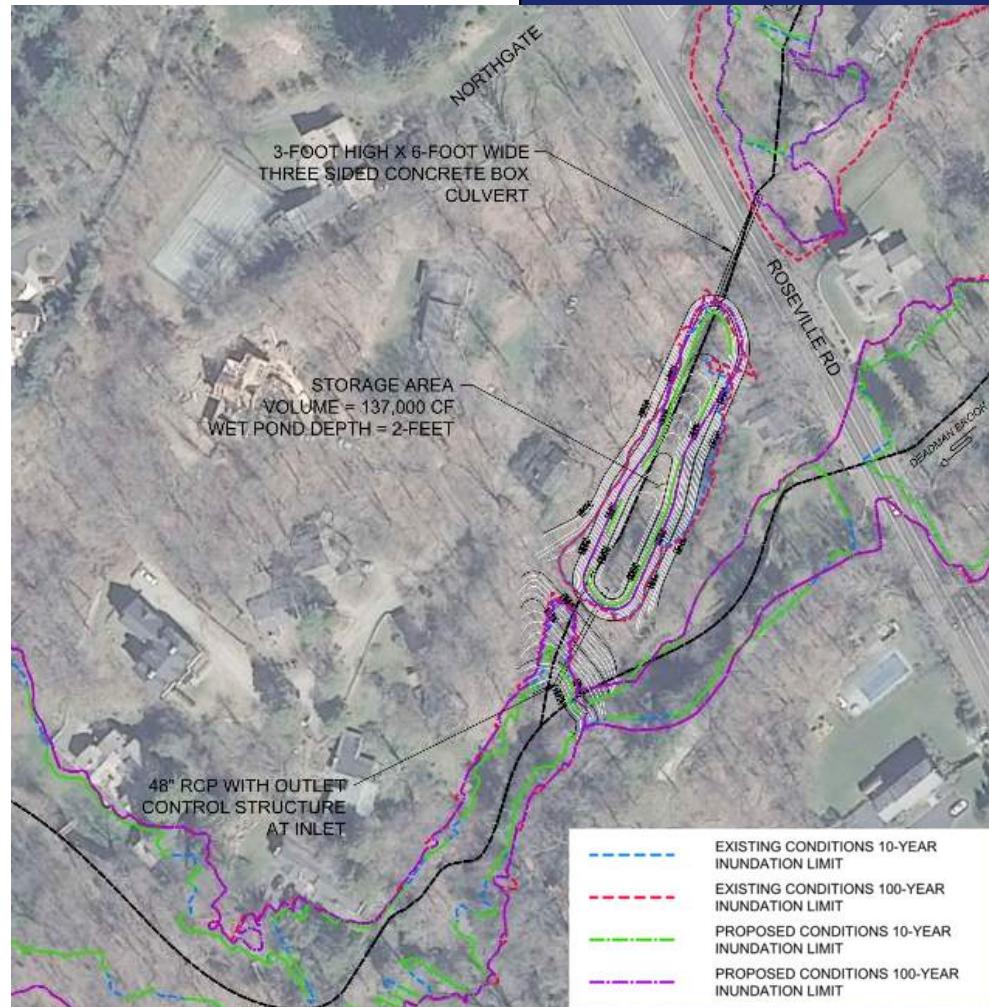
## Alternative 6: Storage Areas within Tributary 1

- Located within wooded areas
- Total storage capacity of approximately 160,000 cubic feet
- Reduces flow rates for all studied storm events (over 50% decrease for 2-year through 100-year events)
- Along modeled Tributary 1, five residences removed from 100-year floodplain



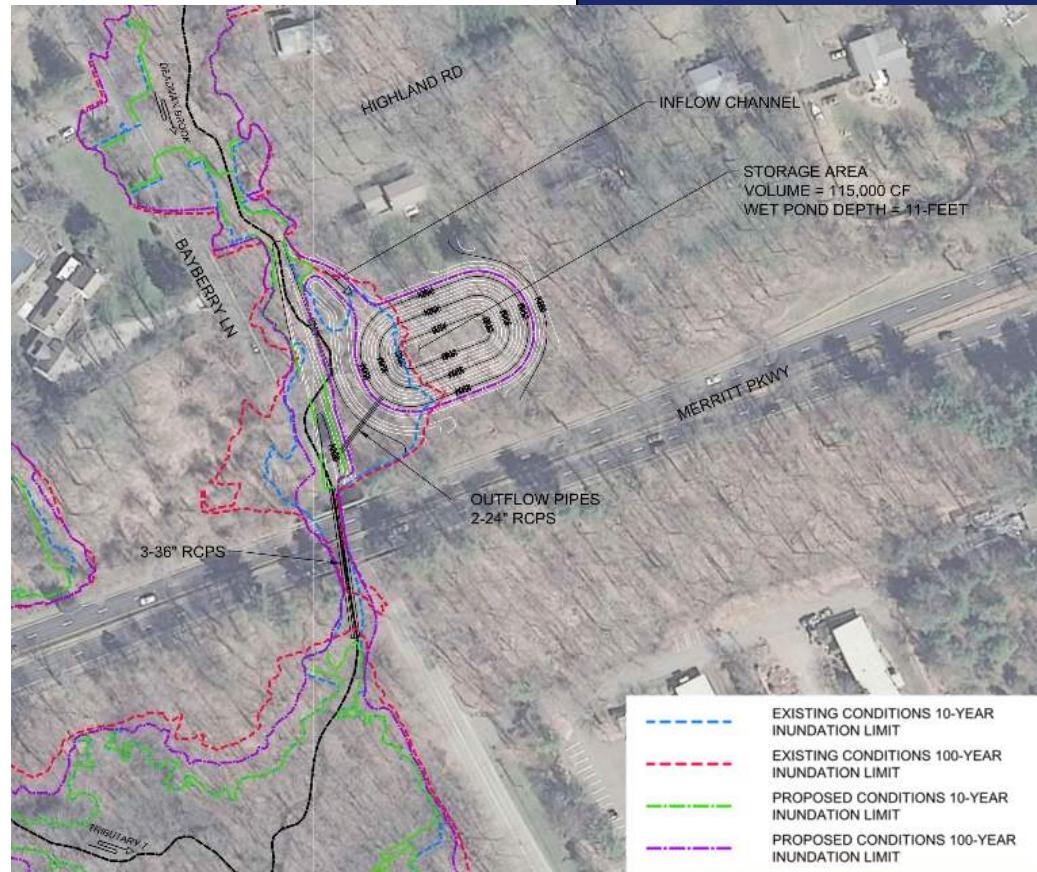
## Alternative 7: Storage Area downstream of Roseville Road

- Existing area is currently undeveloped, consisting mainly of a large swampy area
- Proposed flood storage basin has a designed storage capacity of approximately 137,000 cubic feet
- Replaces existing Tributary 3 crossing below Roseville Road
- Reduces tributary flow rates for all studied storm events (approximate 20% decrease)
- Prevents overtopping of Roseville Road for all events



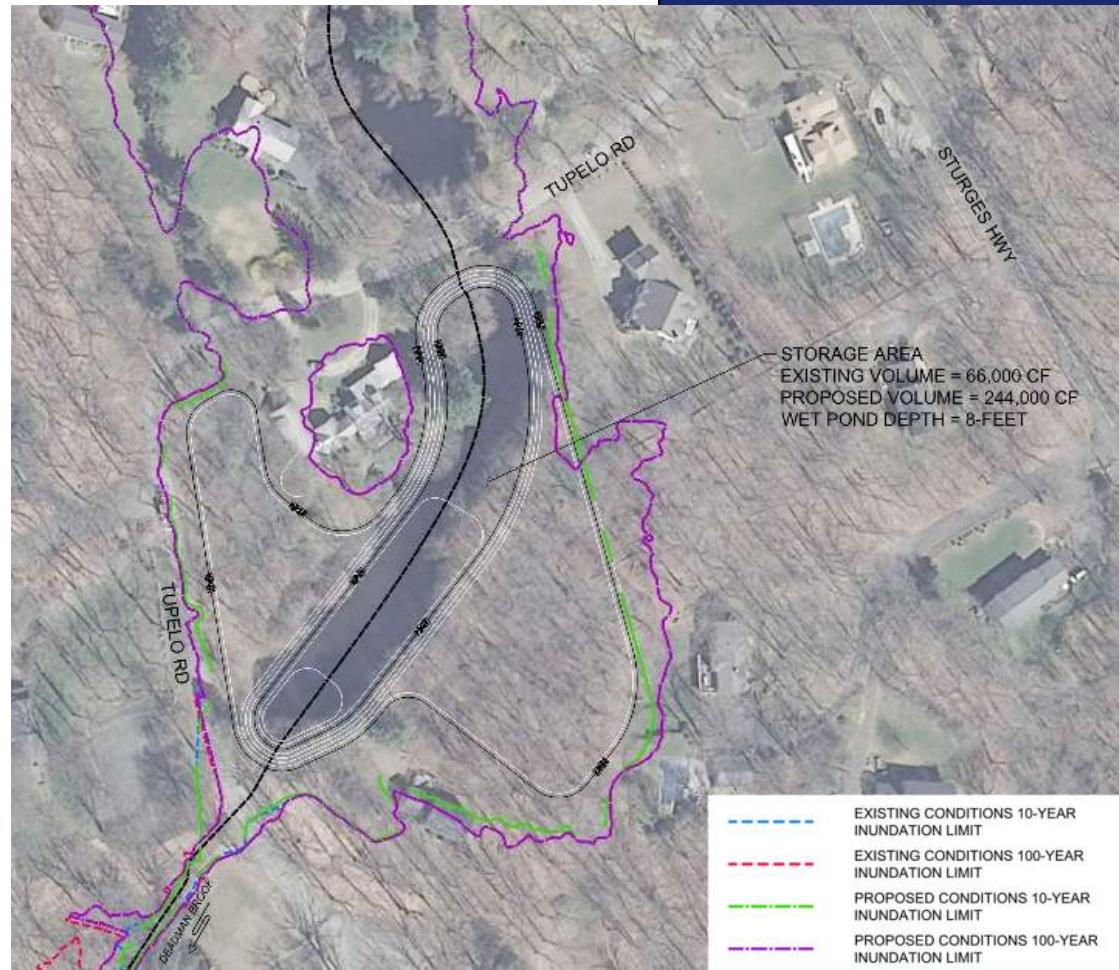
## Alternative 10: Storage Area between Highland Road and Merritt Parkway

- Existing area currently undeveloped, mainly consisting of forest
- Proposed flood storage basin has a designed storage capacity of approximately 115,000 cubic feet
- Replaces existing Bayberry Lane crossing with three 36" RCP's
- Overtopping between 10-year and 50-year events (existing overtops at 2-year storm)
- Downstream, one residence removed from 100-year floodplain



## Alternative 11: Storage Area at Tupelo Road

- Existing pond has storage capacity of approximately 66,000 cubic feet
- Proposed pond has a designed storage capacity of approximately 244,000 cubic feet
- Reduction in 10-year and 100-year water surface elevations upstream and downstream
- Three residences removed from 10-year inundation



# Recommended Alternatives for Design

- Recommended Alternatives chosen for
  - Decrease flows within Deadman Brook
  - Reduce flooding limits on residential properties
  - Reduce water surface elevations on residential properties
- Recommended Alternatives discussed with CT DEEP
- 2-year storm impact reduction
- 9 residences removed from 100-year inundation limit



## Questions & Answers

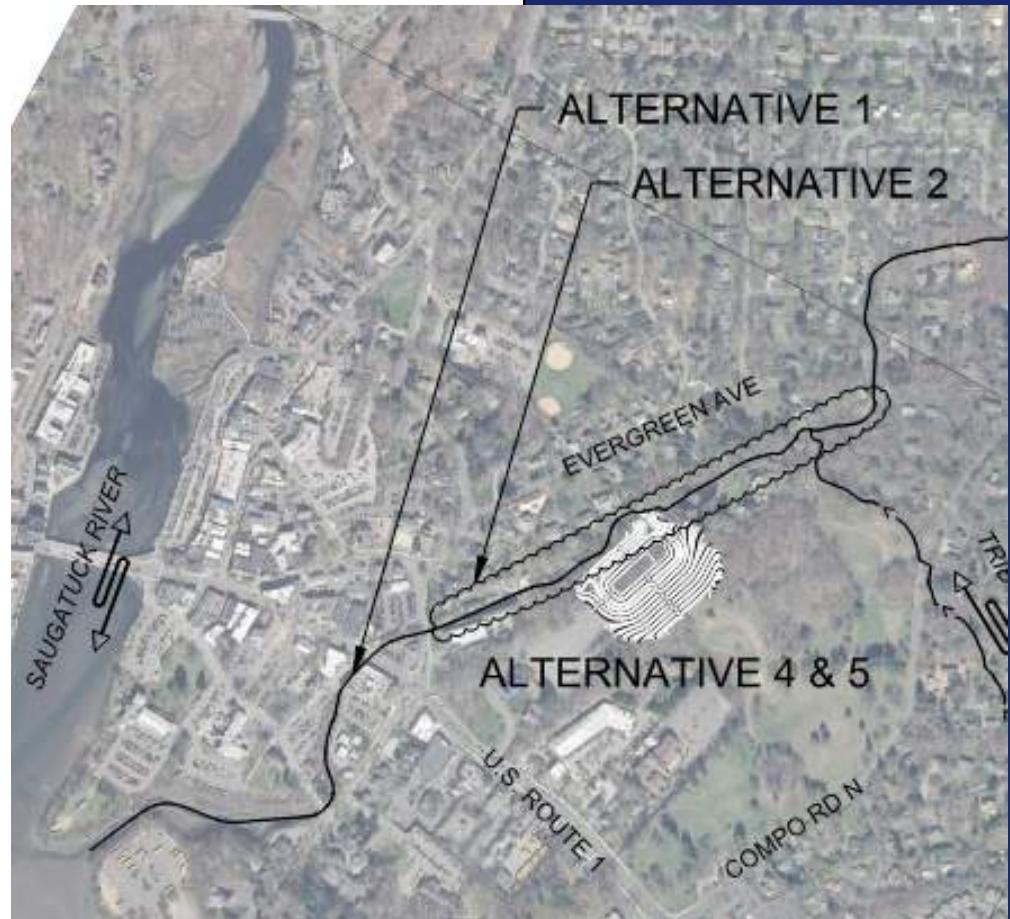
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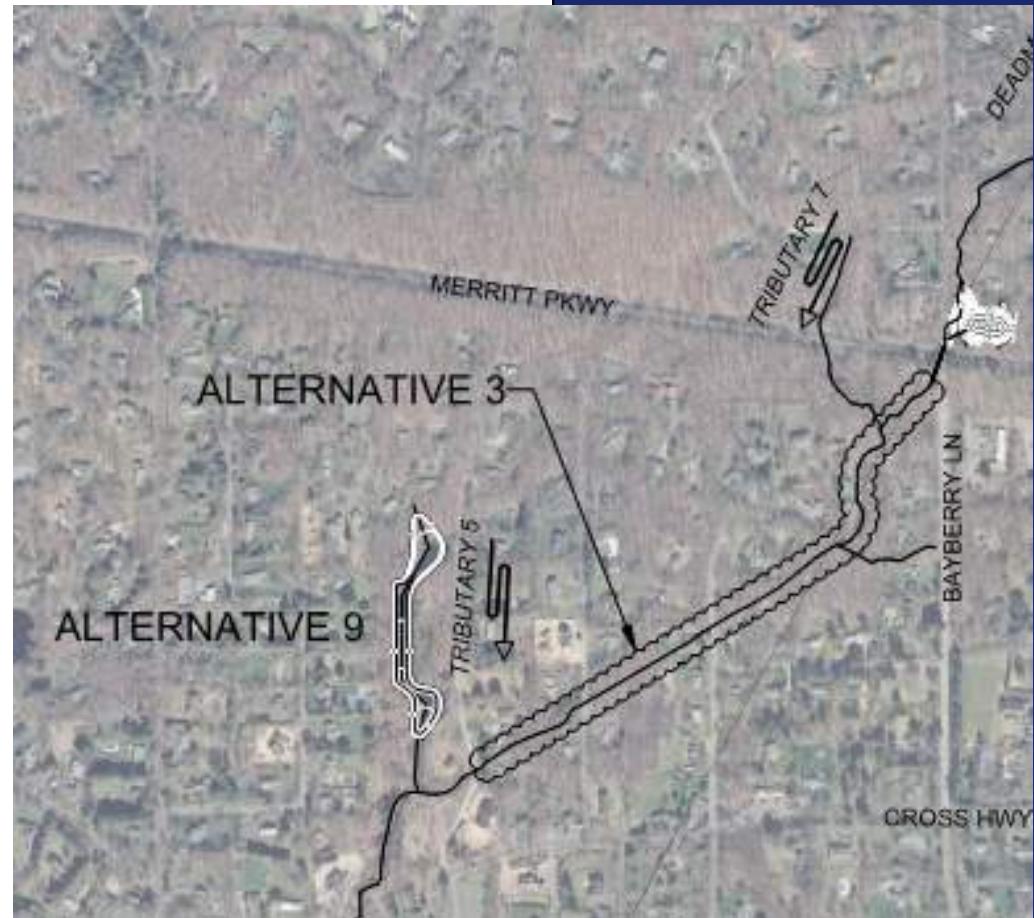
## Alternative 2: Channel Widening from Evergreen Avenue to Myrtle Avenue

- Existing channel begins to overtop during the 2-year storm event
- Proposed channel widened to a uniform width of 10-feet
- 2-year contained within the widened channel (until Myrtle Avenue approach)
- 10-year and 100-year water surface elevations are reduced slightly or remain the same



## Alternative 3: Channel Widening from Silent Grove North to Bayberry Lane

- Existing channel begins to overtop during the 2-year storm event
- Proposed channel widened by approximately 4-feet to a 10-foot width
- Proposed channel contains 10-year storm event, but overtops during 50-year storm event
- 17 residential homes remain within the 100-year inundation



## Alternative 4: Underground Flood Storage Basin, Winslow Dog Park

- Existing area within Winslow Dog Park
- Proposed system consists of nine, 310-foot long 48" RCPs
- Storage capacity of 35,000 cubic feet
- Very small reduction in peak flows for all studied storm events
- 2-year event continues to overtop Myrtle Avenue



## Alternative 5: Flood Storage Basin, Winslow Dog Park

- Existing area is currently undeveloped, mainly consisting of forest
- The proposed basin has a storage capacity of approximately 365,000 cubic feet
- Reduces peak flows (~8%) for all studied storm events
- 2-year event continues to overtop Myrtle Avenue
- Five residences continue to be within 100-year floodplain



## Alternative 8: Storage Area near Leslie Lane

- Existing area is currently undeveloped, mainly consisting of forest
- Proposed flood storage basin has a designed storage capacity of approximately 56,000 cubic feet
- Decreases flows (~5%), minimal reduction in 10-year and 100-year water surface elevations



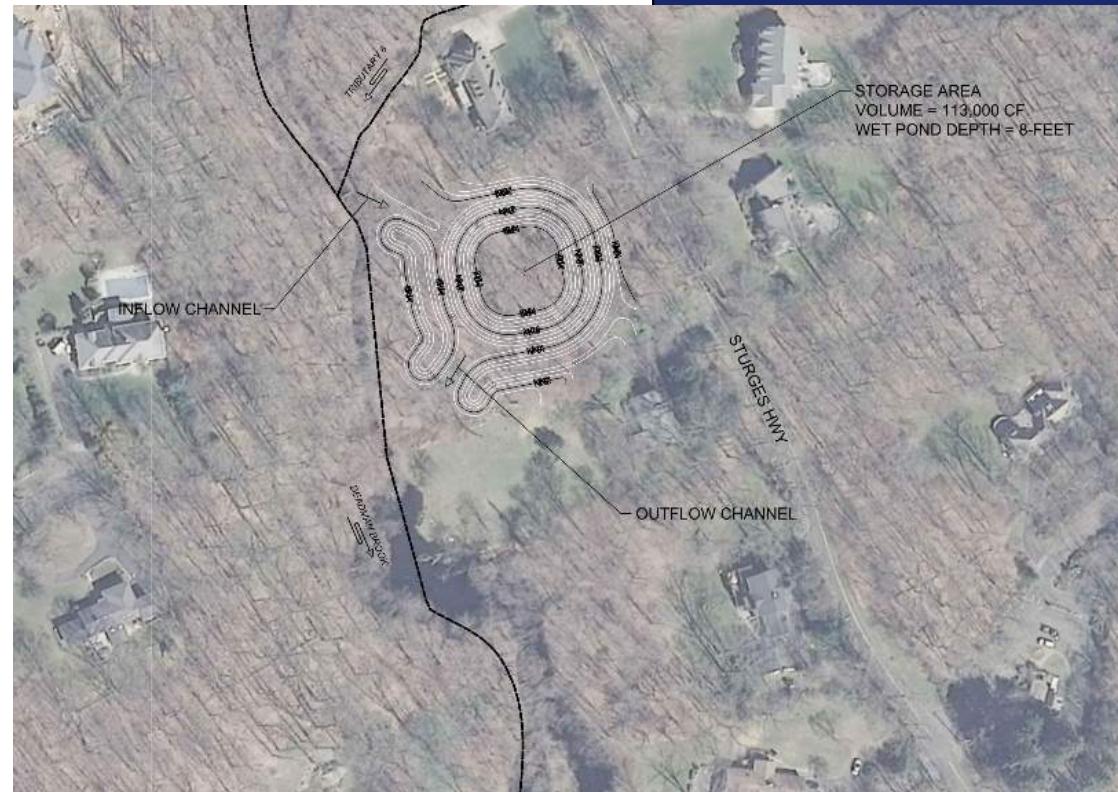
## Alternative 9: Storage Area adjacent to Silent Grove North

- Existing pond has storage capacity of approximately 49,500 cubic feet
- Proposed pond has a designed storage capacity of approximately 400,000 cubic feet
- Fully contains 2-year and 10-year storm events
- Reduces peak flow rates for all storm events studied
- Minimal effect downstream

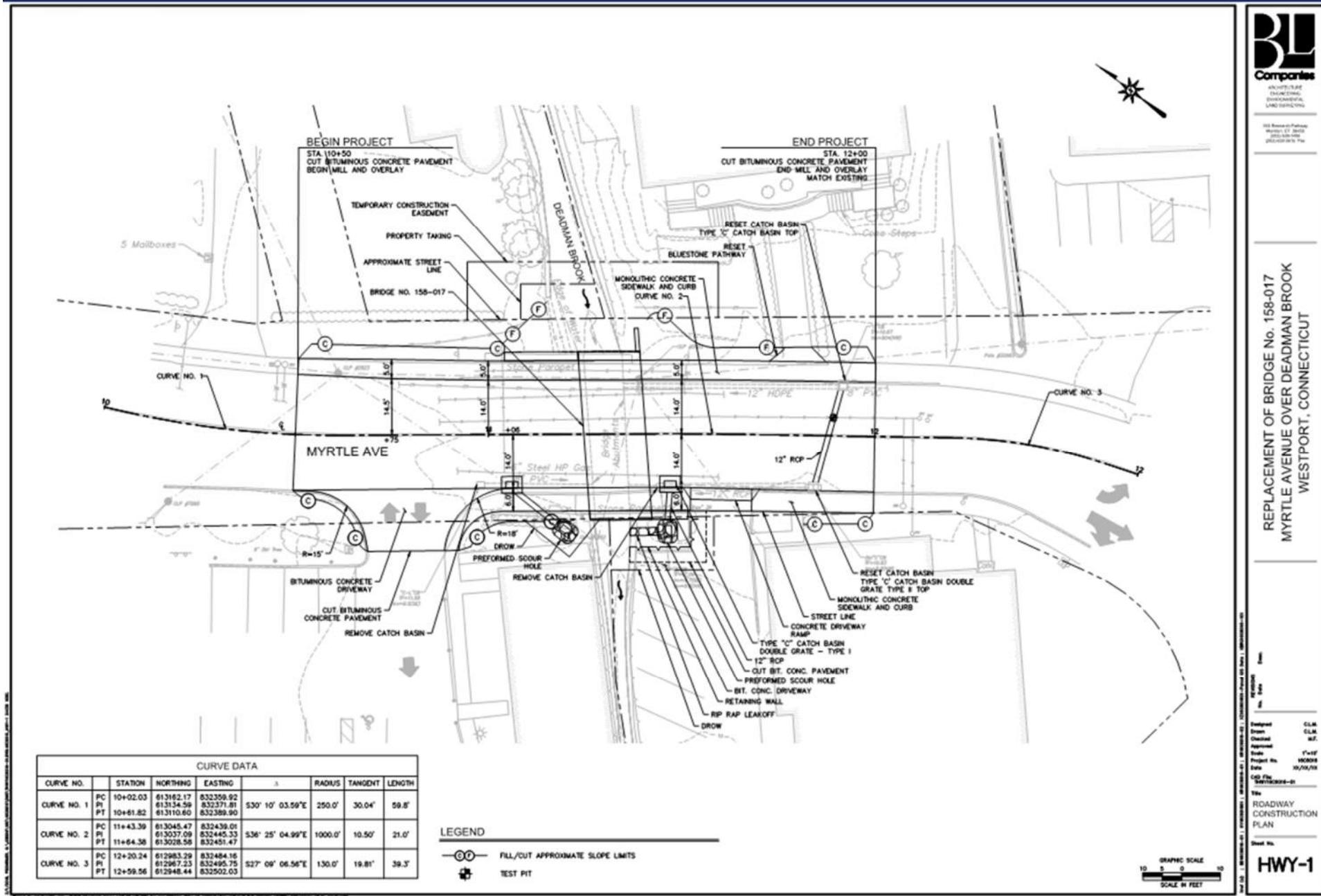


## Alternative 12: Storage Area near Sturges Highway

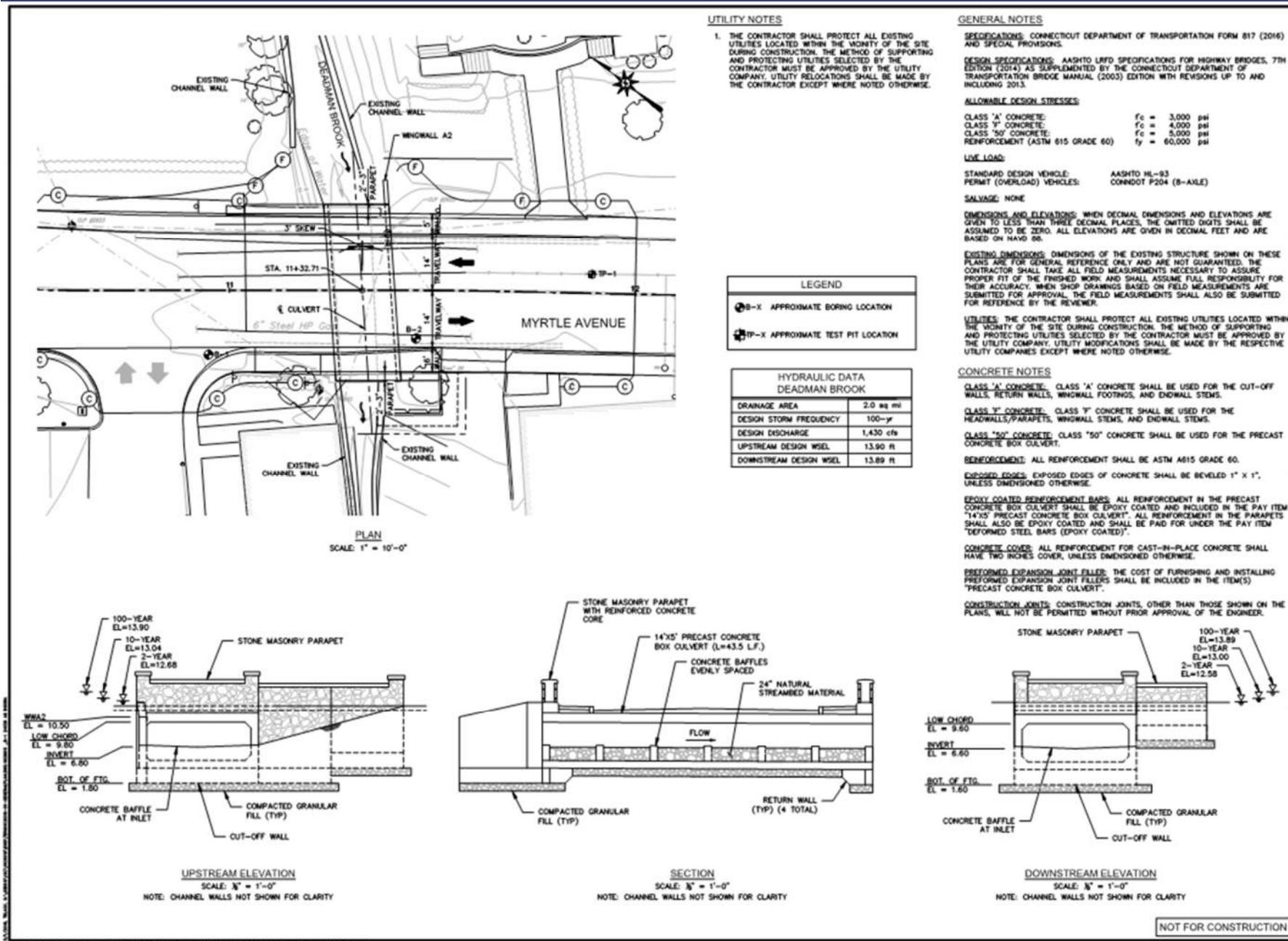
- Existing area is currently undeveloped, mainly consisting of forest
- Proposed storage basin has a design capacity of approximately 113,000 cubic feet
- 5% reduction in downstream flows
- Downstream (Tupelo Road) area not improved



# Myrtle Avenue over Deadman Brook – Roadway Plan



# Myrtle Avenue over Deadman Brook – Bridge Plan

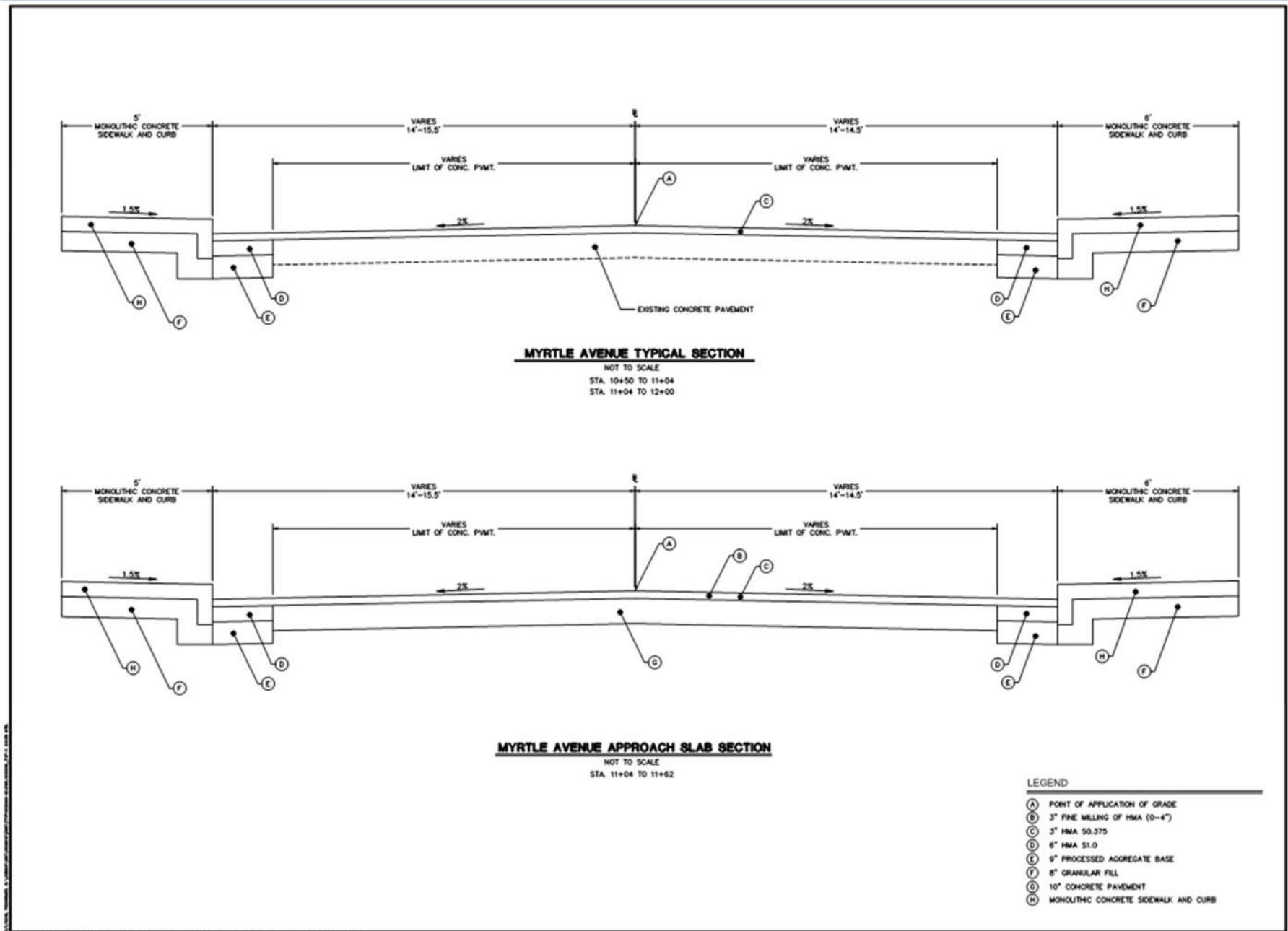


REPLACEMENT OF BRIDGE No. 158-017  
MYRTLE AVENUE OVER DEADMAN BROOK  
WESTPORT, CONNECTICUT



Design: K.L.  
Draw: G.M.  
Check: G.P.  
Approved: G.P.  
Date: 08/09/09  
Project No.: H00008  
Cust. File No.: 00000000-01-GENERAL  
Rev.: 1  
GENERAL PLAN, ELEVATION, AND SECTION  
Sheet No.: S-1

# Myrtle Avenue over Deadman Brook – Roadway Section



ARCHITECTURE  
ENGINEERING  
LANDSCAPING

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(212) 557-1000  
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REPLACEMENT OF BRIDGE No. 158-017  
MYRTLE AVENUE OVER DEADMAN BROOK  
WESTPORT, CONNECTICUT

Design: C.L.M.  
Draw: C.L.M.  
Checked: M.F.  
Approved: N.T.S.  
Project No. HOB088  
Date 10/07/08  
CD File TYP-158-017

Typical  
Roadway  
Section

Sheet No.

**TYP-1**