

**NEWEA & NYWEA Joint Spring Meeting
Technical Conference & Exhibition
June 6, 2016**

Sewer Trunkline Repairs and Stream Stabilization

Anthony Eagan, P.E.

Richard Straut, P.E.



Engineers • Environmental Scientists • Planners • Landscape Architects

Objectives

- History
- Project Background
- Design Components
 - Sewer Investigation
 - Sewer Rehabilitation
 - Stream Realignment
 - Dam Breach
- Next Steps





-

Why is West Trunk Sewer Important?

- 6,000 acre contributory drainage area
- Conveys 65-75% of City flows to the WPCP (WRRF)
- Constructed in 1880s of hand laid brick

Estimated Flows through the West Trunk Sewer to WPCP

	Total Flow		70% of Total Flow			
12 Month Rolling Average	6.3	MGD	4.41	MGD	3,063	GPM
SPDES Permitted Flow	9.0	MGD	6.3	MGD	4,375	GPM
Max Day Flow	13.5	MGD	9.45	MGD	6,563	GPM
Daily Average Flow	4.3	MGD	3.01	MGD	2,090	GPM
Peak Flow	21	MGD	14.7	MGD	10,208	GPM

History

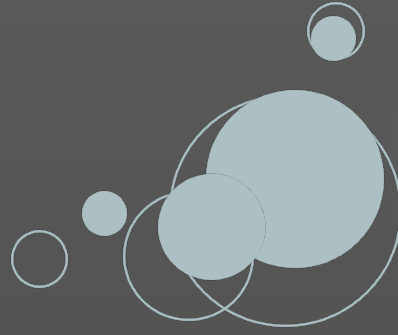
July 16, 2012

Received a call at 6:30 AM Monday Morning from the WWTP Operator that there was significantly reduced flow at the WWTP which is not typical for a Treatment Plant within a Combined Sewer System during a 1.18" rain event.





Immediate Repair



- Contractor Mobilized by 9:30 AM that Morning and after 32 Hours, the Spill was Contained (3:30 AM)
- Contractor has installed five 8' x 8' manholes for access and bypass pumping
- Lined Approximately 1,250 ft of 54-inch sewer
- Contractor continued inspections, and lining operations, as well as restoration of the disturbed area throughout August & September.

October 5, 2012

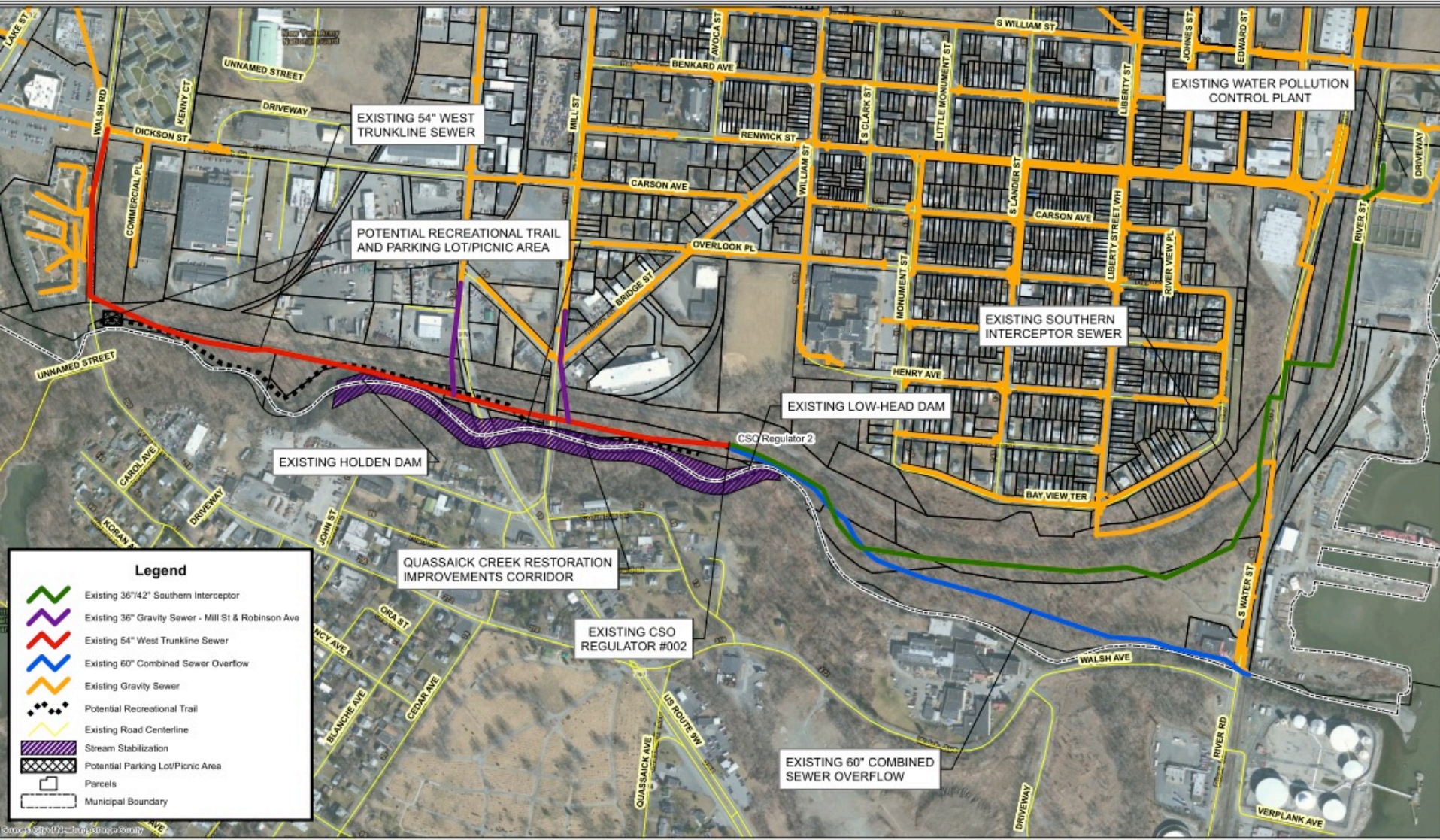


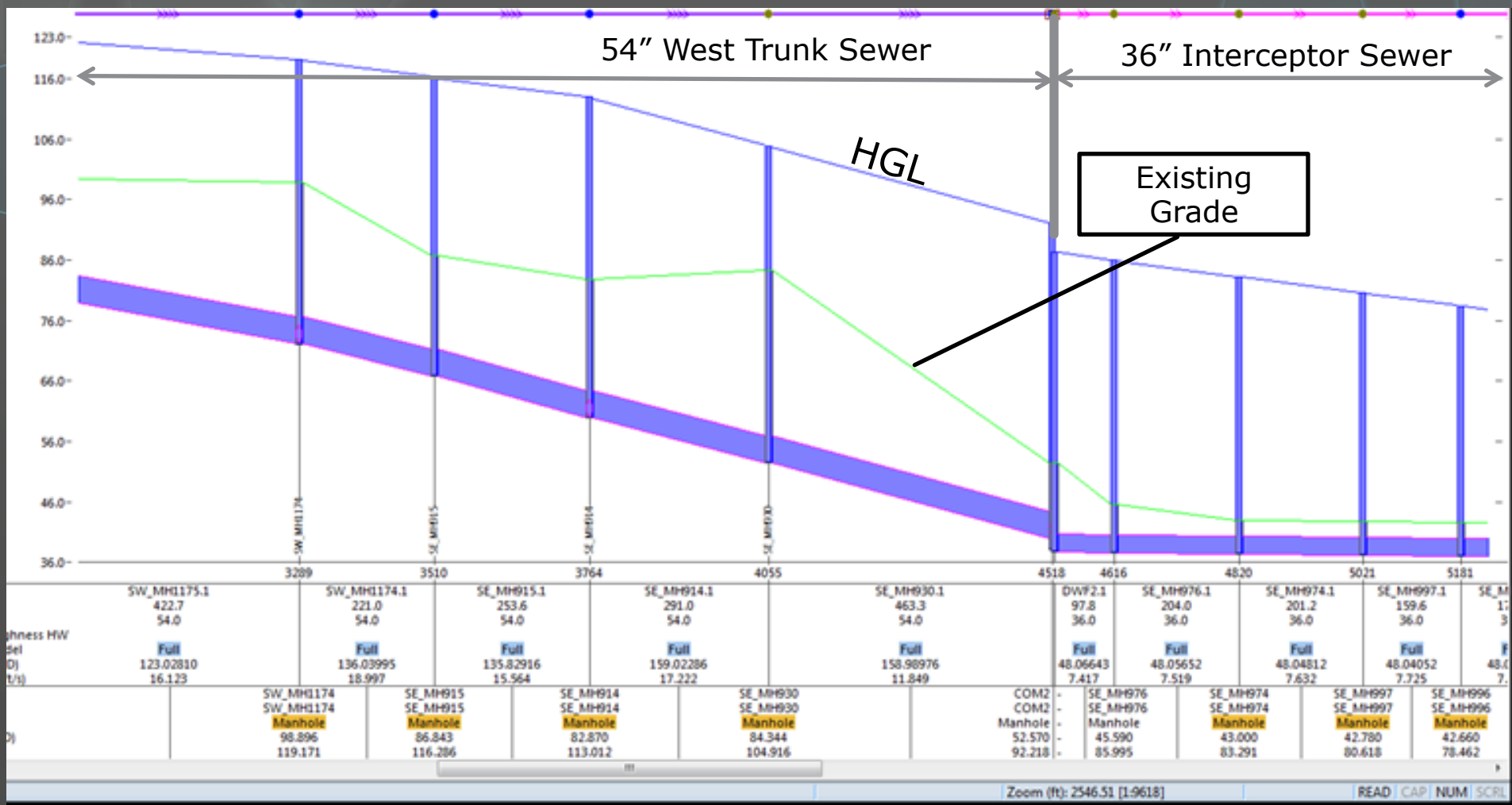
Immediate Repair

- Just Spent \$0.85 million
- 2.5 months conducting repairs
- Exhausted City Sewer Fund Reserve - programmed for other Capital Improvements
- Newburgh Fiscal Recovery Act – August 2010
- City Bond Rating - Ba1
Bonds 4.3%+/- interest
- Over 1,000 ft of 12-inch Bypass Piping was in place at 9:30 PM
 - Bypass Piping Pipe had to come from Albany
 - Clean out downstream piping and regulator
- Repair was completed by 5:00 AM

City Manager Declares State of Emergency to Facilitate Continued Repairs to West Trunk Sewer Line

Project Overview





Calculated Manning Capacity of the 54" West Trunkline Sewer 165 MGD

Calculate Manning Capacity of the 36" Interceptor Sewer 19.2 MGD

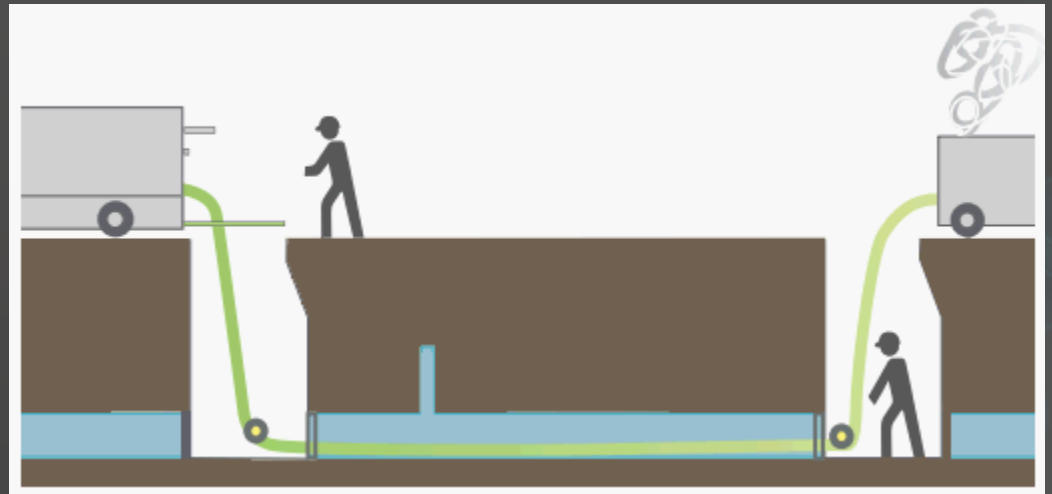
Twelve Month Permitted Average Flow at the WRRF 9 MGD

Sanitary Sewer Investigation

- \$9.1 Million dollars obtained through NYSEFC from Clean Water Funds
 - 50% zero interest 50% subsidized interest
- CCTV Completed as a Subcontract to Engineer - July 2015
- Contractor was able to uncover 8 manholes for access
- Contractor removed nearly 100 yards of material from sewers. (West Trunk Sewer from MH5 to Reg #002 was lined in 2012)
- Manhole Locating and Sewer Locating through Summer/Fall 2015

Sewer Pipe Rehabilitation – Contract 1

- Cured-in-place pipe (CIPP) 54-inch Walsh Rd to MH 5
- CIPP 36-inch Robinson Ave
- CIPP 18/24-inch Mill St
- Manhole rehabilitation (MH's 5, 4, 3, 2, 1)



Sewer Pipe Rehabilitation – Contract 2

- Spot repairs along overflow and interceptor
- Centrifugally Cast Concrete Pipe overflow



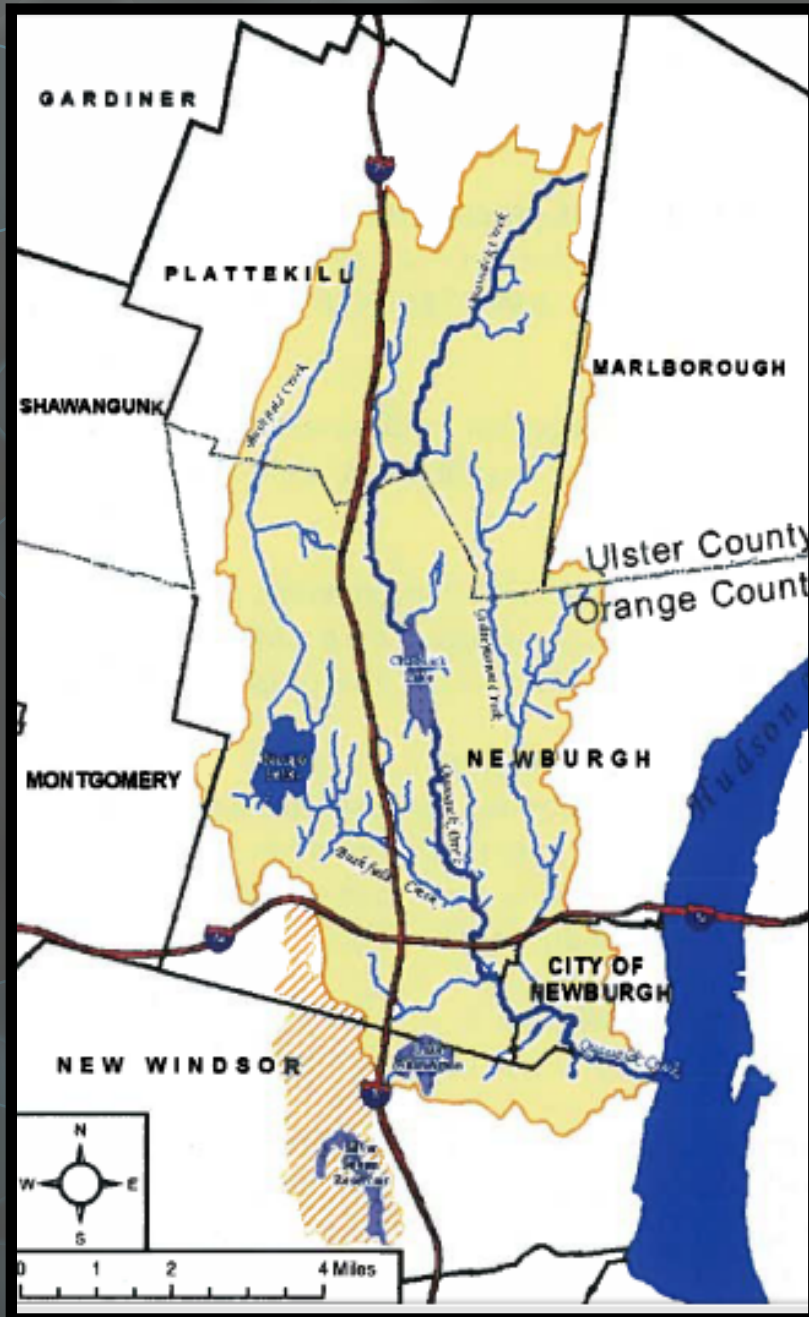
How to prevent this from occurring again?

Severe Bank
Erosion



Quassaick Creek

- 50 Sq. Mile Drainage Area
- Five Municipalities, Two Counties





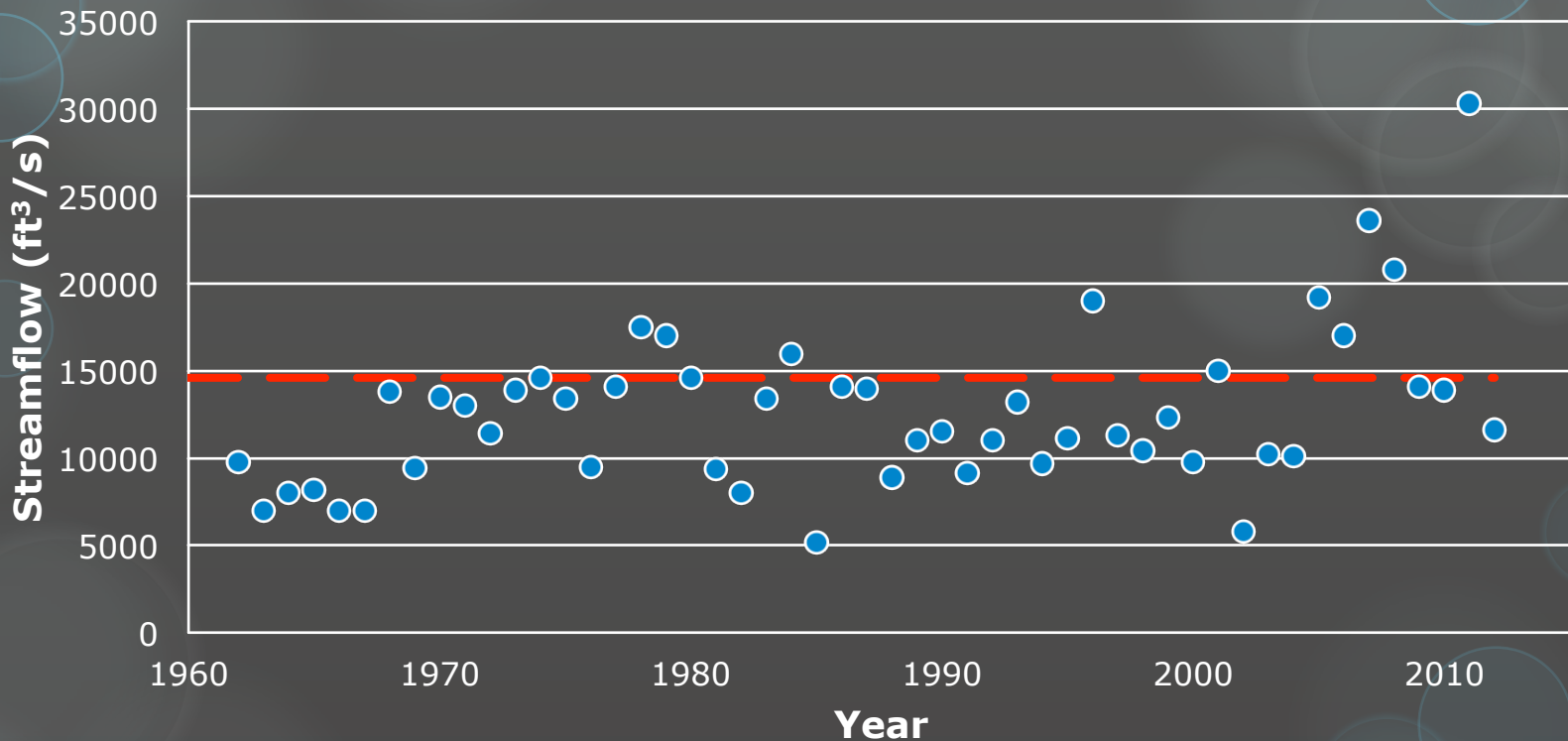
Unconfined Channel

- Reduced depth and velocity
- Reduced shear stress
- Lower erosion potential

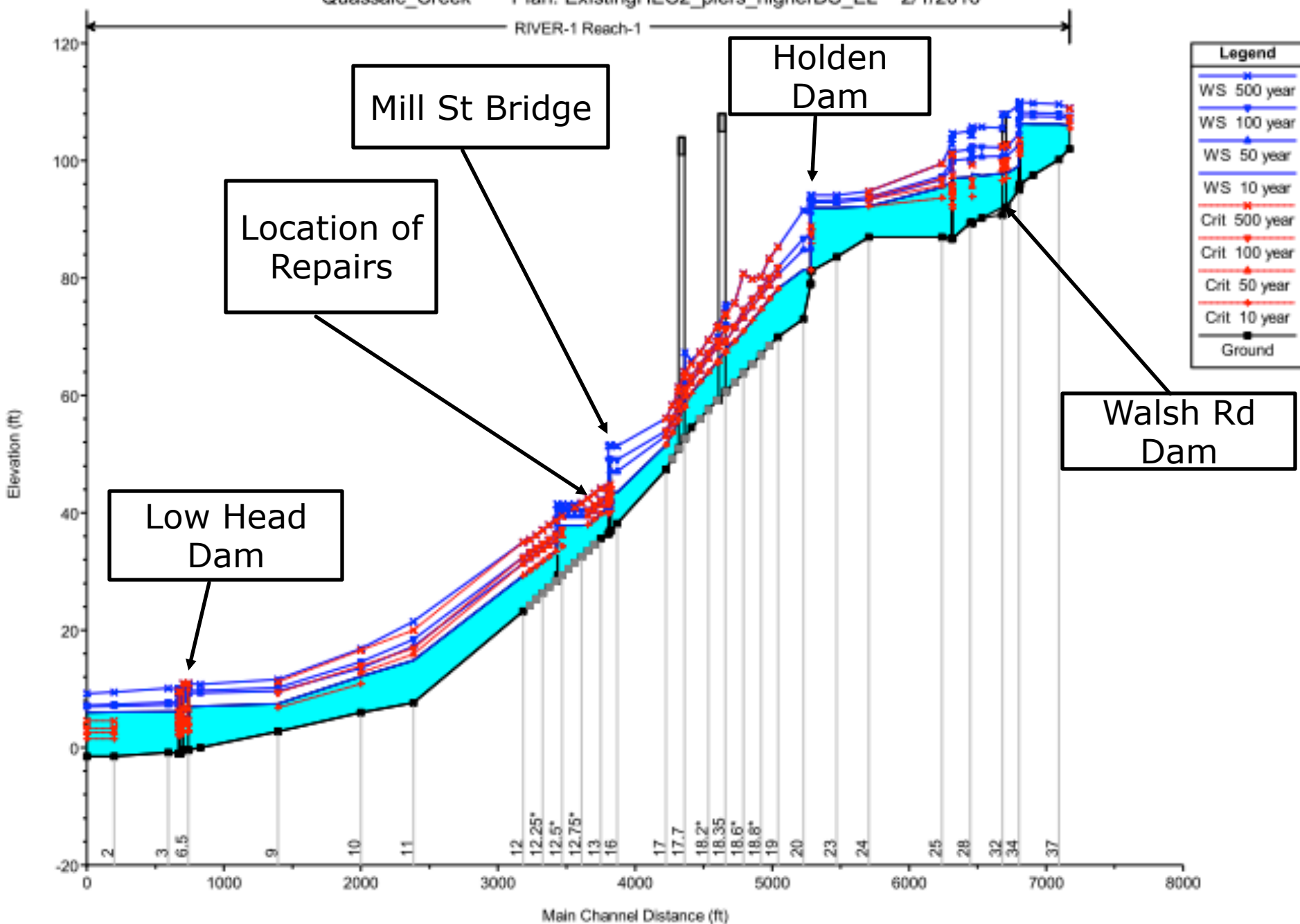
Laterally Confined (Entrenched) Channel

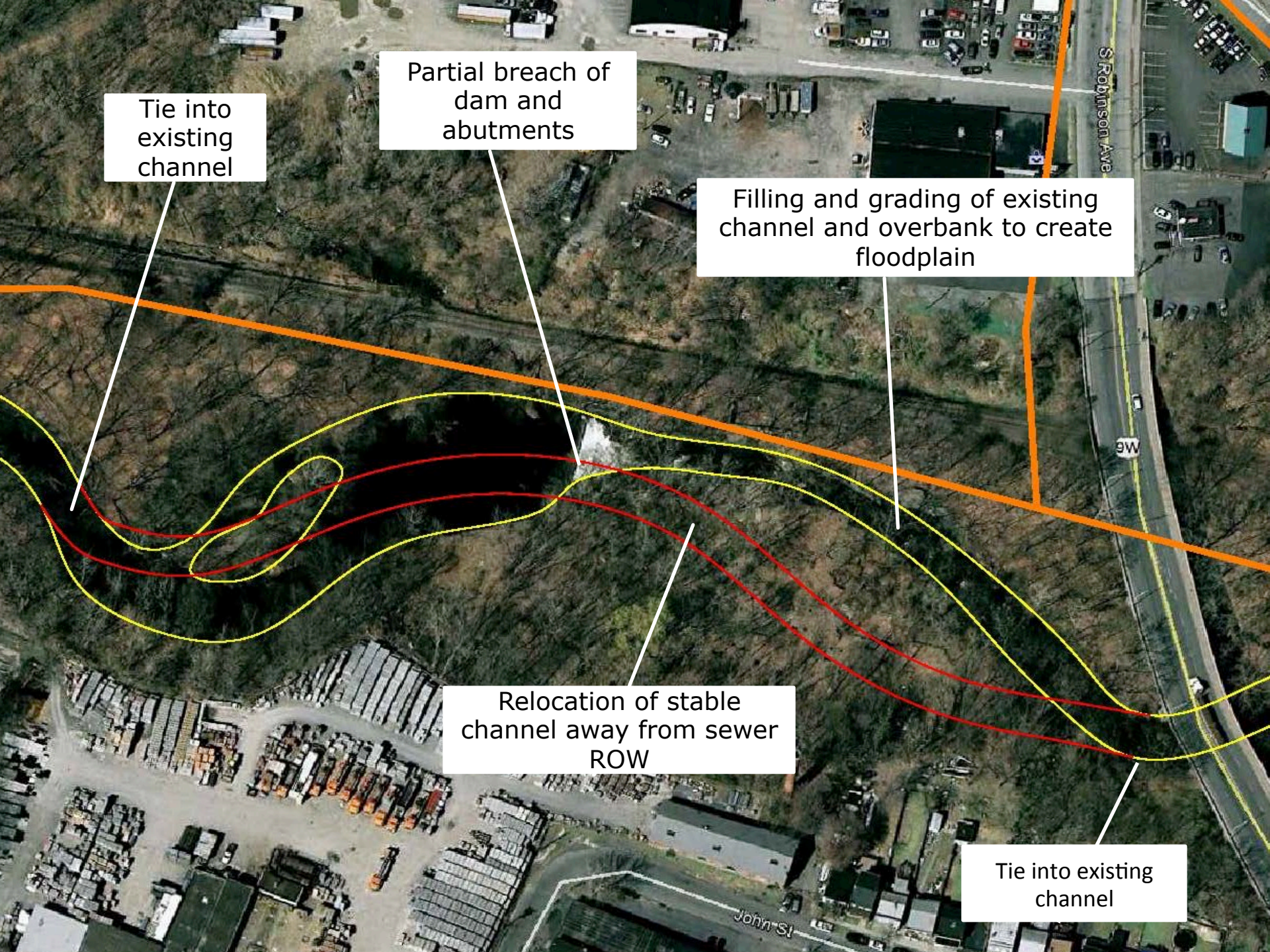
- Increased depth and velocity
- Higher shear stress
- Greater erosion potential

Peak Annual Streamflow Wallkill River - Gardiner, NY



- 1960 – 2000 (40 years) → 4 floods exceed 80th percentile
- 2000 – 2010 (10 years) → 6 floods exceed 80th percentile





Tie into
existing
channel

Partial breach of
dam and
abutments

Filling and grading of existing
channel and overbank to create
floodplain

Relocation of stable
channel away from sewer
ROW

Tie into existing
channel

**Tie to existing
stream channel**

**Existing Holden
Dam**

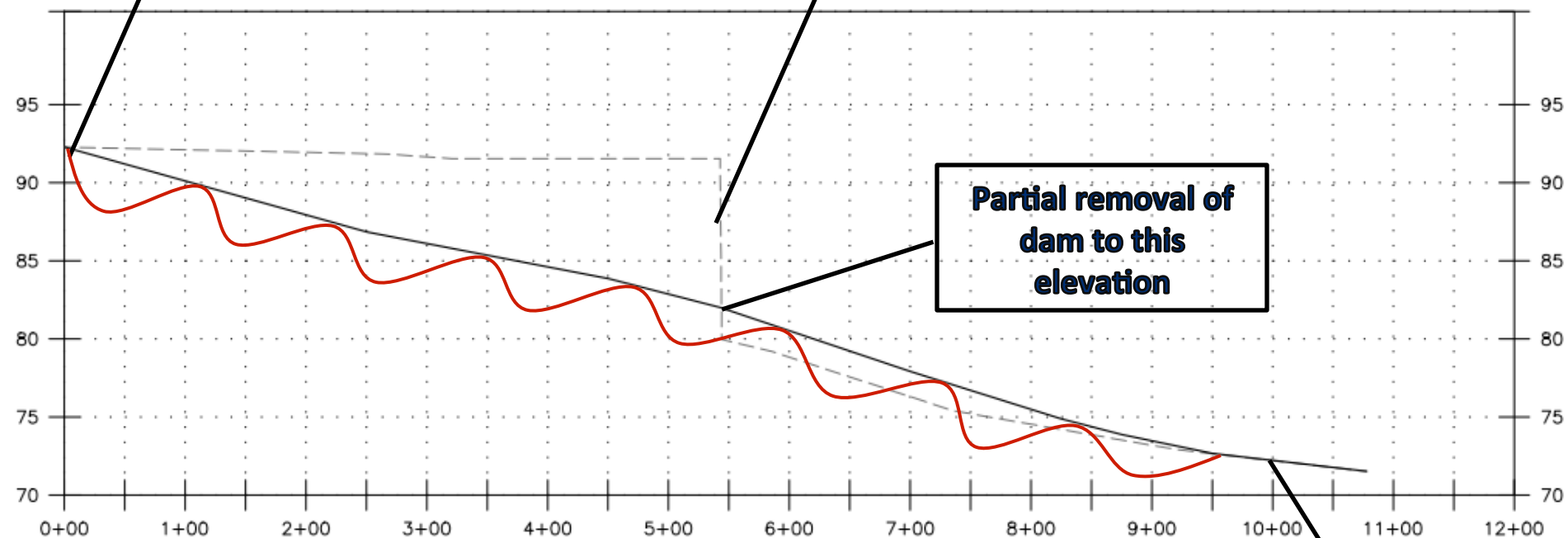
**Partial removal of
dam to this
elevation**

**Tie to existing
stream channel**

LEGEND

—— PROPOSED
----- EXISTING

STREAM PROFILE



Why Breach the Dam and Relocate the Stream?

- **Relocate active channel away from sewer ROW**
 - Eliminate risk of stream encroachment
- **Construct stable channel to reduce bank erosion**
 - Eliminate recurring risk of bank failure
- **Create wide floodplain buffer to protect sewer ROW**
 - Provide additional structural stability to sewer line
- **Eliminate concrete channel**
 - Remove risk to longevity of sewer line

Next Steps...

- **Design of Sewer Lining is nearly complete - Summer 2016**
 - **CIPP Polyester Felt 54" West Trunkline Sewer – Contract 1**
 - **Cementitious Lining 60" Overflow Pipe – Contract 2**
 - **Bid Late Summer 2016; Contracts Complete - Spring 2017**
- **Contaminated Materials Testing - Summer 2016**
- **Final Design & Permitting of Stream - Fall 2016**
- **Stream Stabilization and Dam Breach Bid - Winter 2017**
- **Construction Completion – February 2018**

Thank You!



Anthony Eagan, P.E.

aeagan@bartonandloguidice.com

Richard Straut, P.E.

rstraut@bartonandloguidice.com



Engineers • Environmental Scientists • Planners • Landscape Architects