

McLane and Goldman Dam Removal Feasibility and Impact Assessment

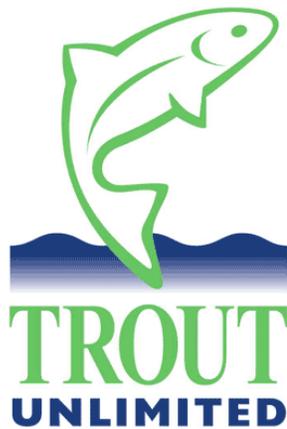
Public Meeting
September 10, 2014
Milford Town Hall



Agenda

Item	Presenter
Welcome and Introductions	Guy Scaife, Town Administrator
Presentation: Feasibility and Impact Assessment	Mark Wamser and Lori Siegel, Gomez and Sullivan Engineers
Presentation: Next Steps	Mark Wamser
Public Comments and Questions	Mark Wamser, Lori Siegel, Project Partners

Project Partners and Funding Sources



Key Project Partners

Partner Name	Affiliation
Guy Scaife	Milford Town Administrator
Debbie Loiselle	NH Department of Environmental Services
Steve Landry	NH Department of Environmental Services
Eric Hutchins	National Oceanic and Atmospheric Administration
Eric Derleth	US Fish and Wildlife Service

Meeting Logistics

- Please hold questions until after presentation.
- Limit Q & A to 5 minutes per speaker. May be allowed another 5 minutes pending number of speakers.
- Technical questions- please provide technical questions in writing (written comment due dates discussed at end of presentation).

Purpose of Meeting

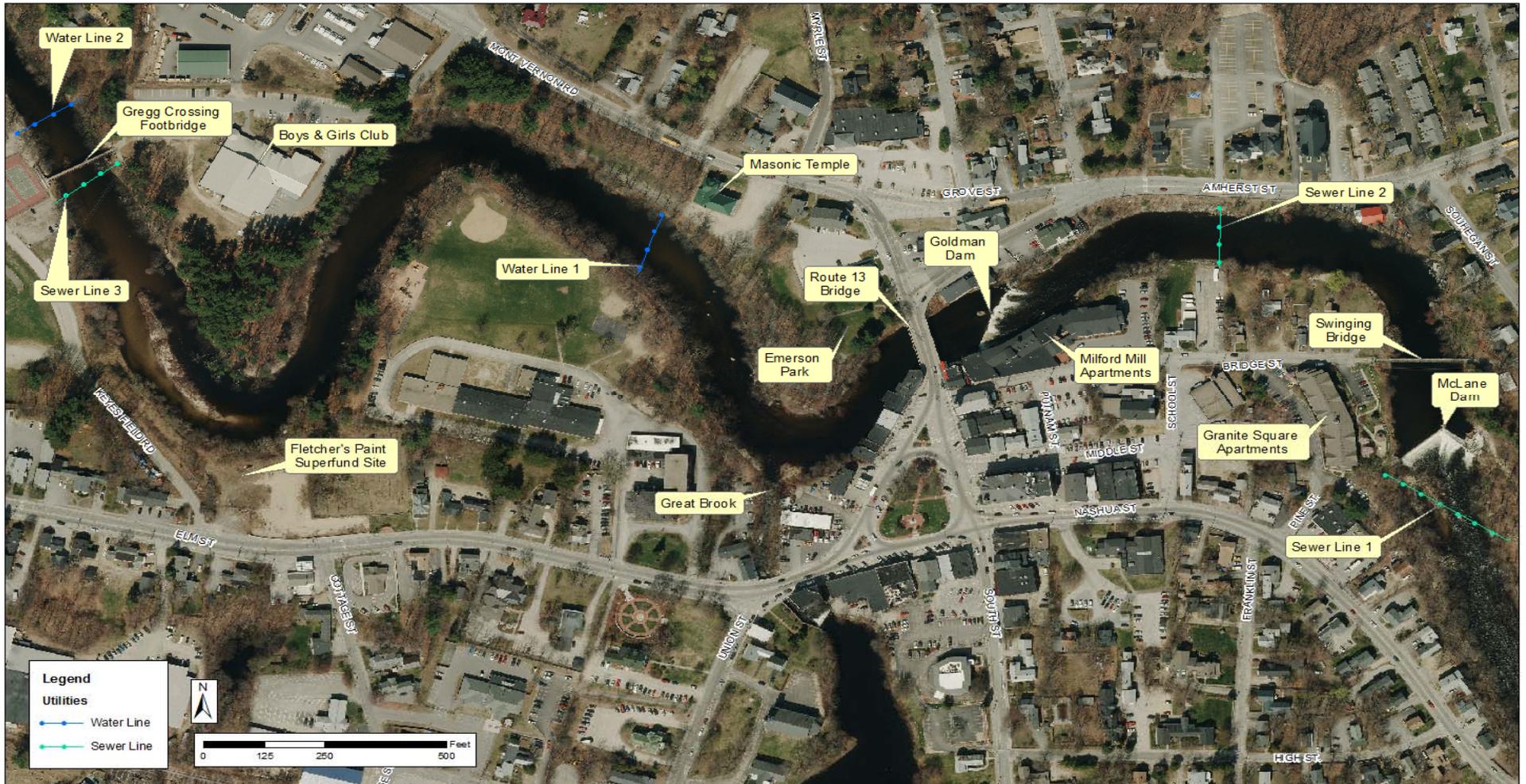
- Review feasibility and impact assessment of potential removal of McLane and Goldman Dams.
- Discuss next steps.
- Allow for Q & A.

No decisions have been made relative to dam removal—only providing factual information at this time.

What Prompted Potential Dam Removal?

- In recent years (4/07, 3/10) town experienced flooding. Will removing dams reduce flooding?
- The impoundments created by the dams have water quality issues significant enough to warrant action. Will removing dams improve river quality?
- The dams are physical barriers to fish passage and other aquatic organisms.
- Dam ownership = costs associated with ownership (NHDES dam registration, operation & maintenance), and liability.
- Grant funding was available to defray costs associated with dam removal feasibility study and impact assessment.

Project Layout



McLane Dam

- Town-Owned.
- Rebuilt in 1992; good condition.
- ~18 feet high.
- Operates as “run-of-river” facility.
- Provides no flood protection.
- NHDES classifies dam as Low Hazard.
- NHDES issued Town **Letter of Deficiency (LOD)** in 2009 identifying deficiencies, all issues were addressed. Next inspection: 2015.
- In 2009, Private entity considered hydropower at site, but withdrew pursuit.

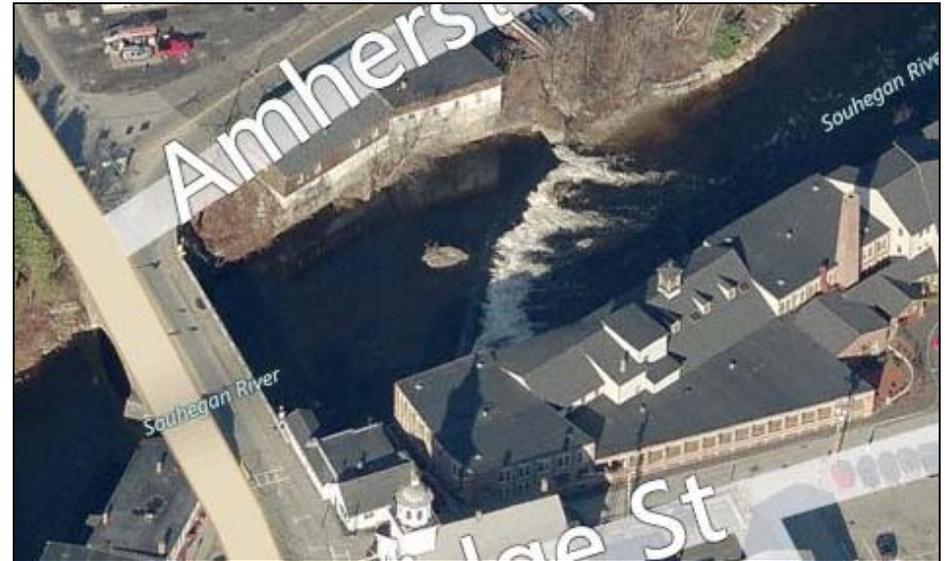


Source: Google



Goldman Dam

- Owned by Helen Goodwin Estate- college student in New Mexico.
- Rebuilt in 1960's; fair condition.
- ~0.5-6 feet high.
- Operates as “run-of-river” facility.
- Provides no flood protection.
- NHDES classifies dam as Low Hazard.
- NHDES issued **Notice of Inspection** in 2013 identifying issues; but no schedule was set for addressing issues since these issues do not “*detract from the dam’s structural integrity or operability*”. Next inspection: 2018.
- Per NHDES, Town has no legal or financial obligation to maintain or operate dam.



Source: Google



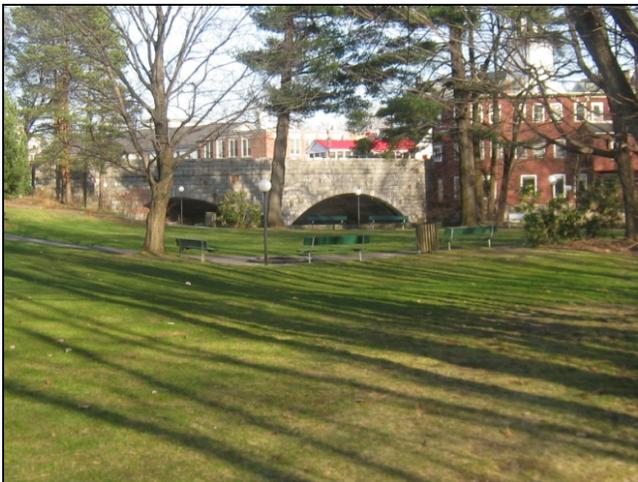
Project Features



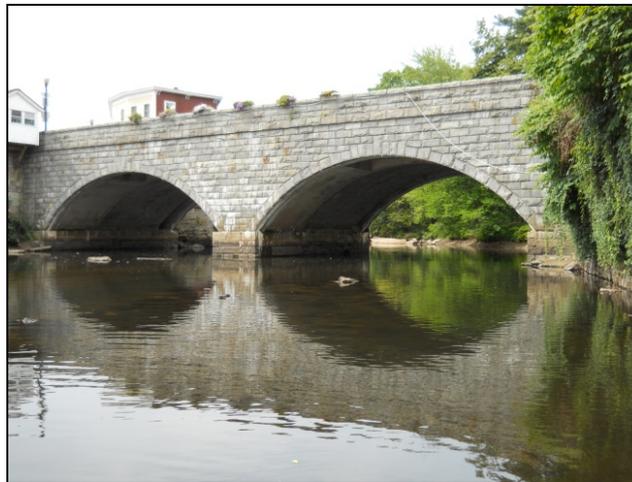
● Gregg Footbridge



● Fletchers Paint Site



● Emerson Park



● Route 13 Bridge



Source: Google

Project Features



● Goldman Dam/Milford Mill Apt



● Armored Shoreline



● Swinging Bridge



● Granite Square Apt

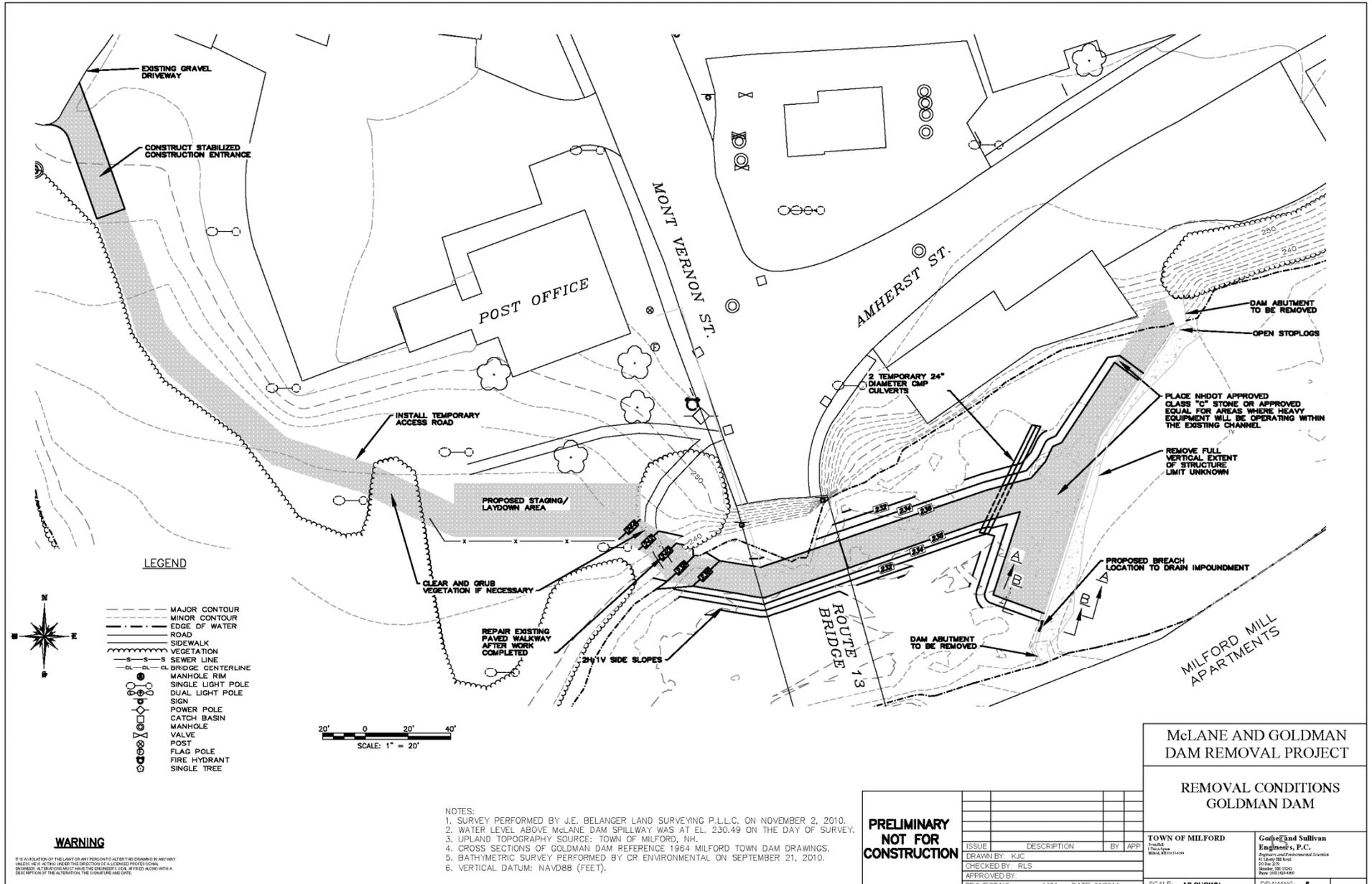


Source: Google

Alternatives Evaluated

- Status Quo- Existing Conditions.
- Full Dam Removal of both Dams.
- Assumptions Associated with Full Dam Removal Alternative.
 - Impounded sediments behind both dams may naturally transport downstream after dam removal; no dredging. Has not been approved by State or Federal agencies at this juncture.
 - McLane Dam would be removed first, followed by Goldman Dam.
 - Removal would occur in the summer low flow period.
 - Any easements needed to access the dams for removal have not been obtained.

Goldman Dam- Conceptual Removal Plan (Option 1- Access from Masonic Temple/Emerson Park)



PRELIMINARY NOT FOR CONSTRUCTION			TOWN OF MILFORD	
			14474 1000 N. Rte. 101 Milford, NH 03055	
			Goette and Sullivan Engineers, P.C. 1000 North Main Street Concord, NH 03301 Phone: 603.224.1000 Fax: 603.224.1000	
			SCALE: AS SHOWN DRAWING: 5	
ISSUE	DESCRIPTION	BY	APP	
	DRAWN BY: KJC			
	CHECKED BY: RLS			
APPROVED BY:				
PROJECT NO.	1474	DATE:	03/2014	

McLANE AND GOLDMAN
DAM REMOVAL PROJECT

REMOVAL CONDITIONS
GOLDMAN DAM

Competing Issues Assessed for Two Alternatives

- Flooding
- Infrastructure (water/sewer lines, Route 13 Bridge)
- Wells, Fire, Traffic
- Water Quality
- Fisheries
- Sediment
- Wetlands, Rare, Threatened and Endangered Species
- Historic Structures
- Archaeological Resources
- Recreation Resources
- Aesthetic Resources

Will removing the dams reduce upstream flooding?

- Developed a hydraulic model of the river extending from below McLane Dam to above the Gregg Footbridge.
- Model is used to predict the depth, velocity and width of the river under dam-in and dam-out conditions.

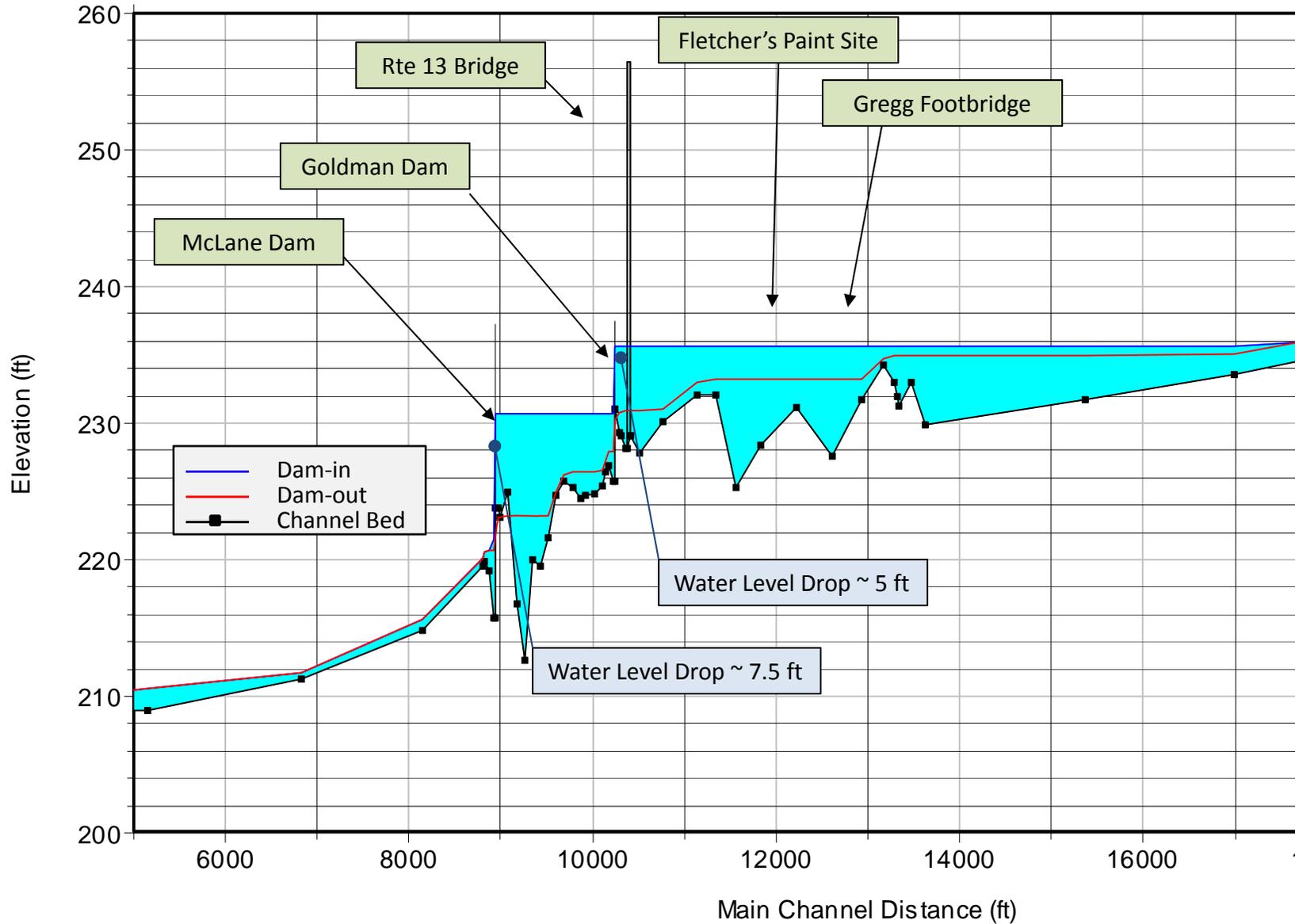


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Source: Unknown

River Profile- Low Flow (33 cfs)- under Dams-In and Dams-Out



Plan View- Low Flow (33 cfs)- under Dams-In and Dams-Out

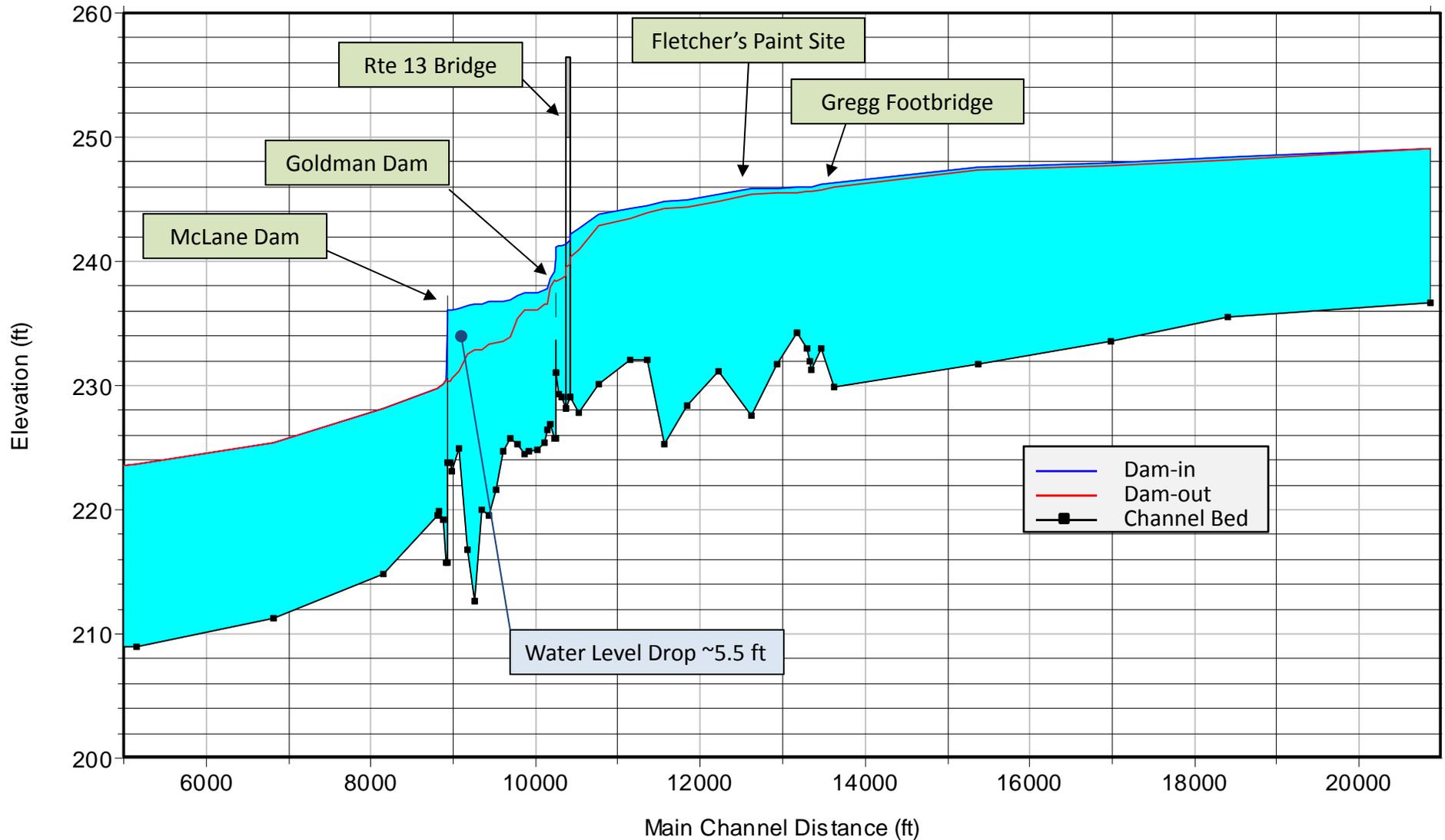


Goldman Dam gate left open
Summer low flow picture

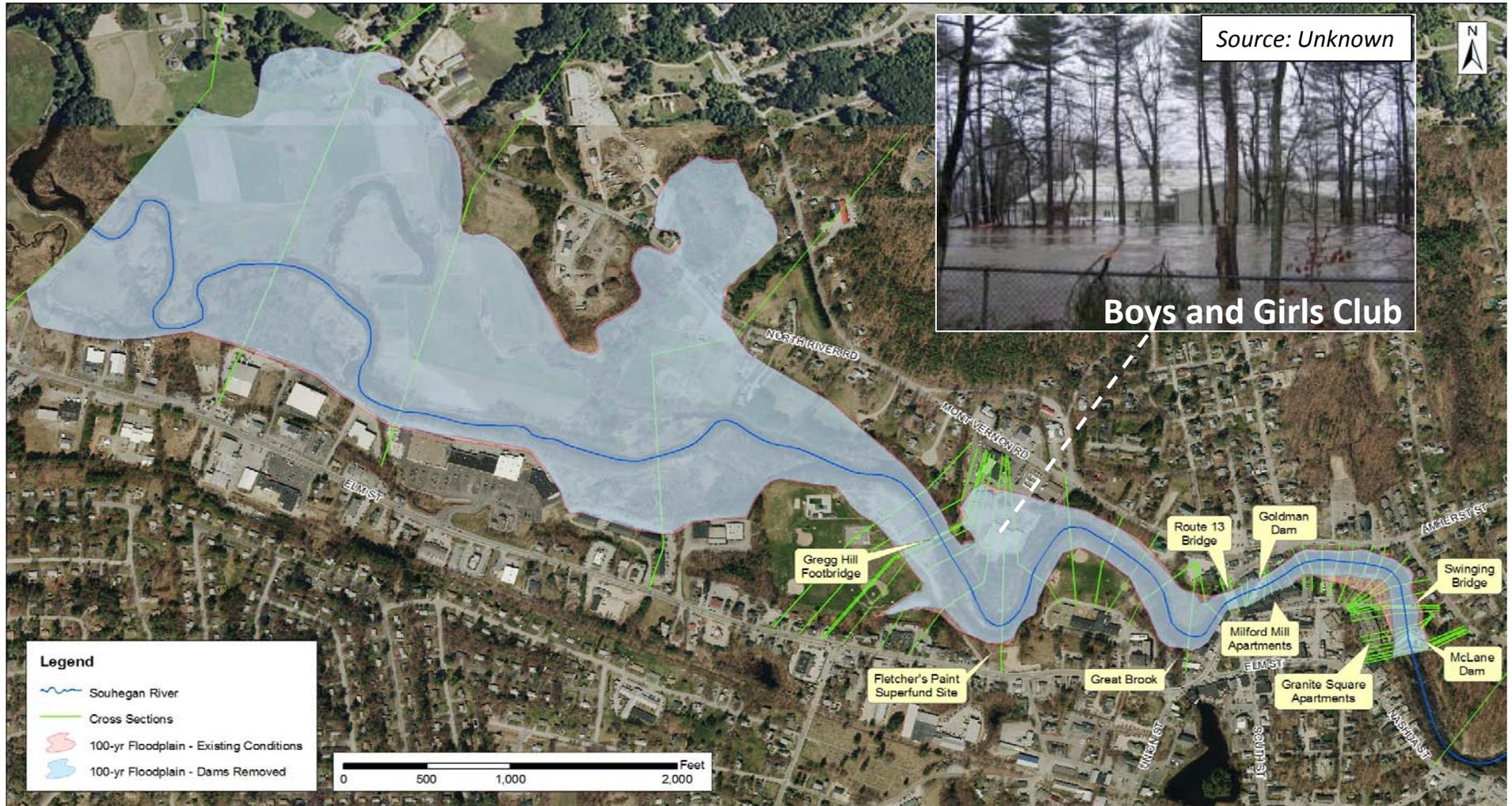
Looking downstream
from Gregg Footbridge



River Profile- 100-yr Flow (10,800 cfs)- under Dams-In and Dams-Out



Plan View- 100-yr Flow (10,800 cfs)- under Dams-In and Dams-Out

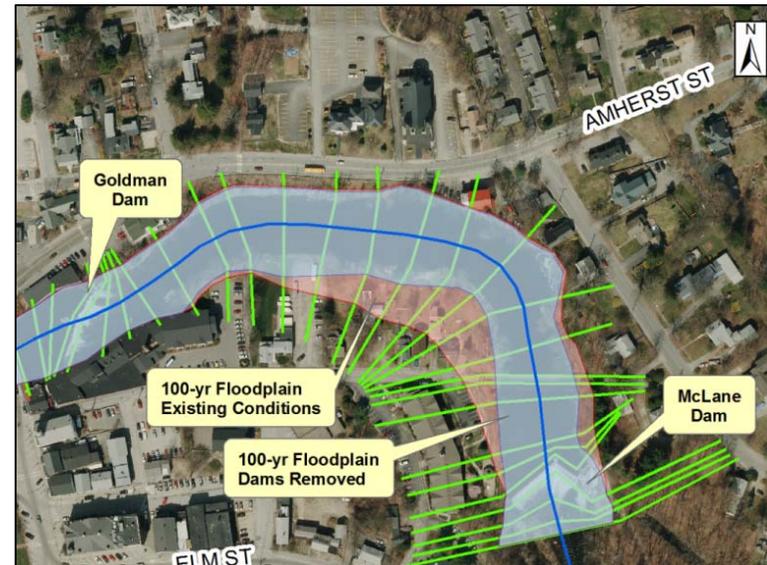


Summary of Findings

- Removing Goldman Dam provides minimal flood reduction benefits.
- Removing McLane Dam, under the 100-yr flood, provides flood reduction benefits to ~ 7 landowners on the inside bend of the river.



Goldman Dam – Apr 2007 ~ 50-yr flood
Under 100-yr flood dam likely not seen
Source: Unknown



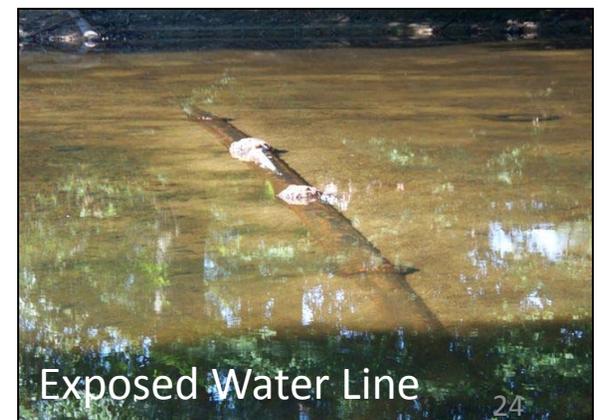
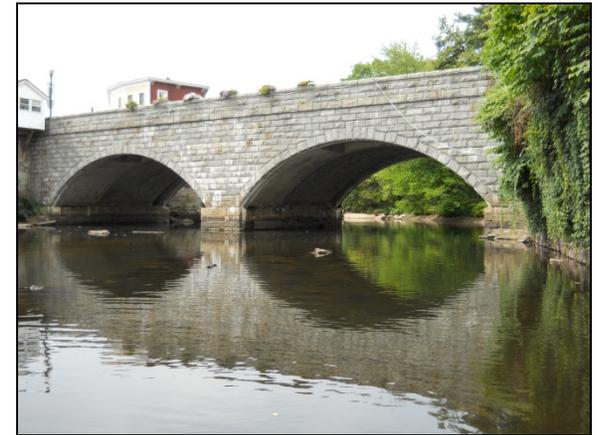
Above McLane Dam – 100-yr flood

Infrastructure

- Route 13 Bridge- Geophysical study concluded: *“The results of this test indicate that the abutments and piers have a high probability of being partially founded on bedrock”*. Dam removal unlikely to impact bridge.

↓ Scour potential

- 2 water lines and 2 sewer lines crossing impounded reaches. One sewer line (inset) between dams to be investigated further. Dam removal unlikely to impact remaining water and sewer lines, except water line behind Masonic Temple.



Exposed Water Line

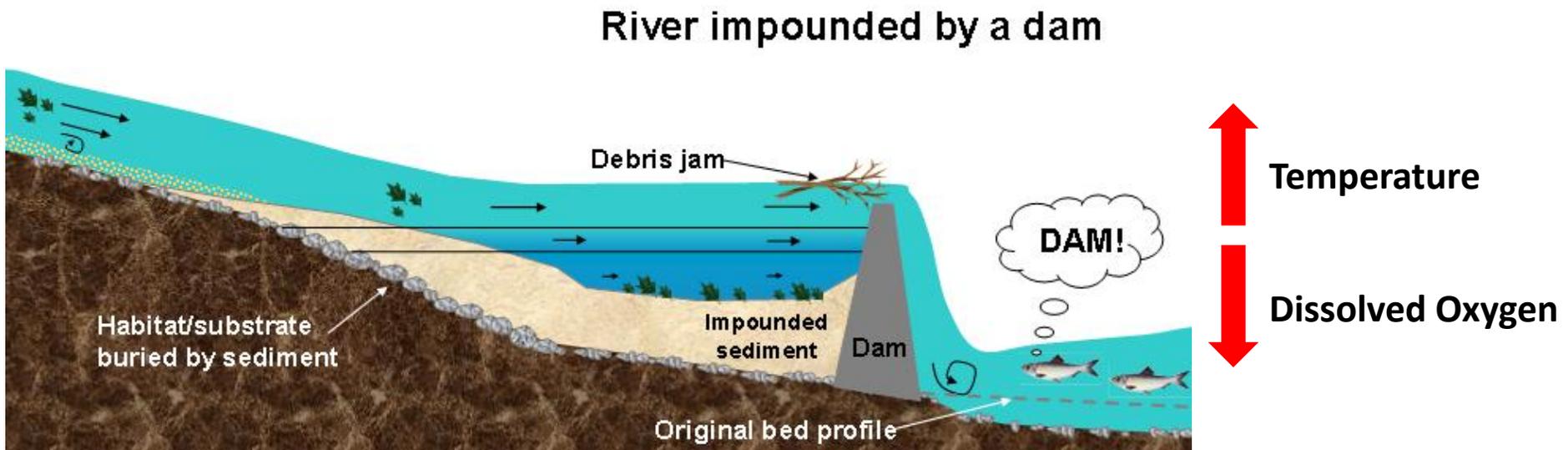
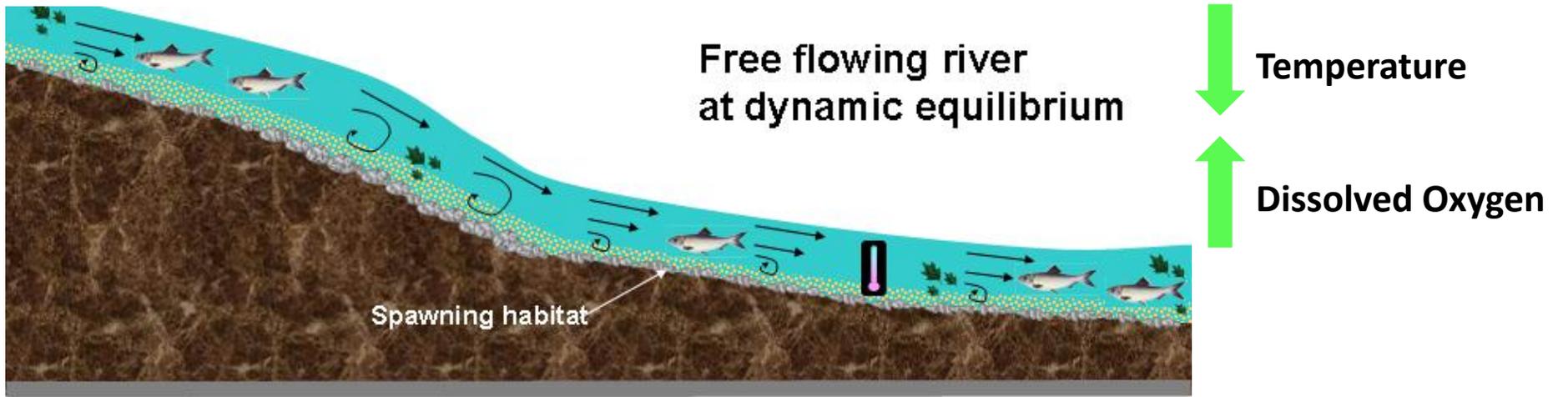
Wells, Fire, Traffic, Hydropower

- Town serviced by public water and sewer, thus dam removal would have no impact on wells.
- Fire Department indicated impoundments are not used as a source of water to fight fires or fill pumper trucks.
- Traffic control- dam removal would result in temporary impact on traffic during debris hauling; may require traffic control or hauling during off-peak traffic hours.
- In 2009, private entity considered installing hydropower at McLane Dam, but was dropped. Gomez and Sullivan conducted independent hydropower feasibility assessment for Town in 2009; conclusion-- not economical. Goldman also not economical for hydropower.

River Quality

- Goldman and McLane Impoundments are on the 303(d) list for impaired and threatened waters that the Clean Water Act requires all states to submit for EPA approval every two years.
 - Goldman- dissolved oxygen and mercury
 - McLane- *e. coli* and mercury
- No detailed water quality study conducted, but ample scientific literature demonstrating impact of dams on water quality.
- The impoundments artificially increase water temperatures as it takes longer for a drop of water to enter/exit the impoundment.
- Dam removal will likely decrease water temperatures and increase dissolved oxygen as the water tumbles over rocks (aerates), instead of being stagnant.
- Unclear if dam removal would have any impact on *e.coli* and mercury.

River Quality



Source: Laura Wildman, Princeton Hydro

Fisheries

- Migratory fish (herring, shad, eels) have upstream and downstream passage from the Ocean to McLane Dam. Fish passage provided at 2 dams on Merrimack River; no dams on Souhegan River below McLane Dam. No formal upstream or downstream fish passage at McLane or Goldman Dams.
- Dams serve as barriers to free upstream and downstream movement of fish, mussels, crayfish and other aquatic resources.
- Dam removal would open up 6 more miles of free-flowing habitat up to the next dam in Wilton (Pine Valley Dam).

Year	Essex Dam	Pawtucket Dam
2012	8,992 herring 21,396 shad	1,809 herring 13,490 shad
2013	17,389 herring 37,490 shad	13,490 herring 9,350 shad
2014	33,515 herring 32,546 shad	23,696 herring 2,937 shad

