



SUMMARY OF ALTERNATIVES
Oyster River Dam at Mill Pond - Feasibility Study
Oyster River, Durham, New Hampshire

	Alternative 3 Dam Stabilization	Alternative 5 Dam Removal
Initial Capital Cost - Dam Infrastructure	\$913,000	\$603,000
Initial Capital Cost - Environmental Component	\$3,150,000 (1)	\$711,000 (2)
Total Capital Cost w/ Environmental Components	\$4,063,000	\$1,314,000
30-year Life-Cycle Cost (with Env Components)	\$5,114,414	\$1,333,600
Description of Alternative	This alternative would fill the interior spillway cells of the dam with concrete to form a mass concrete section that is reinforced and anchored into the underlying bedrock. The dam spillway would be retained in its current configuration, with no measurable changes to water depths or surface area within the impoundment. This alternative does not comply with NHDES Dam safety regulations regarding the spillway design flood for a low-hazard dam, and would therefore require NHDES to approve a "non-menace waiver," contingent on several conditions.	This alternative would include the removal of the existing dam spillway and fish ladder, while preserving the abutments and restoring the Oyster River channel through the project area. This alternative would eliminate the dam safety hazard and therefore relieve the Town from future regulatory requirements.
Description of Environmental Component	<i>Option 1 - Pond Restoration Dredging</i> - In order to address decreased water depth and poor water quality, 11,000 cubic yards of sediment could be removed from the pond. This would convert approximately 2.4 acres of wetland to deep water habitat. (3)	<i>Option 2 - Active Channel Restoration</i> - To mitigate potential sediment impacts, active restoration of the Oyster River channel upstream of the dam site would involve channel shaping approximately 600 feet upstream of the dam to stabilize the channel and remove approximately 3,000 cubic yards of sediment deposited in the Mill Pond impoundment. The channel would be reshaped to a roughly 42-foot bankfull width, incorporating a 12-foot wide low-flow channel, to provide fish passage under low flow conditions.
Achieve Dam Safety?	Requires NHDES non-menace waiver	Yes
Reduce Flooding?	No	Moderate Benefit
Improve Fish Passage?	No	Major Benefit
Improve Water Quality?	Minor temporary potential benefit (Option 1)	Major Benefit
Hydraulic Effects	No change from existing condition, unless pond is dredged, which would increase average depth of the pond from approximately 2.2 ft to 3.7 ft (median annual flow).	Dam removal would lower the hydraulic control of the river by approximately 9.6 feet. During typical conditions (median annual flow), the upstream surface water would decrease from 19.7 acres to 5.4 acres. Average depth would decrease from 3.3 ft to 1.4 ft. Dam removal would also restore tidal flow upstream of the dam, possibly as far upstream as Hamel Brook.
Sediment Transport/Erosion	Interrupts natural sediment transport processes.	Restores natural sediment transport processes; accumulated sediments will remobilize. This would be mitigated through active channel restoration.
Bridges, Walls, Foundations	No effect relative to existing condition.	Dam Removal would not adversely affect the downstream NH 108 Bridge or pedestrian bridge. Remaining walls could be stabilized through proper design.
Water Supplies	No effect relative to existing condition.	No substantial effect. No known surface water withdrawals, the impoundment is not a significant source of recharge to the underlying bedrock aquifer, thus, private and municipal water supplies will not be affected.
Water Quality	Dam Stabilization would maintain existing water quality impairments. Pond Restoration Dredging could provide temporary improvement, but would require regular maintenance.	The improved dissolved oxygen levels and lower water temperatures will possibly eliminate upstream impairments and positively affect habitat conditions for diadromous fish.
Cultural Resources	Modification to the structural design of the dam is expected to be deemed a Section 106 "adverse effect" to the NH State Register-listed resource.	Dam removal would be a major adverse effect to the NH State Register-listed historic structure; potential indirect effects to surrounding district.
Fisheries	Dam limits upstream and downstream migration of anadromous fish species, favors warm water species.	Would restore fish passage, benefitting anadromous species and the downstream estuary system.
Wetlands	Pond Restoration Dredging would convert approximately 2.4 acres of aquatic bed and emergent habitat to open water.	Dam removal would directly or indirectly affect approximately 10.8 acres of palustrine wetlands; wetland cover types would shift but loss of wetlands is unlikely.
Invasive Species	No effect relative to existing condition.	Management plan recommended to limit potential for spread of invasive species.
Rare Species/Exemplary Natural Communities	No effect relative to existing condition.	Four state-tracked plant species and two state-tracked fish species present in impoundment.
Visual/Aesthetics	Falling water at dam site and flatwater in impoundment considered aesthetic resource.	Would eliminate visual resource at dam site and lower flatwater impoundment, particularly at Hamel Brook reach.

Notes:

The "No Action" alternative is not feasible due to public safety and regulatory considerations and is therefore not presented in this summary.

(1) Cost of "Pond Restoration Dredging"

(2) Cost of "Active Channel Restoration"

(3) Environmental resource agencies have expressed serious concerns with the proposal to dredge Mill Pond under this alternative; permitting expected to be difficult to impossible.

