

TOWN OF NORWICH

Norwich Pool Dam and Recreation Area

PRESENTATION by
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Existing Conditions

Impact from Tropical Storm Irene

- Amount of rainfall
- Overtopping
- Erosion of right embankment

Conclusions from Visual Inspection and Desktop Analysis

- Vintage concrete (1949)
 - Minimal reinforcement and cracks
- Antiquated flashboard design
 - Nonfunctional



Project Approach

Address Deficiencies Through Design

- Inadequate hydraulic spillway
 - Overtopping in 1979 and 2011 caused right embankment erosion.
- Deteriorated spillway concrete has led to structural instability
- Inoperable flashboard system
 - Flashboards are braced reducing hydraulic capacity during flood flows.
- Manual stoplog section is often utilized during inclement conditions.
- Unprotected abutments
 - If the left embankment hadn't eroded, overtopping would have been widespread and additional damages would have occurred.

Conform to Regulatory Requirements

- Adequate Hydraulic capacity (1% storm frequency)
 - 6" of rain in one 24-hour period
- Address sediment transport
 - Operable low-level gates
 - Sediment management plan
- Fish passage element
 - Constructed natural fish bypass
 - Fish ladder
 - Flow management



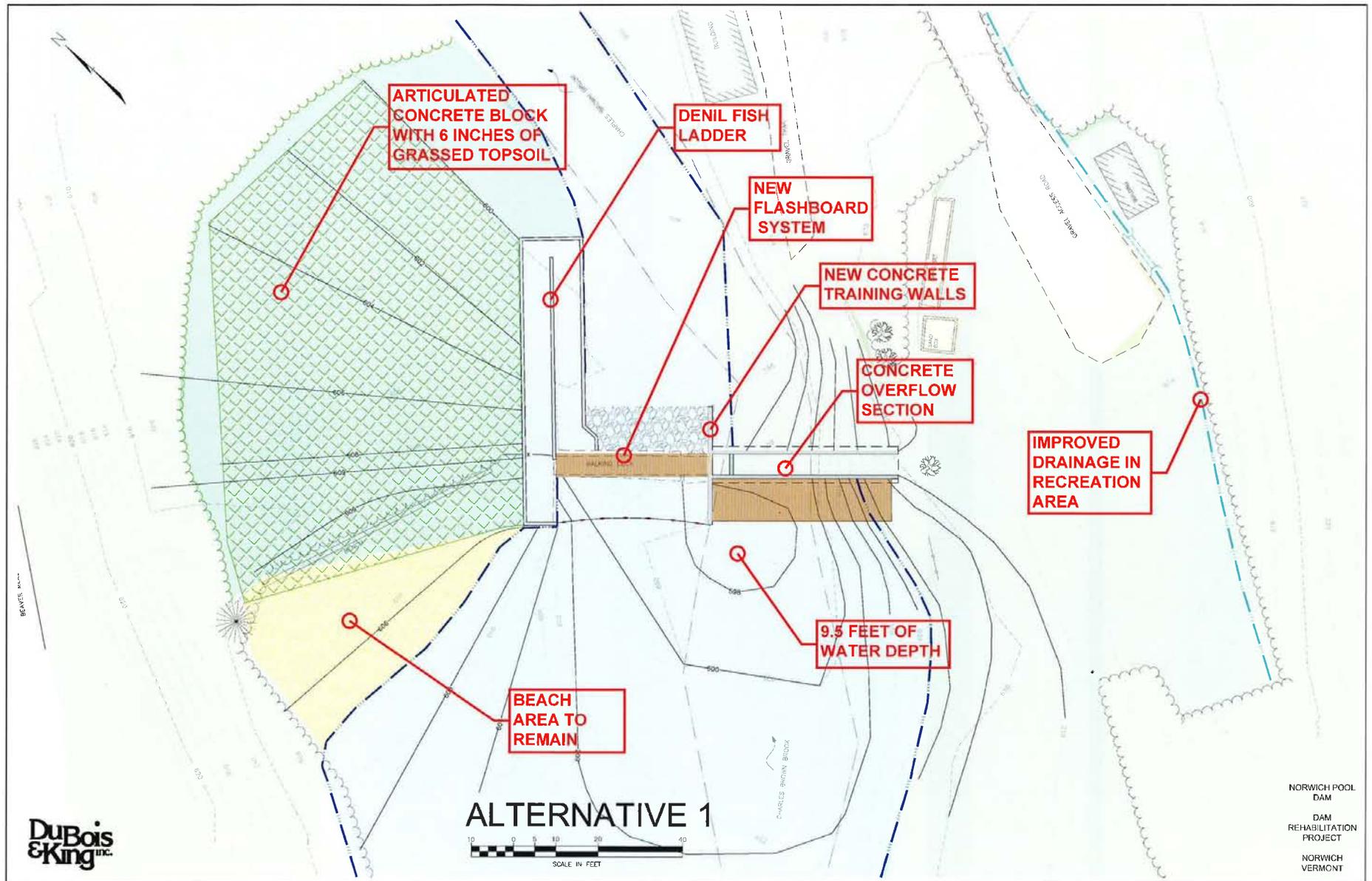
Alternative 1 - Rehabilitate Existing Structure

Address Deficiencies

- New concrete training walls
- Raise right abutment
- Denil fish ladder
- Articulated concrete blocks on left embankment
- New flashboard system
- Concrete overflow section
- Rising stem sluice gate



Alternative 1 - Rehabilitate Existing Structure



Denil Fish Ladder



Articulated Concrete Blocks



Flash Board System



Concrete Overflow Section



Alternative 1 - Rehabilitate Existing Structure

Address Deficiencies

- New concrete training walls
- Raise right abutment
- Denil fish ladder
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- Rising stem sluice gate

Conclusion of Alternative 1

- Hydraulic capacity - water level during storm
- Structural integrity
- Fish bypass
- Sediment



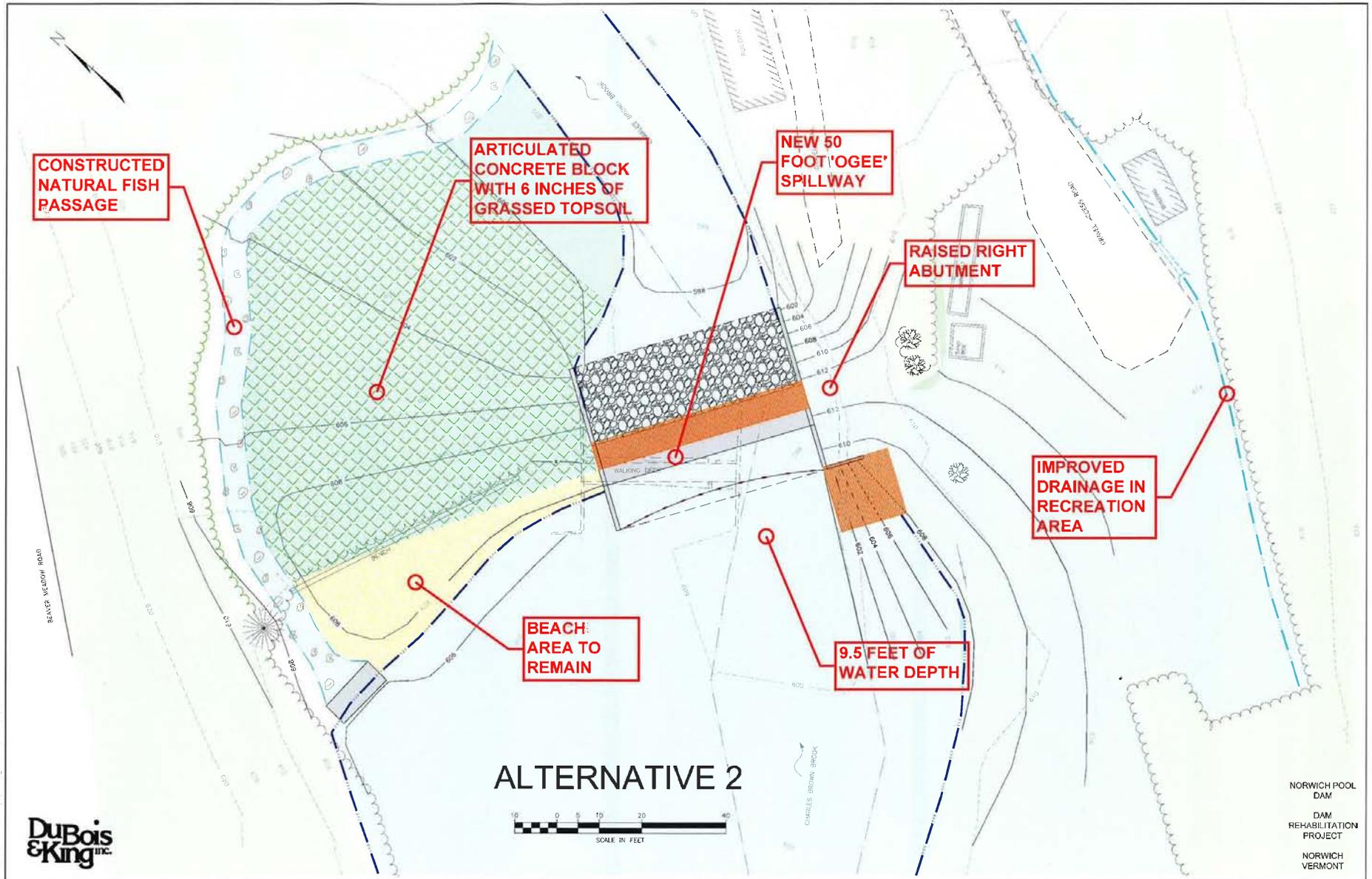
Alternative 2 - Ogee Spillway Design

Address Deficiencies

- Remove and replace entire dam
- Raise right abutment
- 50-foot-span ogee spillway
- Constructed natural fish bypass
- Articulated concrete blocks on left embankment
- Rising stem sluice gate



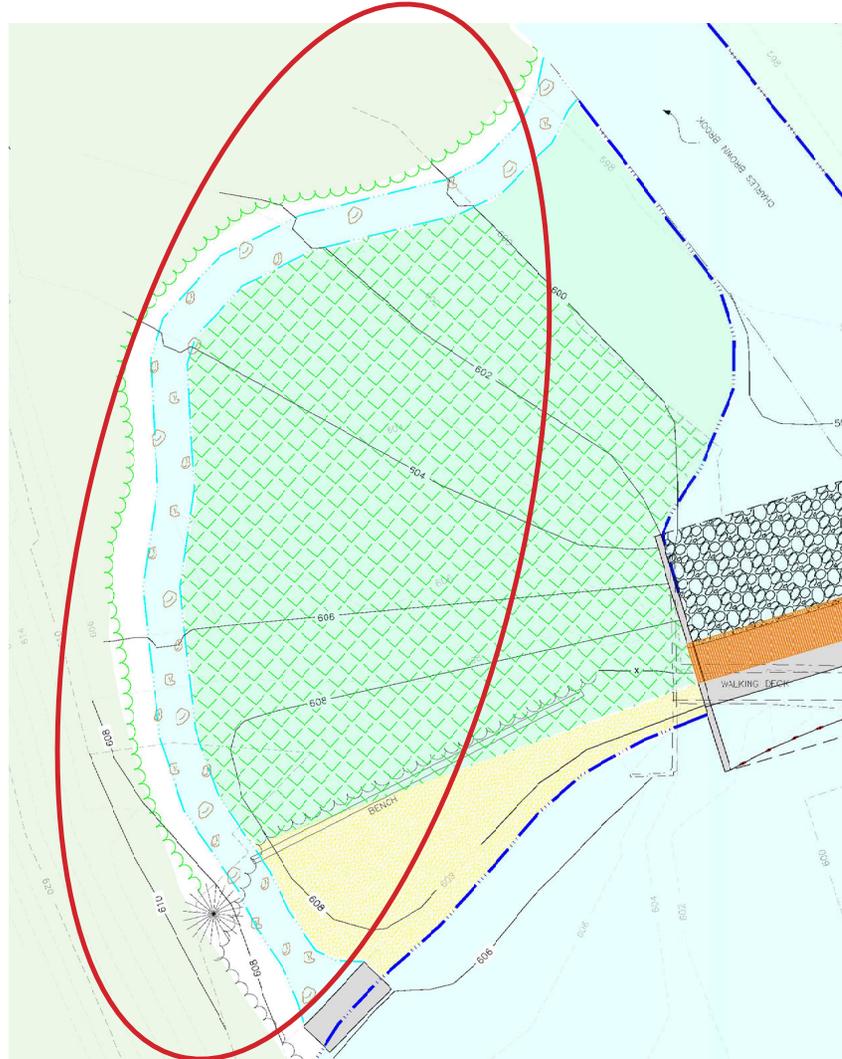
Alternative 2 - Ogee Spillway Design



Ogee Spillway



Constructed Natural Fish Bypass



Alternative 2 - Ogee Spillway Design

Address Deficiencies

- Remove and replace entire dam
- Raise right abutment
- 50-foot-span ogee spillway
- Constructed natural fish bypass
- Articulated concrete blocks on left embankment
- Rising stem sluice gate

Conclusion of Alternative 2

- Hydraulic capacity - water level during storm
- Structural integrity
- Fish bypass
- Sediment



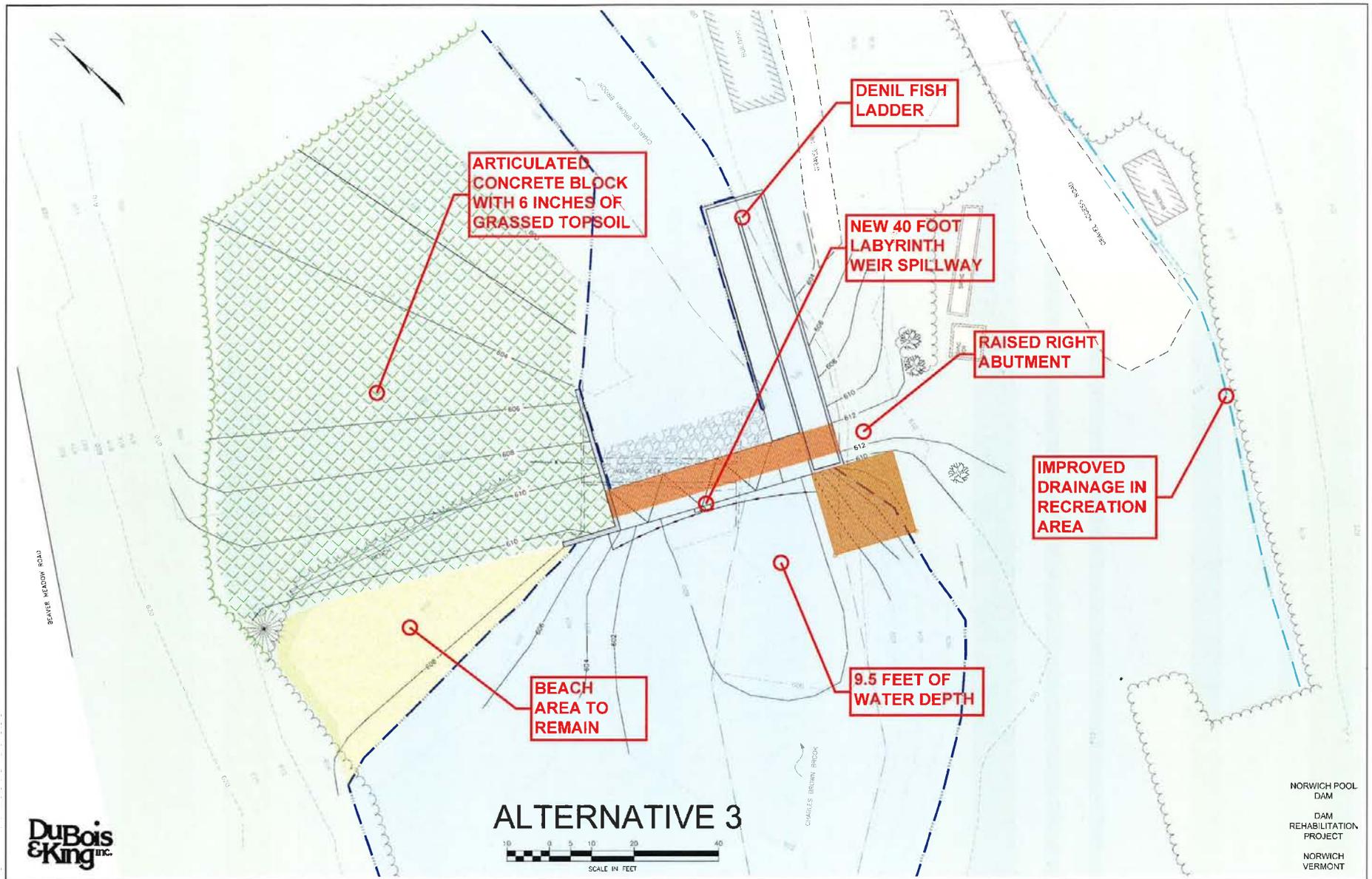
Alternative 3 - Labyrinth Weir Spillway

Address Deficiencies

- Remove and replace entire structure
- Raise right abutment
- 40-foot, 3-cycle labyrinth weir
- Denil fish ladder
- Articulated concrete blocks on left embankment
- Rising stem sluice gate



Alternative 3 - Labyrinth Weir Spillway



Labyrinth Weir Spillway



Alternative 3 - Labyrinth Weir Spillway

Address Deficiencies

- Remove and replace entire structure
- Raise right abutment
- 40-foot, 3-cycle labyrinth weir
- Denil fish ladder
- Articulated concrete blocks on left embankment
- Rising stem sluice gate

Conclusion of Alternative 3

- Hydraulic capacity - water level during storm
- Structural integrity
- Fish bypass
- Sediment



Project Costs

Cost Elements	Alternative 1 Rehabilitate Existing Dam	Alternative 2 New Ogee Spillway	Alternative 3 New Labyrinth Weir
Dam Construction Costs (without fish passage)	\$324,000	\$456,000	\$375,000
Fish Passage Construction	\$100,000	\$50,000	\$100,000
Engineering Costs	\$50,880	\$60,720	\$57,000
TOTAL	\$474,880	\$566,720	\$532,000

Questions and Discussion

