

AGENDA ITEM: **# 10C**

DATE: June 1, 2009

COUNCIL COMMUNICATION

INITIATED BY: Durham Town Council

AGENDA ITEM: CONTINUED DISCUSSION AND POSSIBLE ACTION RELATIVE TO THE RIVER RESTORATION/REMOVAL OR REPAIR OF THE OYSTER RIVER DAM AT THE MILL POND

PREPARED BY: David Cedarholm, Town Engineer

PRESENTED BY: Todd Selig, Town Administrator
David Cedarholm, Town Engineer

AGENDA DESCRIPTION:

At the March 16, 2009 Town Council meeting, Public Works Director Mike Lynch and Town Engineer David Cedarholm provided information relative to the physical condition of the Oyster River Dam, the structural problems identified, and the range of options to consider prior to developing plans to repair the dam. After a lengthy discussion regarding this matter, the Council voted to schedule a public hearing for Monday, May 4, 2009.

At its meeting on April 6, 2009, the Council held further discussion relative to the venue for the May 4th public hearing and decided to hold the hearing in the multipurpose room at the Oyster River High School. At the public hearing, Town Engineer David Cedarholm presented a brief overview of the Oyster River Dam project. At the conclusion of his presentation, the public hearing was held. There were approximately 170+/- citizens who attended the hearing, many of whom provided input to the Council and Town staff relative to this matter. The Council has also received written feedback concerning the dam from residents and concerned parties. During limited Council discussion at the end of the May 4th meeting, a number of Councilors expressed interest in gathering more information as part of a feasibility study surrounding questions that had been raised regarding dam removal/river restoration. Questions also were raised concerning the short and long-term implications of dam repair.

As a follow up to the May 4th public hearing, the Administrator and Town Engineer

met with Ted Diers of the N.H. Coastal Program and Cheri Patterson of the N.H. Department of Environmental Services on May 12, 2009, regarding the Oyster River dam. The N.H. Coastal Program would be willing to allocate approximately \$50,000 of funding that could be used to conduct a preliminary investigation (or pre-feasibility study) surrounding the topic of river restoration/dam removal . If after completing a pre-feasibility study the Town had an earnest interest in continuing to explore river restoration, the N.H. Coastal Program would likely be willing to work with the Town and contribute additional funding toward a full scale feasibility study. A full scale feasibility study will cost from \$100,000 to \$150,000 depending upon the scope of work, etc. and will take 12 months or more to complete.

At the Town Council meeting on May 18, 2009, the Town Administrator presented a proposal for a pre-feasibility study for Town Council consideration as follows:

OYSTER RIVER DAM & MILL POND

Preliminary Investigations (Pre-Feasibility Study) Option

May 18, 2009

Oyster River Dam and Mill Pond – PRELIMINARY INVESTIGATIONS or PRE-FEASIBILITY STUDY

Purpose - To address threshold issues and answer principal questions associated with dam repair and dam removal/river restoration. *The NHDES Coastal Program has offered a \$50,000 contribution toward a preliminary feasibility study.*

Background – The Mill Pond Dam has significant deficiencies which need to be addressed by the Town of Durham. The dam could be either repaired or removed to address the known deficiencies. Through public meetings, it has become clear that there are advocates in the Town for both considerations. Because of a lack of data on some aspects pertaining to the dam, especially a dam removal option, additional study is needed before the Town commits to a full feasibility study. A complete feasibility study would take at least a year and cost well over \$100,000. Thus, it would be beneficial to first address some important less understood issues before considering if a complete feasibility study is warranted. These “threshold issues” are listed as questions with study components below.

Possible Scope of Work for Preliminary Investigation or Pre-Feasibility Study .

- How would the impounded area look after dam removal and river restoration?
 - Bathymetric survey to estimate restored limits of the Oyster River channel, floodplain, the head-of-tide line, and extent of tidal prism.

- Photo/mapping simulation.
 - What is the impact of changes to the impoundment?
 - Extent of current impoundment.
 - Sediment testing (near dam)/contaminant cores.
 - Hydrology: determine such items as sediment transport, floodwater, floodplain changes, channel morphology, hydropower potential, and potential climate change impacts with or without dam.
 - Abutter waterline change and resultant changes to jurisdiction/regulation.
 - Recreation change.
 - What are the real costs?
 - Dam Repair:
 - Invasive testing of structural concrete may reveal more serious issues.
 - Repeated structural repair and Mill Pond dredging and disposal.
 - Historic mitigation to further dam repairs (e.g. right abutment/training wall repair).
 - Lifecycle costs
 - Dam removal/river restoration:
 - Sediment removal/remediation
 - Historic mitigation
 - Invasive plant mitigation
 - Dam removal and site stabilization
 - Cost of full feasibility study with all options to be determined and considered.
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Overall Outline of Considerations Regarding the Oyster River Dam

Note: Not all considerations are addressed in the preliminary investigations but would be in a complete feasibility study.

I. Technical Considerations

A. Regulatory (Env-Wr 100)

1. Responsibility for maintaining a safe dam and correcting deficiencies.
2. Liability associated with nearby properties for entire life of dam.

B. Engineering

1. Address deficiencies in a timely manner
 - a. Perform strength testing of structural concrete
 - b. Implement immediate repair on right training wall
2. Hydraulics and hydrology

- a. Ability of dam to convey 100 year storm
- b. Lamprey River contributes to Oyster River during storm events
3. Effects on infrastructure and property
4. Dam repair vs. dam replacement
- C. Lifecycle of project(s)
 1. Dam repair has a 20-30 year life cycle
 2. Dam removal is permanent
- D. Dam is potential source of alternative energy or for interpretive education use.
- E. Climate Change - the effect of more frequent intense storms may increase the threat to the dam and surrounding structures and force the dam into a higher hazard classification.

II. Social Considerations

- A. Historical Resources
 1. Pre-Colonial History of River
 2. More Recent Town History
- B. Aesthetic value
- C. Recreation
- D. Impact on Property Values

III. Ecological Considerations - Benefits/Impacts of maintaining the dam vs dam removal/habitat restoration

- A. Effects on Habitat
 1. Existing Fish (and other species) will be displaced by dam removal.
 2. What is the expected fish population post dam removal?
 3. How much habitat will be restored by dam removal?
 4. Invasive Species may colonize newly exposed stream banks.
 5. What are best management practices for the existing Mill Pond?
- B. Sediment Management
 1. Dredge or not to Dredge for dam repair.
 2. The Mill Pond traps sediments that would otherwise be released to Great Bay.
 3. Dam removal requires a detailed sediment investigation and remedial plan.
 - a. Possibility of contaminated sediments requiring removal and costly disposal.
 - b. Preliminary sediment sampling in 2004 revealed limited contamination.
- C. Water Quality

1. Dam removal is expected to address dissolved oxygen water quality impairment.

IV. Economic Considerations

A. More detailed cost estimate

1. Dam repair option should consider invasive testing of concrete and preliminary design of repairs.

2. Dam removal and river restoration costs should address sediment issues, future park development.

B. Availability of funding is greater for dam removal

C. Impact on Property Values

D. Legal issues

V. Complexity & Uncertainty

A. Schedule

1. Dam repair has a more predictable schedule.

2. Dam removal is a more complex and lengthy process.

B. Level effort Town Staff and volunteers increases with complexity.

At the May 18, 2009 meeting, the Administrator provided the following options for the Council's consideration in moving forward with the project:

1. River Restoration/Dam Removal. Move forward with a preliminary investigation (pre-feasibility study) to answer threshold questions to assist the Council in making a more informed decision regarding the project.
2. Repair. As the Council is aware, Stephens Associates Consulting Engineers, LLC has completed a dam evaluation report outlining the dam's existing conditions and providing a conceptual design and cost comparison of options. If the Town were to move forward with repairing the dam, the next step would be to negotiate a service contract with Stephens Associates for the engineering phase of the project.

After a lengthy discussion, the Council asked the Administrator to bring back a revised approach for the Council's further consideration.

Based on the direction provided by the Town Council on May 18th, the Town Administrator and the Department of Public Works understands that the Town Council desires information to address the primary unknowns associated with general questions that relate to the health of the Mill Pond and its sediments and possible structural issues with the dam. A limited investigation to seek more

information in these areas of concern would help to address concerns associated with both dam repair and river restoration, and would likely require two parts.

1. Sediment sampling and Bathymetric Survey

Proceed with hiring a consultant to conduct a limited investigation of sediments that have accumulated in the Mill Pond to determine where the accumulation has occurred and explore the degree to which the sediments are contaminated. A possible Scope of Work would likely include the following 4 tasks, and include budget limits totaling approximately \$30,000:

- Conduct bathymetric survey of the impoundment area of up to 25 acres. (\$8,000)
- Establish ground survey controls and layout up to 6 river transect surveys to tie in the bathymetric survey (\$6,000)
- Perform sediment core sampling using vibratory core methods. This task would include detailed descriptions of soil cores and screening for possible contamination from volatile organic compounds, petroleum products, or other suspect compounds. (\$6,000)
- Perform analytical testing on suspected screened soil samples. (\$10,000)

This information would help the Town gain a better understanding of the condition of the Mill Pond and to what degree sediments may require remediation if sediments were dredged as part of a dam repair scenario or removed as part of a river restoration effort.

2. Phase II Dam Investigation

Request a proposal from Stephens Associates to further investigate the seriousness of the structural issues associated with the dam and provide more detailed cost estimates for both short-term and long-term repairs. A possible Scope of Work of this work is as follows:

- Conduct an intrusive investigation of the dam's concrete which would involve concrete core sampling and strength testing.
- Prepare a detailed cost estimate for short-term and long-term repairs. This cost estimate would not include complete replacement of the dam.
- Provide recommendations for immediate temporary measures to stabilize the right soil embankment.

NHDES has preliminarily indicated that it would possibly help fund a Scope of Work similar to Part 1, but would not fund Part 2. The Town needs to conduct Part

2 only if dam repair was the option of choice, but NHDES would consider Part 2 as a matching contribution from the Town.

Based on the Council's last discussion, this approach endeavors to obtain a more limited scope of analysis that is weighted neither toward dam repair nor river restoration, yet will help to provide answers and data to help address some basic questions regarding this issue serving to help inform the process. It will not, however, address issues surrounding how the riverbed would appear if the dam were removed, impacts to abutters due to river restoration, channel morphology, etc.,--all questions that could be evaluated at a later date if so desired by the Town Council.

LEGAL AUTHORITY:

N/A

LEGAL OPINION:

N/A

FINANCIAL DETAILS:

See estimates listed above.

SUGGESTED ACTION OR RECOMMENDATIONS:

Hold discussion relative to desired next steps concerning this issue and consider moving forward with one of the options outlined above. Suggested motions:

MOTION:

The Durham Town Council hereby requests the Town Administrator to

- 1. Negotiate a service contract with a consultant to conduct a sediment sampling and Bathymetric Survey of sediments that have accumulated in the Mill Pond to determine where the accumulation has occurred and explore the degree to which the sediments are contaminated; and*
- 2. Obtain a Request for Proposal (RFP) from Stephens Associates to further investigate the seriousness of the structural issues associated with the dam and provide more detailed cost estimates for both short-term and long-term repairs.*

OR

MOTION:

The Durham Town Council hereby requests the Town Administrator to negotiate a service contract with Stephens Associates Consulting Engineers, LLC for the engineering phase to repair the Oyster River Dam.

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OR

Take other actions as required.