



Colchester Selectboard

October 10, 2017

## ACTION SHEET

### Stormwater Alternatives

**RECOMMENDED ACTION:** The staff recommendation is for the Colchester Selectboard to approve the Meets Stormwater Standards alternative for the Moorings Stream, Crooked Creek, and Smith Hollow Creek watersheds; the Exceeds Stormwater Standards alternative for the East Lakeshore Drive watershed; and the continued exploration by staff to identify other specific sub-basin improvements where Exceeding Standards may be financially beneficial to future permit compliance related to phosphorus reduction in Lake Champlain, all of which has a future conceptual construction cost estimate of \$5.6 million which would be subject to voter approval.



# Memo

## From the Department of Public Works

To: Colchester Selectboard

Cc: Dawn Francis, Town Manager

From: Karen Adams, Technical Services Manager  
Bryan K. Osborne, Director of Public Works

Date: October 5, 2017

Re: Stormwater Improvement Alternatives

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**Issue:** The issue is whether the Colchester Selectboard will approve the Meets Stormwater Standards alternative for the Moorings Stream, Crooked Creek, and Smith Hollow Creek watersheds; the Exceeds Stormwater Standards alternative for the East Lakeshore Drive watershed; and the continued exploration by staff to identify other specific sub-basin improvements where Exceeding Standards may be financially beneficial to future permit compliance related to phosphorus reduction in Lake Champlain, all of which has a future conceptual construction cost estimate of \$5.6 million which would be subject to voter approval to access local property tax or local option tax funds.

**Background:** Approximately two years ago, the Town began advancing the Malletts Bay Initiative. The overall vision for this initiative was to preserve and enhance the positive aspects and overall value of Malletts Bay by improving the overall management of our water resources, providing safe and efficient transportation systems for all users, improve recreational, cultural, and educational opportunities for all ages, promoting welcoming, small scale, yet vibrant infill and redevelopment, and creating a four season destination for both residents and visitors.

The Malletts Bay Scoping Study provides further conceptual development of three of the many projects identified as part of the overall Malletts Bay Initiative. The scoping process moves a recognized problem from an idea through the development of alternatives and environmental screening. The scoping process consists of several steps: 1. Local Concerns Meeting; 2. Data Collection; 3. Alternatives Development; 4. Alternatives Presentation Meeting; 5. Alternatives Selection; 6. Report Preparation; 7. and final acceptance by the Vermont Agency of Transportation. This process positions projects for continued development through preliminary engineering, and securing state and federal funding assistance for the projects.

**Discussion:** The purpose of the Malletts Bay Stormwater Scoping Project is to address insufficient roadway drainage infrastructure and the excessive loadings of stormwater volume, sediment, and nutrients. Project needs,

as defined by the Town of Colchester, project team members, and the public at the Local Concerns Meeting, include addressing roadway deterioration and lessening private property impacts that both result from poor drainage, improving stormwater management measures needed to treat roadway and developed lands runoff to tributary streams and Inner Malletts Bay, addressing erosion and stream bank instability issues and the sediment and nutrient transporting that occurs where runoff is channeled from roadways via ditches or closed drainage systems to streams. This scoping project evaluated stormwater improvements along East and West Lakeshore Drive and in the upland watersheds of Smith Hollow Creek, Crooked Creek, and the Moorings Stream. The stormwater improvements identified along West Lakeshore Drive have been included in the selection of transportation and intersection alternatives, so the remaining four watershed areas were evaluated for two types of improvements: Construction of stormwater best management practices (BMPs) and drainage improvements that will result in the meeting of state stormwater standards, or construction of stormwater BMPs and drainage improvements that will result in the exceedance of state stormwater standards.

For each watershed and their resulting 49 sub-basins, a number of factors were considered including the cost of improvements, the reduction in phosphorus resulting from each improvement, the acreage being treated by improvements, the volume of water being treated prior to infiltration or entry to surface waters, and ultimately, the cost per pound of phosphorus removal for each identified improvement. Under the upcoming revised Municipal Separate Storm Sewer System Permit (MS4 Permit) that regulates the Town's stormwater discharges to public waterways, each MS4 community will be assigned a phosphorus reduction target and will be expected to identify and prioritize funding of improvements to reduce the entry of phosphorus into our waterways. Staff and the consulting team identified over 490 improvements projects across the five project watersheds. Through the input provided at project meetings, stakeholder meetings, and by way of the on-line survey, it is clear that there is strong support for at least meeting stormwater standards across watersheds. The East Lakeshore Drive watershed was the only one identified during the project as having a lower cost per pound of phosphorus removal from improvements designed to Exceed Stormwater Standards than the cost per pound under the Meeting Standards improvements.

The primary driver behind staff's recommendation is the cost per pound of phosphorus removal, which will lead to selection of projects that most efficiently manage funds needing to be spent on phosphorus removal/reduction. However, as a result of summarizing costs at the watershed level, there may be opportunities within each of these watersheds to Exceed Standards at an acceptable cost per pound of phosphorus removal that are not immediately apparent through this scoping project. Staff recommends that as design of these stormwater BMPs moves forward, we capitalize on opportunities to increase treatment levels in specific locations that result in a lower cost per pound of phosphorus removal to exceed stormwater standards.

**Staff Recommendation:** The staff recommendation is for the Colchester Selectboard to approve the Meets Stormwater Standards alternative for the Moorings Stream, Crooked Creek, and Smith Hollow Creek watersheds; the Exceeds Stormwater Standards alternative for the East Lakeshore Drive watershed; and the continued exploration by staff to identify other specific sub-basin improvements where Exceeding Standards may be financially beneficial to future permit compliance related to phosphorus reduction in Lake Champlain, all of which has a future conceptual construction cost estimate of \$5.6 million which would be subject to voter approval.

**Motion: The Colchester Selectboard moves to approve the Meets Stormwater Standards alternative for the Moorings Stream, Crooked Creek, and Smith Hollow Creek watersheds; the Exceeds Stormwater Standards alternative for the East Lakeshore Drive watershed; and the continued exploration by staff to identify other specific sub-basin improvements where Exceeding Standards may be financially beneficial to future permit compliance related to phosphorus reduction in Lake Champlain, all of which has a future conceptual construction cost estimate of \$5.6 million which would be subject to voter approval to access local property tax or local option tax funds.**

Table XX-11  
Stormwater Management Recommendations - Summary of Metrics and Costs

	Watershed Name	Recommendation Details, Metrics, and Costs													
		Sub-basin Area (ac)	Sub-basin WQv (CF)	Impervious Area Treated (ac)	Pervious Area Treated (ac)	Proposed Storage Volume (CF)	Curbing, Stabilization, and Drainage Upgrade Cost Estimate (2017 \$)	BMP Cost Estimate (2017 \$)	Total Implementation Cost Estimate (2017\$)	Implementation Cost Per Pound P Load Removed (2017 \$)	Est. annual avg runoff volume (CF)	Estimated Total Base P Load, Including Existing BMPs (lbs/year)	Estimated P Load Removed by New BMPs (lbs./yr)	% Sub-basin WQv Treated by New BMPs	% Reduction in Total P Load
Meeting Standards	Malletts Bay - West Lakeshore Dr. Area	57.6	70,020	5	26	18,120	\$779,000	\$349,000	\$1,128,000	\$158,000	1,923,600	50	7	26	14
	Malletts Bay - East Lakeshore Dr. Area	163.2	115,270	8	30	19,435	\$1,384,000	\$336,000	\$1,721,000	\$124,000	3,978,000	84	14	17	17
	Crooked Hollow Creek	78.7	87,310	22	56	44,550	\$100,000	\$848,000	\$948,000	\$39,000	2,893,200	46	25	51	53
	Smith Creek	183.8	207,790	51	125	72,340	\$679,000	\$1,208,000	\$1,887,000	\$51,000	6,887,100	67	38	35	57
	Moorings Stream	77.9	53,710	11	67	45,520	\$179,000	\$496,000	\$675,000	\$34,000	1,780,100	39	20	85	52
	<b>TOTALS</b>	<b>561</b>	<b>534,100</b>	<b>98</b>	<b>305</b>	<b>199,965</b>	<b>\$3,121,000</b>	<b>\$3,237,000</b>	<b>\$6,359,000</b>	<b>\$62,000</b>	<b>17,462,000</b>	<b>285</b>	<b>104</b>	<b>37</b>	<b>36</b>
Exceeding Standards	Malletts Bay - West Lakeshore Dr. Area	57.6	70,020	7	28	40,745	\$972,000	\$1,991,000	\$3,070,000	\$182,000	1,923,600	50	17	58	34
	Malletts Bay - East Lakeshore Dr. Area	163.2	115,270	17	73	62,460	\$1,404,000	\$1,036,000	\$2,441,000	\$58,000	3,978,000	84	42	54	50
	Crooked Hollow Creek	78.7	87,310	22	56	105,060	\$100,000	\$1,893,000	\$1,993,000	\$62,000	2,893,200	46	33	120	71
	Smith Creek	183.8	207,790	51	125	205,660	\$679,000	\$4,074,000	\$4,753,000	\$109,000	6,887,100	67	44	99	66
	Moorings Stream	77.9	53,710	11	67	107,190	\$179,000	\$1,161,000	\$1,340,000	\$65,000	1,780,100	39	21	200	53
	<b>TOTALS</b>	<b>561</b>	<b>534,100</b>	<b>108</b>	<b>350</b>	<b>521,115</b>	<b>\$3,334,000</b>	<b>\$10,155,000</b>	<b>\$13,597,000</b>	<b>\$87,000</b>	<b>17,462,000</b>	<b>285</b>	<b>156</b>	<b>98</b>	<b>55</b>