

January 19, 2009

1557-7

Mr. Robert A. Pontau, Jr., P.E.
Director of Public Works
100 Main Street
Topsham, Maine 04086

**Re: Drainage Analysis
Bay Park Subdivision**

Dear Rob;

Sitelines PA has considered the issues surrounding stormwater drainage and high groundwater in the southerly portion of the Bay Park neighborhood of Topsham. The issues of poor surface drainage and high groundwater impacting the residents have been an issue for many years. A previous analysis completed by Sitelines in 1991 determined the depth of storm drain pipe and catch basins, and their elevation relative to the houses in the vicinity of Hunter Lane and Goldeneye Drive. Alternatives for improvements to the drainage system were identified, but no alternative was chosen and implemented. At your direction we have completed the following analysis to determine what improvements can be constructed to provide a lower outfall of the storm drain system to facilitate collection of groundwater below the basement elevation of the houses in the vicinity. The objective of the improvements is to alleviate or minimize the issues of wet basements and continuous reliance on sump pumps reported by several homeowners over the years.

Consistent with our proposal, Sitelines has completed a limited survey of elevations within Bay Park, in the natural drainageway to the southwest, and at selected locations along Foreside Road. To facilitate our survey and analysis, we were able to use data collected for the previous subdivision around Home Place/Brookside Drive.

The catch basin on the south side of Hunter Lane between Goldeneye and Merganser Drives is the lowest point in the drainage system prior to the outfall and serves as the Analysis Point for our study. Lowering the storm drain at this location is the primary goal.

Four options for storm drain improvements were considered as follows: 1) obtain an easement from Tad Hunter and extend a storm drain directly to Foreside Road, 2) obtain an easement from Tad Hunter and construct a new storm drain along the westerly

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property line of the Hunter parcel to Foreside Road, 3) obtain an easement and construct improvements from the outfall to the existing drainage channel southwest of Bay Park, and 4) extend the storm drain in Hunter Lane to the southwest through the existing right-of-way and onto adjacent properties where it would outfall at the existing channel. (See enclosed plan for Alternative locations)

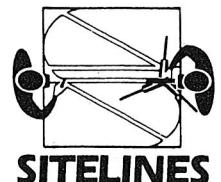
Key considerations of the feasibility of the alternatives include approximate overall length of new storm drain, amount of off-site property that would require purchase or easements, and the potential of the alternative to allow the storm drain in Bay Parks to be lowered. These considerations are summarized for each option below.

Option	Approximate distance	Land purchase/ easement required	Potential to lower
1 Storm drain direct to Foreside Rd	1,500 feet	Considerable	Low
2 Storm drain at Hunter's west parcel boundary	2,200 feet	Considerable	Low
3 Storm drain to natural channel	1,125 feet	Moderate	Medium
4 Extend drainage via Hunters Lane ROW	1,430 feet	Minimal	High

The survey data revealed that the elevation of Foreside Road is higher than the outfall of the existing storm drain from Hunter Lane. Construction of a storm drain extension to Foreside Road per Option 1 or 2 would be required to go beyond the Foreside Road right-of-way an undetermined distance before lower terrain was available for a free outfall.

The cost of construction of new storm drain to Foreside Road would be prohibitive making Options 1 & 2 undesirable. Obtaining the required permits to do work in the steam channel would be time-consuming and problematic, making Option 3 undesirable.

The recommended alternative is Option 4, which would provide the lowest outfall elevation and minimal property acquisition. Option 4 assumes reconstruction of storm drain in Hunter Lane; however, it is our understanding the reconstruction is required in any event. If a new storm drain were constructed beginning with an outfall elevation of approximately 50' with a slope of 0.5% along the alignment of Option 4, the new system would provide an elevation of approximately 57.5 at the analysis point in Hunter Lane or approximately 2.5 feet lower than the existing invert. By installing all or a portion of the new storm drain as perforated pipe, it would be possible to lower the groundwater table in the vicinity by a similar amount. As future funds become available, the storm drainage in the connecting streets could be reconstructed at a lower elevation, further improving the system and lowering the groundwater table. Based on the previous analysis in 1991, it



would appear most, if not all, homeowners could connect to the reconstructed storm drain system at an elevation equal to or lower than their basement.

Because the existing storm drain system outlets to the same channel, no significant changes to drainage patterns would be anticipated. The channel currently serves as the outlet for both surface and groundwater flows, and appears to have more than sufficient capacity based on its depth and slope.

Whereas Option 4 requires the cooperation of an adjacent landowner, we would recommend the Town explore their options and secure a letter of intent or agreement with Mr. Bethea in writing prior to committing additional funds for detailed design.

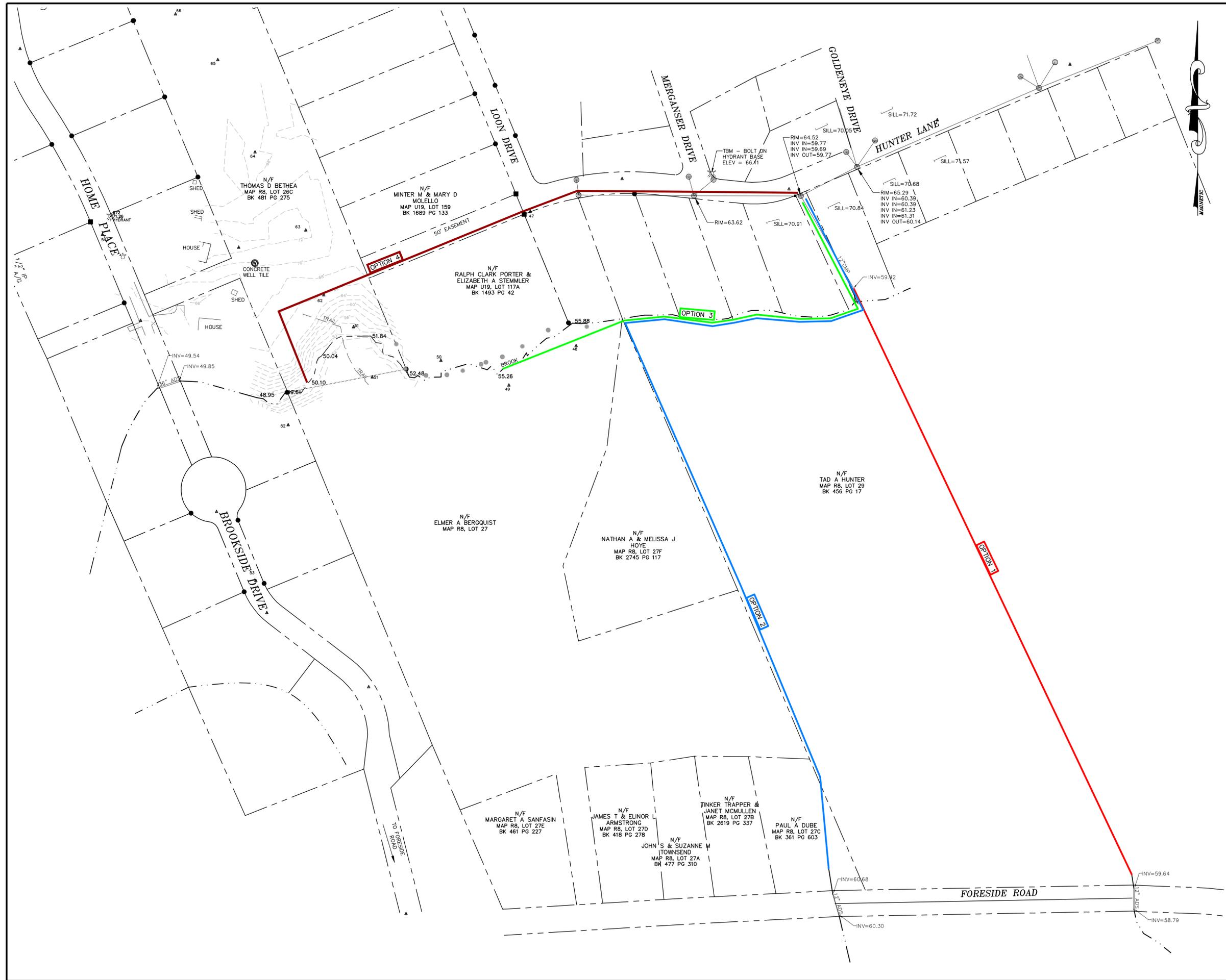
We appreciate the opportunity to assist you in making informed decisions to improvements to the drainage of the Bay Park neighborhood. We are available to complete detailed design of the recommended alternative should be Town elect to pursue it. If you have any questions about the information collected, please call or contact me via cneufeld@sitelinespa.com.

Very truly yours,



Curtis Y. Neufeld, P.E.
Vice President

Enclosures

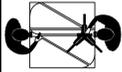


1. 1-19-09 SUBMITTED TO DIRECTOR OF PUBLIC WORKS CYN

LIMITED SURVEY & DRAINAGE STUDY

**BAY PARK NEIGHBORHOOD
TOPSHAM, MAINE**

**PREPARED FOR:
TOWN OF TOPSHAM**


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