

**WATER SUPPLY STUDY
MULBERRY POINT, TUTTLES POINT
AND INDIAN COVE**

FEASIBILITY STUDY

Appendix D - Septic System Impact Investigation

DONALD T. BALLOU
Professional Engineer

April 5, 2011

Ronald J. Nault, P.E.
Luchs Consulting Engineers
89 Colony Street
Meriden, Connecticut 06451

RE: Proposed Water Main Extension Area
Indian cove Shore Areas
Guilford, Connecticut

Dear Mr. Nault:

Please find enclosed herewith commentary concerning the potential impacts on the existing residential septic systems that may result from the extension of the potable water main to the two communities located beside Indian Cove & remedial measures.

INTRODUCTION--PRE WATER MAIN EXTENSION

This commentary is applicable to the two residential communities located on both sides of Indian Cove. The east side is about 105 acres comprised of lot sizes varying from 1/8th acre to 2 acres with the predominant lot size averaging about 1/4 acre. The west side is about 55 acres with the predominant lot size averaging a little larger than a 1/4 acre. Note that an 1/8th acre = 5,000 sq-ft and a 1/4 acre = 10,000 sq-ft when one is considering a "building acre" as 40,000 square-feet. The total area of about 160 acres is an area of relatively poor soils, large amounts of ledge including a great amount of ledge outcroppings at the surface, and, is located on the seashore of Long Island Sound.

By today's standards of design the existing septic systems on the vast majority of the lots are considered substandard. The residents have to continually "husband" their water use for fear of exacerbating currently malfunctioning septic systems.

Potable water is currently obtained via individually owned private wells. A large number of the wells have become, or, are becoming inadequate for a variety of reasons; too shallow, brackish, varying degrees of pollution from septic systems and the availability of supply.

POST WATER MAIN EXTENSION

With the extension of the water main to both residential communities will also come an increase in water use. There will also be an increase in water using devices such as laundry washing machines, dish washers, insink garbage grinders, building additions which will include water closets, bath tubs, showers, etc., etc.. The water closets,

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bath tubs & showers may be added without building additions.

All of the above-mentioned additional water uses will occur in spite of the fact that what "precipitated" the need for the water main extension will not have been altered one whit.

CONSIDERATIONS FOR CONTROLLING POTABLE WATER USE

- 1) A study of a number of existing septic systems on selected 1/4 acre lots should be accomplished in order to determine the effects of increased water use.
 - a) Install 2 to 3 observation wells at each site for at least a month.
 - 1) Monitor the wells for normal usage
 - 2) The usage should be metered.
 - b) Increase the normal usage by 50 percent for at least a month.
 - 1) Monitor the wells as well as metering the water usage.
 - c) In the well monitoring several items can be evaluated.
 - 1) Ground water level changes twixt a) and b) above
 - 2) Samples may be taken for testing of the quality.
 - d) The monitoring wells should remain to collect historic data concerning the long term ground water levels throughout the year.
 - 1) The precipitation should also be measured so as to compare the annual precipitation during the testing period to the ground water levels. A 50" precipitation year should produce a higher ground water level than a 44" year.
- 2) Any historical data the Town may have on file for the septic systems should be utilized for correlation evaluation as-well-as serving as useful information.
- 3) Any failing or near failing septic systems regulated by the Town should remain the responsibility of the owner to correct. These systems should be corrected as a condition of being connected to the proposed potable water system.
- 4) The following restrictive water uses should be considered for implementation:
 - a) Residential metering.
 - b) Low flow fixture devices for lavatories & showers.
 - c) Residences with no washing machines, dishwashers & insink garbage grinders should be flagged and considered for nonpermittal useof these items.

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- d) Land use controls should be considered for:
- 1) Not adding a bedroom or additional bathroom to an existing residence.
 - 2) Limiting the size of any proposed residence regarding bedrooms, bathrooms and any other water using device.
- e) Limits should be considered for lawn watering as portions of this water also penetrates to the groundwater table. This water carries with it the various lawn chemicals & fertilizers.

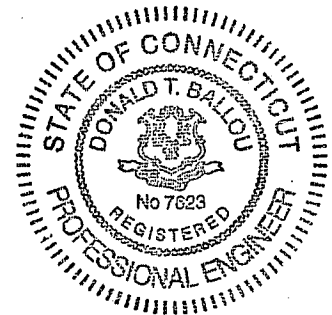
CLOSING COMMENTS

There are a number of reasons for extending the potable water main to the two sea-shore communities. The prime reason is due to pollution of the existing ground water as-well-as diminishing quality of the ground water supply. The massive expense to remediate the situation in the two communities warrants the introduction of much needed restrictive water use measures. These restrictive water use measures are to insure that the pollution of the ground water and the large number of failing & near failing septic systems will gradually reverse direction with a continuing improvement to the local environment.

Please call if you have any questions.

Respectfully,

Donald T. Ballou
Donald T. Ballou, P.E.



DTB/stm