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Sewage Pollution of Densmore and Thompson Creeks - A Follow-up Report*

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THE ROCHESTER COMMITTEE FOR SCIENTIFIC INFORMATION

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SEWAGE POLLUTION OF DENSMORE AND THOMPSON CREEKS - A FOLLOW-UP REPORT

In recent reports the committee has described the pollution of Densmore and Thompson Creeks with sewage from the City of Rochester. These two streams are being kept under surveillance by the committee. We report here results obtained on 25 March, and present some material relevant to a press release on the subject of Densmore Creek made by Commissioner of Urban Works Alfred S. Ancello.

I. Coliform Counts (taken on 25 March 1967)

<u>Location and Remarks</u>	<u>Coliforms per 100 ml</u>
Thompson Creek, at culvert under Sea Breeze Expwy. south of Tryon Park. Strong odor of gasoline, floating oil on water, water grey-black in appearance.	73,000
Densmore Creek about 50 yds. upstream from Norton St. chlorinator. No sludge or toilet paper visible in the stream.	45,000
Densmore Creek, just downstream from chlorinator. Toilet paper, sludge, 2 condoms seen in stream	320,000
Densmore Creek at Densmore Rd., a few hundred yds. downstream from chlorinator. Toilet paper seen in stream.	280,000
Densmore Creek, downstream from Irondequoit's S.E. sewage treatment plant, Point Lookout.	78,000

These results, entirely consistent with our previous data, establish that (1) Thompson Creek is still polluted; and (2) the City of Rochester screening and chlorination facility at Norton Street is the main source of sewage pollution of Densmore Creek.

II. Note to Commissioner Ancello

A report by Commissioner Ancello, summarized in the 25 March Democrat and Chronicle under the heading "Sewage Unit Working Okay, City Retorts", shows some misconceptions concerning the pollution of Densmore Creek. In the text that follows we quote directly from the newspaper article and add our comments. We hope that these explanations will help Commissioner Ancello to recognize and correct the bad conditions originating at the city's Norton Street chlorinator.

(1) "The chlorination station...is purely for the screening and chlorination of wet weather overflow that originates from sewers..." We do not see why the overflow from sewers should be considered any cleaner in dry weather than it is in wet weather. The law requires that all overflow of sanitary sewage be disinfected before it is released into Densmore Creek. If the Norton Street Screening and Chlorination Station was built to comply with the law, then the station is not working properly. Mr. Ancello can call on the capable sanitary engineers in his department to remedy the trouble. We will keep testing the creek, to see whether the remedies work.

(2) "The levels, which it (the chlorinating equipment) was set at, was obtained by our previous consulting engineers after conducting a lot of experiments." You cannot design an automatic disinfecting plant without preliminary tests, but it is sound engineering practice to check later to see whether the plant works as expected, and to change the settings as required to disinfect the water discharged by the plant. We note that this was not done at the Norton Street plant, and we are pleased that our report brought the lapse to the Commissioner's attention.

(3) "The commissioner did not think that the (committee's) report is significant, because there was little material in it." The material, we hasten to note, was left in Densmore Creek. Our report contained facts. The commissioner, as quoted above, had "lots of tests" done on Densmore Creek. If our data are too few, he should have more. What are they? What are the city's measurements of (a) coliform bacteria in the creek, (b) sewer flow into the creek in dry weather, and (c) sewage solids and rubbish released by the city into the creek?

(4) "the chlorinating station...does not treat any of the waters of Densmore Creek... This point is of major importance." The waters of Densmore Creek are in fact far less polluted immediately upstream from the chlorinator than they are immediately downstream. We therefore suggest that the point raised has no importance whatsoever. The material being discharged by the city sewers into the chlorinating plant is evidently the major source of pollution.

(5) "It is important to differentiate whether these counts are fecal coliform or coli aerogenes. The latter may be due to material caused from the surface of the soil, and, thereby, not related to the intestinal tract of warm blooded animals."

Let us first look at the notion of differentiating one kind of coliform count from another. Fecal coliforms are members of a large group of bacteria, the coli-aerogenes group. The soil bacterium the commissioner speaks of is another member of the group, called Aerobacter aerogenes. We advise the commissioner that it is not a good idea to differentiate between the two types of coliforms when measuring water pollution. Here are the facts, quoted from Current Practices in Water Microbiology, A Training Course Manual, written by public health experts of the Federal Water Pollution Control Administration and published in February 1967.

"The assumption that Aerobacter aerogenes and its close relatives (so-called soil coliforms) cannot be of direct fecal origin is not borne out by studies carried out at the Taft Sanitary Engineering Center... Human feces tend to include appreciable numbers of Aerobacter aerogenes and other IMViC types which some regard as "non-fecal" segments of the coliform group."

Thus even if it were established that these bacteria were A. aerogenes, these coliforms, when associated with sewage solids, would clearly indicate the presence of a health hazard.

FWPCA scientists state that "It is emphasized that no responsible PHS (Public Health Service) worker advocates substitution of a fecal coliform test for total coliforms in evaluating drinking water. Tests for the coliform group as a whole (our emphasis) are used in official tests... in most, if not all, cases where official standards of water quality have been established for such use as in recreational or bathing waters..." The FWPCA water pollution surveillance system relies on the membrane filter method for total coliforms (our emphasis) as the basic bacteriological test for the presence of stream pollution by feces of warm blooded animals.

(6) "...coli aerogenes...may be due to material caused from the surface of the soil, and, thereby, not related to the intestinal tract of warm blooded animals." We quote this sentence again, because we would like to bring the commissioner up to date about the occurrence of coli-aerogenes organisms in soil. Extensive studies of many kinds of soil by the bacteriologists of the Taft Sanitary Engineering Center have shown that these organisms occur in soil in small numbers only, unless the soil is contaminated by feces. Unpolluted soil (lawns, gardens) has only a few thousand of these organisms per gram. To have the count of 320,000 organisms per 100 ml shown in this report, we would have to suspend in a cup of water every bacterium present in some 6 ounces of soil. The same count, however, would be given by the bacteria present in one eightieth of an ounce (0.0125 oz) of feces.

According to the commissioner, Densmore Creek receives three kinds of water in passing through Rochester: surface runoff from the valley of the creek, ground water infiltrating into the creek and into the tunnel, and sewage. We found toilet paper, condoms, and high coliform counts just downstream from the Norton Street station. We found much lower coliform counts just upstream from the station, and no sewage solids. It would be a remarkable coincidence if the extra bacteria did not come from the same place as the toilet paper. We suggest that these findings are definitive, since we have now repeated the tests on three occasions with the same results: the bacteria below the Norton Street station come from undisinfected sewage.

(7) "Ancello...was critical of the committee for 'scare tactics'". The Rochester Committee for Scientific Information has been extremely careful not to call every instance of water pollution a "health hazard". In Densmore Creek, however, we are faced with coliform counts ranging from the hundreds of thousands to the millions and with clear evidence that the bacterial pollution comes from human feces. We must conclude that exposure to the waters of Densmore Creek tested by us would have been a hazard to health. Neither of the authors of this report would let his children play in the polluted part of Densmore Creek. We repeat our warning to all parents whose children play in that area, and we hope that the hazard is eliminated as soon as possible.

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Water Pollution Subcommittee