



*Rochester Committee
for Scientific Information
Rochester, NY*

*RCSI Bulletin 30
Improved Condition of the Irondequoit Creek Watershed*

*By: David J. Wilson
June 1967*

#30(w)

IMPROVED CONDITION OF THE IRONDEQUOIT CREEK WATERSHED

I. Location of Tests

In previous years this committee has found Irondequoit Creek to be extensively polluted with undisinfected sewage. The picture at present is greatly improved, although at least one source of undisinfected discharge into the creek continues. The RCSI tested the creek and its tributaries between December 1966 and March 1967, at locations which are shown in the attached sketch map and described in Table 1.

Table 1. Location of Sampling Sites

<u>Number of Location</u>	<u>Description of Location Where Samples Were Taken</u>
1	Thomas Creek just upstream from Fairport Sewage Treatment Plant (STP)
2	Effluent from the Fairport STP into Thomas Creek
3	Thomas Creek at O'Connor Rd., downstream from the Fairport STP
4	Irondequoit Creek at Highway 64
5	Effluent from the Penfield STP
6	Irondequoit Creek at Panorama Trail South
7	Irondequoit Creek at Browncroft Boulevard
8	Thompson Creek, culvert at Sea Breeze Expressway, near the Tryon Park overpass
9	Thompson Creek, upstream from dump of Town of Brighton
10	Leachings from Brighton dump into Thompson Creek
11	Thompson Creek at outlet into Irondequoit Creek
12	Irondequoit Creek, 50 yards downstream from Thompson Creek
13	Irondequoit Creek at Empire Blvd., near creek outlet into the Bay.

II. State of the Creeks

Residual free chlorine tests and settleable solids analyses were run on sewage effluents from Penfield's main plant on Irondequoit Creek and from Fairport's plant on Thomas Creek. Free chlorine is used as a disinfectant for sanitary sewage, and the discharge of undisinfected sewage or sewage containing significant quantities of settleable solids is a violation of state law. Coliform bacteria were counted in samples of water from Irondequoit Creek and from Thompson and Thomas Creeks, two of its tributaries. The significance of these counts in determining the presence of undisinfected fecal

pollution has been explained in our previous bulletins.

Dissolved oxygen concentrations were measured in the waters of Thompson Creek with a galvanic cell dissolved oxygen meter. The water of clean shallow streams is normally nearly saturated with oxygen during the winter, containing about 12 parts per million of oxygen. The more oxygen demanding organic matter is dumped into a stream, the more free oxygen is taken out of the water by the stream bacteria which feed upon organic matter. As free oxygen disappears from the water, the stream becomes unsuitable for game fish such as trout; more pollution brings lower oxygen readings and makes the stream unsuitable for the rough fish such as carp; and if the organic loading is high enough the water becomes poisonous and unsuitable even to green plants, and the stream becomes foul smelling and sludge-lined (as is Slater Creek at Ling and Kirkwood Roads).

The results of the oxygen analyses and coliform counts are shown in Table 2.

Table 2. Results

<u>Location (a)</u>	<u>Coliforms per 100 ml</u>	<u>Dissolved Oxygen</u>
1 Thomas Cr. upstream	1450 (c)	
3 Thomas Cr. downstream	0 (c), 0 (d)	
4 Irondequoit Cr., Hwy. 64	2400 (d)	
6 Irondequoit Cr. at Panorama Trail	560 (c), 600 (d)	
7 Irondequoit Cr. at Browncroft Blvd.	0 (d)	
8 Thompson Cr. culvert	48,000 (c), 200,000 (d),	9.2 (b)
9 Thompson Cr. upstream		8.8
10 Leachings, Brighton dump		6.5
11 Thompson Cr. outlet		8.4
12 Irondequoit Cr. downstream		10.5
13 Irondequoit Cr. outlet	0 (d)	

(a) Locations shown on map and described in Table 1.

(b) Dissolved oxygen in parts per million in water, measured on 17 December 1966.

(c) Counts of coliform organisms per 100 ml of water, made by the Millipore[®] filter method on 12 February 1967.

(d) Counts as above, made on 4 March 1967.

At the time these tests were made, that part of Irondequoit Creek extending from Fairport Road through Ellison Park to Browncroft Boulevard appeared to be clean enough for recreational use and fishing. Coliform counts were all below 2500 per 100 ml, indicating that there is little contamination of this water with bacteria from sewage. There is a serious source of fecal pollution in Thompson Creek, which enters Irondequoit Creek between Browncroft Blvd. and the Bay. In our 1966 bulletins we reported that a sewer of the City of Rochester is discharging human fecal matter into Thompson (location 8 on the map). City officials informed us that special crews were given the job of finding and stopping this pollution. The source is perhaps a local sewer pipe which was unlawfully connected to the storm overflow when it should have led to the city trunk sewer. We are sorry to report that Thompson Creek was still badly polluted with undisinfected fecal matter on March 4.

There were three "zero counts", that is, samples which did not produce any bacterial colonies on the filters. The first run on water taken at Location 3, is easily explained; chlorine comes into Thomas Creek from the Fairport STP and kills all bacteria in the vicinity of the discharge. The other two locations which yielded zero counts (locations 7 and 13) give us cause for concern. What killed all the bacteria in Irondequoit Creek downstream from Ellison Park? These zero counts raise the possibility of pollution of lower Irondequoit Creek with toxic chemicals. This point bears further investigation.

III. The Control of Pollution at the Source

The effluents from the Fairport and Penfield sewage treatment plants (locations 2 and 5) were tested for residual free chlorine and for settleable solids. Chlorine tests were positive on February 12 and March 4, 1967, indicating that these effluents were being disinfected; and the settleable solids analyses at both locations yielded less than 0.1 ml per liter of water on February 12, indicating that solid material is being effectively removed from these discharges. We owe to such procedures the clean condition of Irondequoit Creek at Panorama Trail (location 6).

The organic loading of the creeks is not so well controlled. At Fairport there were heavy deposits of black, fermenting sludge in the slough leading from the sewage treatment plant to Thomas Creek, and in the creek itself at the point where it receives this sewage. No such sludge was found in the creek above the mouth of the slough. Such deposits indicate that the water is locally overloaded with organic matter. The presence of these sludge beds raises some question as to the ability of this plant to handle the additional load of the meat packing plant now under construction in that area -- possibly considerable expansion will be necessary if much meat packing waste is to be handled without creating a nuisance.

The dissolved oxygen determinations made on Thompson Creek and the leachings from the Brighton dump are lower than one would expect to find in normal stream waters in December. In the wintertime the rate of bacterial consumption of oxygen is low, and both the solubility of oxygen and the volume of water in the streams are high. We do not wish to draw strong conclusions from these measurements, but they do suggest that the dissolved oxygen levels in this area may be quite low in the summer. We plan to watch this situation throughout this coming summer.

Acknowledgements

We are indebted to the Scientists' Institute for Public Information for the loan of some of the equipment used in carrying out these studies.

David J. Wilson
Water Pollution Subcommittee

June 1967

Map of Sampling in Irondequoit Creek Basin

