REPORT

ON THE

WATER POLLUTION INVESTIGATION

OF

DECK'S HOLLOW CREEK

BELOW

STRATFORD, IOWA

Division of Public Health Engineering
Iowa State Department of Health
Des Moines, Iowa
December 1963

Iowa
State Department of Health
EDMUND G. ZIMMERER, M.D., M.P.H., COMMISSIONER
Des Moines, 19

DIVISION OF
Public Health Engineering
Paul J. Houser, M.S.
DIRECTOR

December 19, 1963

Ralph H. Heeren, M.D.
Acting Commissioner
State Department of Health
Des Moines, Iowa

Dear Dr. Heeren:

I am transmitting a report of your Division of Public Health Engineering covering an investigation of the pollution of Deck's Hollow Creek below Stratford, Iowa.

This investigation was conducted in accordance with Sections 135.18 to 135.29 of the Iowa Stream and Lake Pollution Law.

Very truly yours,

P. J. Houser, Director

JRS:cae

WATER POLLUTION INVESTIGATION OF DECK'S HOLLOW CREEK AND ITS CONDITION BELOW THE OUTLET OF THE STRATFORD, IOWA WASTE TREATMENT PLANT

OCTOBER 24, 1963

PURPOSE

At the request of the Town Council and several property owners, a survey of the waste treatment plant and receiving stream was made on the above date to determine what deficiencies in treatment existed and to observe the pollutional aspect of Deck's Hollow Creek, a tributary to the Des Moines River.

INTERVIEWS

1. On March 21, 1962 the writer attended a council meeting at which time the condition of the waste treatment plant, built in 1920 or '21, was discussed. Structural deterioration, inadequate unit capacity and general inability of the plant to treat the volume and strength of domestic wastes from Stratford was reviewed. The discussion also included both the conventional and lagoon method of treatment.

2. On March 22, 1963, Reuben A. Naslund and Herb Bergman, property owners downstream from the plant, visited the Regional Office to discuss conditions of the receiving stream. These men were very considerate in their report, however it was believed by the writer that odors mentioned as noticeable at their homes 1000 or more feet away originated in the ditch receiving inadequately treated wastes from the Stratford sewage treatment plant. Both milk cows and hogs have access to this creek. -- It was suggested that these men contact and discuss this problem with the council and the local health officer. -- Several hog kills had occurred on the Naslund property in 1949 which may or may not have been attributed to the lack of treatment at the sewage treatment plant.

   Mr. Naslund also reported April 22nd, after a meeting with the local officials, that the council had instigated a preliminary survey to determine how the municipal wastes might be handled in the future. He also reported that the council would appreciate a conference to further discuss the problem.

   On May 3, 1963, the writer met with Mayor Van Marel, City Manager Axel Sandegren, and several councilmen. The council reported that the McClure Engineering Company was making a preliminary survey to determine needed improvements to the municipal sewage treatment facilities.

OBSERVATIONS AND FINDINGS

On October 24, 1963, accompanied by Berkley Berglund, water superintendent, the writer conducted a survey to determine the condition of the treatment plant and the receiving stream:

1. The septic tank and dosing compartment, which had been previously observed and discussed with the council at various times as very inadequate, is also structurally deficient. Walking on or crossing the deteriorated concrete top should be restricted. The action of sewer gas on the concrete and metal portions of the structure for the past forty years has weakened the concrete top of the structure. This deterioration was pointed out to the council in a report dated May 14, 1952. -- It is understood that the dosing tank, although repaired at various intervals since 1949, has not been functioning for some time.

   The original sludge bed had been washed out by a heavy rain in 1929 and in 1948 the short natural ravine adjacent to the tank was dammed to enable emergency use as a small sludge lagoon. Most of the sludge from the septic tank and all of the sludge from the final clarifier tank eventually finds its way to the receiving stream (Deck's Hollow) which extends through the Naslund and Bergman land and enters the Des Moines river approximately 1½ miles below the treatment plant.

2. In 1948 a frame roof had been placed over the trickling rock filter. This cover should have improved treatment especially during winter months. The lack of continuous operation and inability of the primary unit to settle out solids has led to a plugged condition of the filter media and nozzles. As a result, nozzles were removed most of the time and on the date of this survey the filter was found to be ponding severely and virtually plugged. All nozzles were off and only one pipe was discharging onto the filter rock, which was covered to a depth of six or more inches with partially settled sewage. Little if any treatment resulted as the wastes passed through the rock media. The final settling tank, located adjacent to the creek, is lacking in capacity and not equipped with a sludge draw-off except to the creek. The final effluent being discharged at this time, although reduced in original strength to some degree, was noticeably grayish, cloudy, odorous and characteristic of inadequately treated domestic wastes. When necessary to draw sludge from either the primary or secondary unit, the contaminated condition of the creek would be considerably increased.

3. Although the sewage plant is enclosed by a fence, the gate was open at this time and approximately 15 cattle, believed to belong to Julian Johnson, were inside the sewage plant enclosure.

4. On October 24, 1963 the quality of the limited flow of creek water above the sewage treatment plant discharge would be considered as normal storm waters. -- On December 12, 1963 this same observation point had "no flow". A further check at the head end of Deck's Hollow Creek, 500 ft. above the sewage treatment plant also showed "no flow" from the 20" storm tile outlet. -- Zero degree weather accounted for the lack of flow December 12 as compared to a light flow October 24th.

5. Virtually all water in the receiving ditch came from the sewage plant outlet. The receiving ditch below the plant discharge was definitely gray colored, highly turbid with streamer type whitish fungus characteristic of heavy pollution clinging to rocks, sticks and other bottom obstructions. On December 12th this observation point was the same only slightly less concentrated.

   The upper 2000 feet of the receiving ditch would be considered as grossly polluted which resulted in the depositing of black sludge which further produces gas and gives off varying degree of odors. The settled black sludge, when agitated, gave off more offensive odors. Fish life or greenish bottom growths were not present in this portion of the stream. At a distance of 2000 to 3000 feet below the treatment plant outlet, the stream began to show some sands and greenish vegetation characteristic of cleaner waters and a fair indication of return to normal conditions. There was however no fish life noted throughout this entire distance.

6. Cattle or hogs were not noticed at the time of this survey in either the Naslund or Bergman property through which the polluted ditch condition extends. Both men have been cooperating in protecting their livestock from contact with these contaminated waters however cannot be expected to forfeit the use of this pasture land indefinitely.

SIGNIFICANCE OF WATER POLLUTION

In accordance with the Iowa Stream and Lake Pollution Law, pollution is defined as follows:

"....pollution means such contamination, or other alteration of the physical, chemical, or biological properties, of such waters of the state, or such discharge of such liquid, gaseous or solid substances into such waters of the state as will create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life."

RECOMMENDATIONS

1. Restrict the use of grounds within the existing sewage treatment plant enclosure to animals and caution all operating employees regarding the structural deficiency of all units.

2. Planning and construction of treatment facilities, adequate to prevent the existing condition of pollution in Deck's Hollow Creek and its tributary, should be instituted immediately for all of the sewage and wastes originating within the Town of Stratford.

Respectfully submitted

X. P. Boyles

X. P. Boyles, Regional Engineer
Regional Health Service #2
Fort Dodge, Iowa

Figure No. 1
Webster County
Deck's Hollow Creek below Stratford