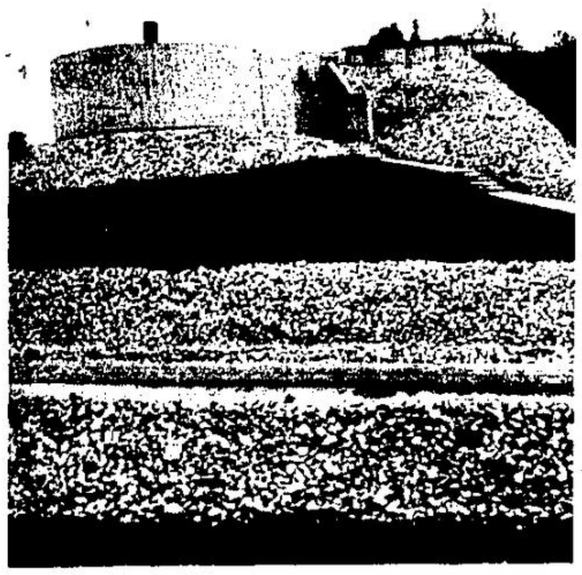
Open sparkling new plant Sat.



THE GREEN CLAD digester tanks cling to the brow of the hill at the highest point of the plant almost like a mediaeval tower. Sludge is circulated through a heat exchanger to maintain temperature at 95 degrees to decompose the sludge. It is 35 feet in diameter, 21 feet deep.—(Staff Photo)

The official opening of the town's spanking new expanded water pollution control plant will take place this Saturday afternoon.

Acton council has invited everyone to participate in the opening ceremonies and view the plant, ranking as one of the most modern on the continent.

Both the engineers and contractors are mighty proud of the plant which cost an estimated $640,400 to complete. Construction began in September, 1968 on the project and workmen are just putting finishing touches on the job this week.

Special speakers at the opening ceremonies, which begin at 2 p.m. this Saturday, will be the Hon. George Kerr, Minister of Energy and Resources, native Actonian John Barr from the Ontario Water Resources Commission and Halton federal M.P. Rud Whiting.

Mayor Les Duby will welcome guests at the opening and preside for the ribbon cutting assisted by platform guests. Rev. Harry Dawson will dedicate the new plant.

Ted Tyler Jr., chairman of the sewer and water committee, is program chairman.

Conducted tours of the new facility will be given immediately after the brief opening ceremonies.

Site for the pollution control plant was donated by Beardmore and Co. Clairson Construction were the main contractors with the mechanical contractor N. L. Lever Ltd., Toronto. Consulting engineers for the project were R. V. Anderson Associates Ltd., Toronto.

The original pollution control plant which is still operating and carrying about half the load, was approved for construction in May, 1950, when Acton was a town of 3,000 people and began operating in October of 1951.

The plant's capacity more than doubled with the introduction of the addition to the town's sewage system. It is expected to serve a potention population of 7,500 and will handle 750,000 gallons a day which works out to 100 gallons a day per capita when it is at full capacity.

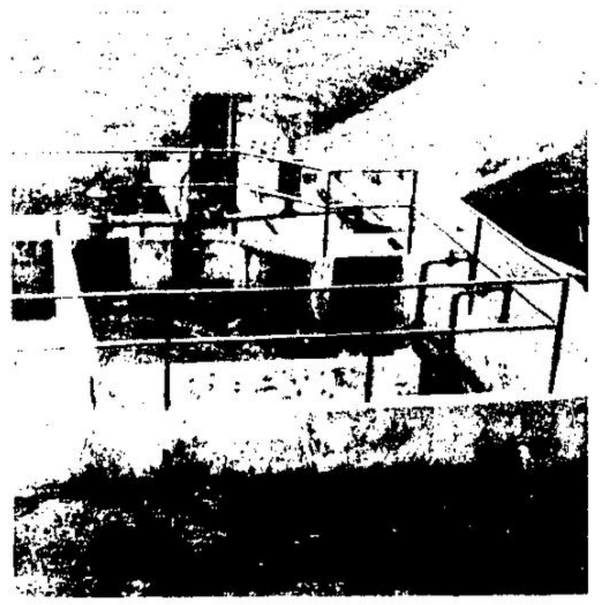
Overall efficiency of the plant complex including the primary, secondary and tertiary phases is expected to be about 98 per cent. The final or tertiary treatment is the unique part of the plant which will make Acton the envy of many municipalities in Ontario.

This may sound like boasting but the increasing importance attached to control of pollution in this age makes the new plant doubly important for the municipality.

Construction of the addition to the plant made it necessary to change the course of the Black Creek. The creek bed was lowered nine feet so the adjacent swamp would not interfere with work on the addition. The treated effluent flows back into the creek so pure it can be drunk.

Engineers cautioned against trying the drinking bit, however.

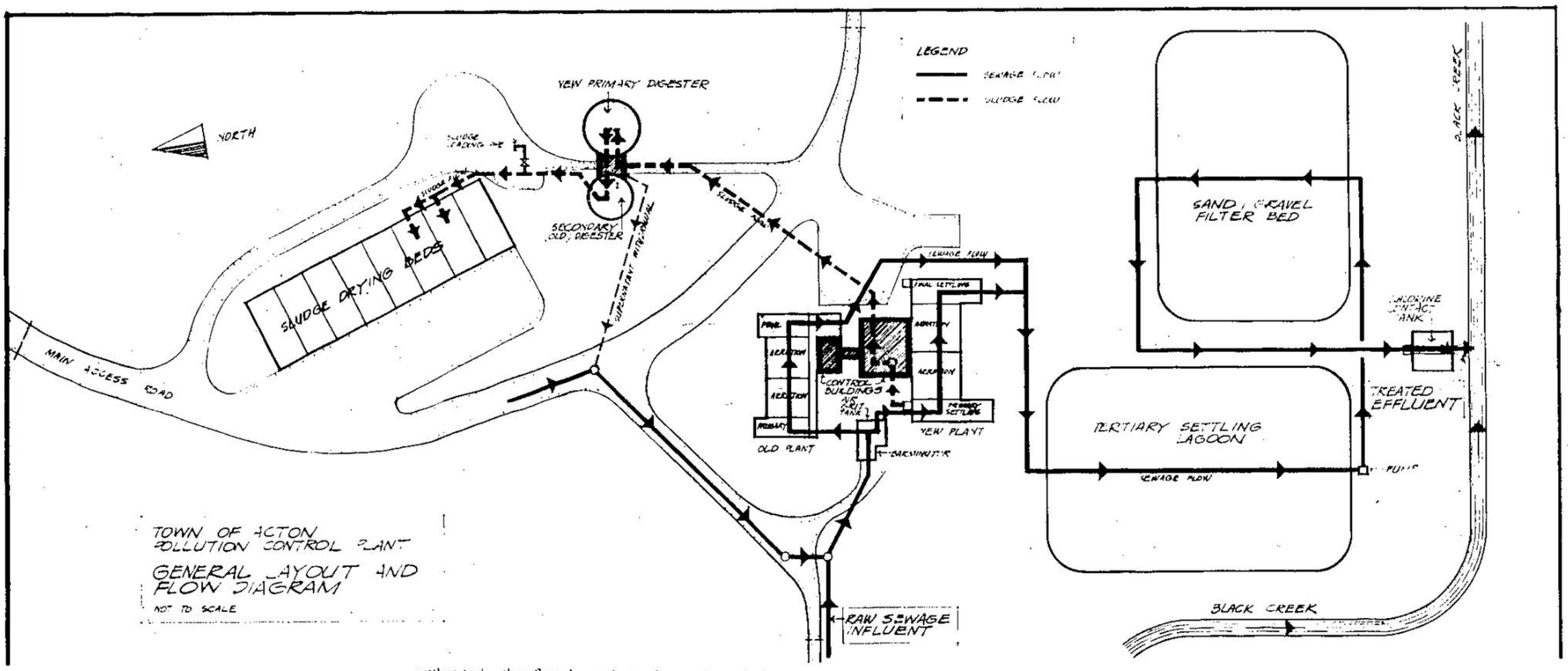
Odor is almost nil from the modern plant which has a bright, airy control building with an office, laboratory, a washroom that will be the envy of many householders as well as storage and space for complex control panels and pipes both on the ground floor and in the well-lit basement. Bright paint helps to make the control building a pleasant place to work.



THE BARMINUTOR where sewage first enters the plant, shreds large particles in the sewage flow to a size more readily treated.- (Staff Photo)

The Acton Free Press

Ninety-Fifth Year. — No. 48 ACTON, ONTARIO, WEDNESDAY, MAY 27, 1970 SECOND SECTION



OUTLINE OF TREATMENT PROCESS

INFLUENT WORKS — Raw sewage in the Town of Acton is collected in a system of gravity sewers, supplemented by area pumping stations, and flows to the Pollution Control Plant for treatment and subsequent discharge to the Black Creek.

BARMINUTOR — The raw sewage first passes through an automatic shredding device known as a Barminutor. This unit shreds the larger particles in the sewage flow to a size more readily treated and to reduce overall maintenance costs due to equipment pluggages.

GRIT REMOVAL — Following the Barminutor, the sewage wastes enter the grit tank where a violent yet carefully controlled roll of the tank contents results from the introduction of low-pressure compressed air through special underwater diffusers. This induced roll results in the settling out of the heavier grit and sand particles but also keeps the lighter organic materials in suspension for subsequent treatment. The settled grit is pumped from the bottom of the tank, using air lift pumps, and discharged into channels where the liquid is decanted back into the main flow and the grit is removed for landfill purposes in the vicinity of the plant.

FLOW SPLITTING — Following the removal of grit, the waste flow is then hydraulically diverted to the new plant extension (design capacity of 450,000 gals./day). Owing to the higher elevation of the original plant, air lift pumps are employed at this point to pump that portion of the waste flow.

PRIMARY SETTLING — Although different in size, the primary settling tanks in the new plant extension are similar in function and results. With a detention period of approximately two hours, the larger organic particles in the sewage settle to the bottom of the tank to form a dense sludge. This sludge is then continuously collected by underwater chain and flight mechanisms and moved to the bottom end of the tank where the concentrated sludge is transferred * by manual control) into the adjacent raw sludge hopper. From this hopper the raw sludge (plunger-type) pumps transfer the sludge along with surface scum, the the Primary Digester for further treatment, after first passing through the heat exchanger.

The effluent (treated liquid waste flow) from the primary settling tanks, then flows by gravity to the aeration tanks for further processing, but even at this stage, approximately 35 per cent of the BOD (Biochemical Oxygen Demand) pertaining to the degree of pollution) and 50 per cent of the Suspended Solids have been removed from the waste flow.

AERATION — AT this stage of the treatment sequence, we encounter the activated sludge process, wherein the primary effluent is introduced into the aeration tanks where a controlled and balanced bacteriological environment is maintained. To maintain this environment, large quantities of oxygen and return sludge (from the Final Settling Tanks) are required. At this installation, the waste flow is retained in the aeration tanks for an effective period of about 7 hours and oxygen is generated by the floating-type mechanical aerators. Fundamentally, these aerators consist of a motor-driven, underwater impeller which violently mixes and agitates the tank contents to prevent deposition of solids and allows surface oxygen to be entrapped by the liquid particles.

FINAL SETTLING — The effluent from the Aeration Tanks (often referred to as mixed liquor) now enters the final settling tank for another detention period of about 2½ hours to allow the "activated" sludge to settle out. This tank is also equipped with a flight and chain collector mechanism to remove the settled sludge for subsequent pumping and return to the aeration tanks. Although the larger portion of this sludge is returned to the aeration tanks to maintain the bacteriological balance, a small portion is "wasted" to the primary settling tanks for ultimate transfer to the digester. At this stage of the process, the relatively clear effluent from the final settling tanks is approximately 90 per cent free of BOD and Suspended Solids.

TERTIARY TREATMENT — Due to the low annual flow in the Black Creek and the imcompatible high flows from the expanded Pollution Control Plant, an additional treatment (Tertiary Treatment) stage is employed.

The final tank effluent from the existing plant as well as the new plant extension flows through separate Parshall Flumes which record the individual hydraulic flows. These effluent flows then combine and enter the Tertiary Settling Lagoon for a retention period of approximately 1-3/4 days. This earthen-bermed lagoon is about nine feet deep and covers an area of approximately 2/3 acres.

The lagoon effluent then passes through a pumping stage and is sprayed over a Sand and Gravel Filter Bed through 96 spray nozzles. The area of this bed covers slightly less than an acre and consists of a four foot depth of specially graded sharp sand, pea gravel and crushed stone, underlain with perforated plastic filtrate drains. The sprayed effluent thus percolates through the filter media and is collected in the underdrain system for gravity transfer to the Cholrine Contact Tank.

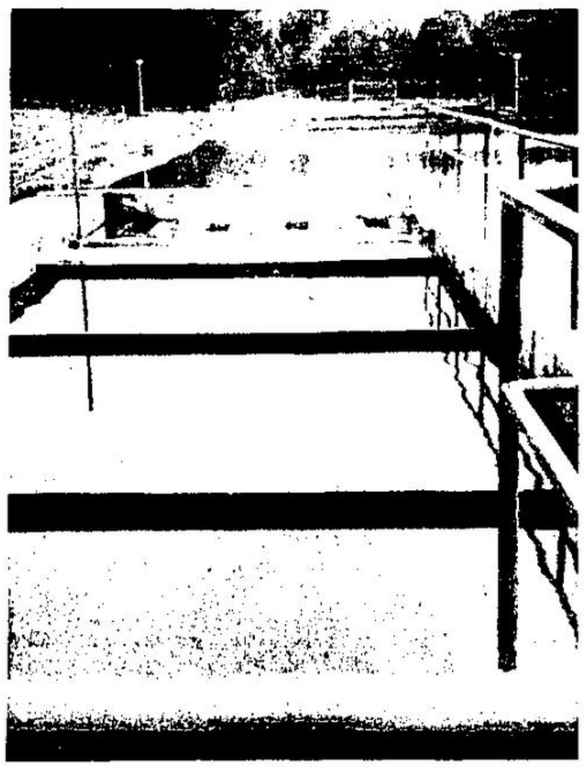
CHLORINATION — The filter bed effluent enters the chlorine tank and immediately comes in contact with a precisely controlled chlorine solution for a period of at least 30 minutes at average flow. This disinfection destroys any pathogenic bacteria which may be contained in the effluent prior to the final discharge to the Black Creek.

The overall treatment efficiency of the plant complex, including primary, secondary and tertiary phases is expected to be about 98 per cent.

SLUDGE DIGESTION AND DISPOSAL — The raw sludge withdrawn from the primary settling tanks is pumped through a heat exchanger, when it is preheated prior to introduction to the primary digester. This digester, equipped with a fixed steel dome, is 35 feet in diameter, 21 feet deep, and of gas-tight construction. The sludge in this digester is recirculated through the heat exchanger so as to maintain the digester temperature at about 95 degrees to provide the environment necessary for the anaerobic bacteria to decompose (or digest) the sludge.

During decomposition, gasses are produced (principally methane) and are used as fuel for the heat exchanger boiler. The two motor driven mixers located on the digester dome are used to minimize scum build-up at surface level of the sludge.

The sludge is retained in the primary digester for a period of approximately 15 to 20 days and is then transferred to the smaller secondary digester where the digestion process is completed. In this digester, the digested sludge slowly settles out leaving a liquid supernatant which is returned to the aeration tanks for further treatment. This sludge is then transferred to the drying beds, located nearby, where it is dewatered to reduce the volume for final disposal. The sludge cake at this stage can be used as a soil conditioner subject to the approval of the local health authorities.



FINAL SETTLING tank before sewage goes into the lagoon is shown. It allows activated sludge to settle.—(Staff Photo)