FORTY YEARS OF WATER POLLUTION CONTROL IN CONNECTICUT *

By Merwin E. Hupfer, *Principal Sanitary Engineer Connecticut Water Resources Commission.*

THE year 1965 is the 40th anniversary of the creation of the State Water Commission, forerunner of the present Water Resources Commission, as the pollution control agency for the State of Connecticut. The fact that this State was one of the earliest in the nation to pass a water pollution control law points out the great foresightedness of our State Legislature in 1925. Most states followed about 25 years later and some still do not have comprehensive control.

It was only natural for the early settlers of Connecticut to establish their communities along the banks of our major streams where abundant supplies of clean water were available for domestic purposes, manufacturing operations, irrigations, generation of power, transportation and the disposal of industrial and domestic wastewaters. The availability of an excellent water supply was to a great degree responsible for the early development of our industrial economy. The first grist mill in Connecticut was built on the Connecticut River at Wethersfield about 1637. Other mills followed throughout the early days, all located near streams from which water power for their operation was derived. A great number of items were manufactured in the State during colonial times making use of water power; nails were made and exported before 1716, copper coins were produced in Simsbury by 1737, a paper mill went into operation at Norwich in 1768 and another one in East Hartford in 1776.

Thus it can be seen that our pollution problem commenced some 200 years ago. As our industries grew in number, size and type our communities grew accordingly. This brought about the development of public water supply systems which, in turn, necessitated the construction of sewage collection systems. Hence, the pollution problem continued to grow until it became apparent that further growth would be seriously hampered unless steps were taken to maintain the quality of our clean streams and upgrade that of our polluted streams.

Early History of Pollution Control in Connecticut

The first recorded pollution control action was taken by the General Assembly in 1886 when it passed a special act prohibiting the City of

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Meriden from carrying out its plan to discharge raw sewage into the Quinnipiac River. This move led to the construction of the first sewage treatment plant in the State in 1891. The type of treatment employed was "land filtration" — natural sand filters with no underdrains.

Superior Court Judge G. W. Wheeler, in 1895, rendered an historic decision in the case of Morgan vs. City of Danbury when he established the rights of riparian owners to the waters of a stream with respect to its use for sewage disposal by a city. This decision stated in part —

"That the sewers were built by the defendant for a public purpose under authority of law and in the exercise by it of a governmental duty is of no importance. Its use of the stream (to the material injury of the plaintiff) under its charter without obtaining the right to the use of the stream by grant or prescription and without compensation is an illegal use."

"It is rudimentary that no man can be deprived of life, liberty or property but by due process of law, nor can private property be taken, even for public use, without just compensation first having been made or received; and under no form of government having regard for man's inalienable rights can one be permitted to deprive another of his property without his consent and without compensation, on the plea that the injury to the one would be small, and the advantage to the other, or even to the public, would be great.

"The rights under the law of a riparian proprietor (as is this plaintiff) in the waters of a running stream . . the common interest requires that the rights should be exercised and enjoyed by each in such a reasonable manner as not to injure unnecessarily the rights of any other owner above or below."

The General Assembly at the 1897 regular session authorized the formation of a sewer study commission to "investigate the subject of sewage disposal of the cities, boroughs and towns of Connecticut." The report of this commission to the 1899 session of the General Assembly stated in part:

"Our cities are growing all the time, the quantity of sewage discharged into streams is thereby increased, and the practice which 20 years ago may have been objectionable has in many cases become unbearable."

"The Courts have found for the plaintiffs in every case that has come to our knowledge, and have rendered decisions strongly upholding the rights of a single riparian owner as against the convenience and financial interests of a large community."

"The disposal of sewage without nuisance is a duty which each community owes to the public."

"The State is now at the parting of the ways. It may leave the whole matter to drift as it will. Our streams will then become more and more polluted . . [as] is going on in this State today or the State may take up the matter and seek . . . to stop further pollution . . this course, we believe, the State should adopt."

The State Board of Health was directed by the Legislature in 1913 to investigate the subject of pollution of waters and to recommend such legislation as would lead to the termination of all such pollution. The 1914 report of this Board commented and recommended:

"The rights of the public should be supreme at all times. But the mistaken idea that the interests of public health and manufacturing industries are diametrically opposed should be dismissed, it has been one of the greatest obstacles of preventing the correction of pollution in our streams. Each needs the assistance of the other and they should work hand in hand solving the problem . the need of some state body to pass upon the larger problems of intertown and interstate rights seems very plain . we . will introduce legislation designed to remedy the present conditions in the waters of the State and prevent their pollution in the future."

In 1917 the Legislature made provision for an Advisory Board to assist the Department of Health in this work and an Industrial Wastes Board was set up to investigate pollution as affected by factory wastes. The 1918-1921 report of this Board concludes:

"That the economical value of a stream is greatly reduced or destroyed by gross pollution that dilutions sufficient to insure satisfactory conditions cannot be secured on the streams studied by regulation of stream flow . that the problem of diminishing the pollution of streams in Connecticut should be approached in a systematic manner, guarding those streams which are not as yet seriously affected and, at the same time, eliminating instances of gross pollution as fast as possible."

The General Assembly in 1921 created a commission to — "investigate the elimination from streams of all substances and materials polluting the same, and report to the next session of the General Assembly its recommendations for the purpose of rendering streams free from all polluting matter." This report concluded that — "it is the duty of the State to enact a law which will develop a comprehensive program of limitation and regulation in a constructive and equitable manner of the amount of pollution or impurity in the waters of the State which will meet specific conditions, basing the standard on the reasonable and economic use of such waters with due regard to public health."

The recommendation of this report was followed when the General Assembly of 1925 passed "An Act Concerning the Pollution of Water and

Creating a State Water Commission." Thus, Connecticut became the third state (preceded only by Rhode Island and Pennsylvania) to adopt water pollution control laws. The Commission was quickly organized and Connecticut's comprehensive pollution abatement program was underway in close cooperation with the State Department of Health. It is interesting to note that the other two states have since made basic changes in their laws. Consequently, Connecticut is the oldest state continuously operating under a statute of this type.

Although the pollution problem is 200 years old, the problem of its control has only been of interest during the last eighty years. We can consider this period in two equal parts, before and after the establishment of a continuing responsible agency.

The first forty years, as described above, were given to study and declarations of the courts of individual cases. These brought about no general development of facilities to ameliorate the problem, but did establish certain fundamental principles which determined the direction of the subsequent approach to abatement.

These fundamentals are:

1. The State has the power to direct treatment by a municipality.
2. Private riparian rights, even though small, can not be abused, even for public benefit.
3. Primary emphasis should be on municipal sewage discharges.
4. Pollution is not only measured by its effect on public health.
5. Correction of problems should be systematic, constructive and reasonable.
6. Program should save harmless the existing pristine water.
7. Industrial pollution should also be controlled by the State.

The importance of these principles can be appreciated when we recognize that subsequent operations in the second period were based on them and that such operations have been comparatively successful.

Water Pollution Control Statutes

The State Water Commission consisted of three members appointed by the Governor. In 1957 the Legislature superseded this Commission, as well as the State Flood Control and Water Policy Commission and the State Board for the Supervision of Dams, by establishing a seven-man Water Resources Commission to carry out the functions of all three former agencies.

During the past 40 years only a few minor changes and additions to the pollution control laws have been found necessary. The statutes are divided

into three categories, those sections affecting sources of pollution which were in existence at the time the State Water Commission was established, a section controlling new sources of pollution, i.e. those established subsequent to 1925, and a section covering the pollution of waterways by refuse.

In situations where the pollution existed before 1925, the Commission may cite any person, firm or corporation causing such pollution to appear before it at a hearing to show cause why the Commission should not issue an order regulating such pollution. If, upon hearing, the Commission finds that the person is polluting the waters of the State, it may issue an order directing the person to use or to operate some practicable and reasonably available system which will reduce, control or eliminate such pollution. The cost of installation, maintenance and operation thereof shall not be unreasonable or inequitable. The order must specify the particular system to be used or operated and, if there is more than one practicable and reasonably available system, the order must allow the person to choose which one of the systems he wishes to use. The order must also specify the time within which the system shall be used or the operation thereof commenced. In the case of a municipality, but not an industry, which is polluting the waters of this State, the Commission may, prior to the issuing of an order and when in its judgment all parties are thus served thereby, require the municipality to have made a preliminary engineering survey for the purpose of determining the cost of correcting the pollution. In the event that an order is not carried out, the Commission may cause its enforcement by application to the Superior Court to enjoin the person from continuing the pollution, the application being brought and the proceedings being conducted by the Attorney General. Any person, firm or corporation aggrieved by a Commission order may, within 30 days, appeal from such order to the Superior Court.

A new source of pollution, one not existing in 1925, cannot be established unless the person, firm or corporation has applied and obtained from the Commission a permit authorizing such pollution. The Commission may issue a permit which it finds will best serve the public interest.

The statute pertaining to the pollution of waterways by refuse prohibits the depositing of such refuse in all surface waters of the State and also forbids the establishment of a dumping area for such material on land within 50 feet of the high water mark of the watercourse or in any place where a storm or high water could carry material to an adjacent waterway, unless the Commission authorizes the disposal on such land if satisfied it will not pollute adjacent water. This law specifically includes the deposition of such matter from waterborne craft.

Philosophies, Policies and Procedures

Quoting from the first biennial report of the State Water Commission — "two possible courses of procedure were open to the Commission in attempting to carry out the intent of the law:

1. To rely on the authority conferred upon the Commission by law, and after proper investigation to issue the necessary orders to secure elimination of specific causes of pollution.
2. To attempt by education and personal conference to develop a sentiment calling for correction, and by assistance to and cooperation with both industry and communities aid in bringing about the desired results."

The Commission adopted the second approach as its main avenue of attack.

The first two major objectives of the Commission when it was established were to evaluate the State's pollution problem so as to set up a reasonable and logical control program and, being so early in the business, to develop practical methods for treating industrial wastewaters. The latter was a requirement brought about by the General Statutes which, as you will recall, make it mandatory for a Commission order to direct a polluter to install a specific, practicable and reasonably available system. After considerable deliberation it was concluded that the most economical and effective means of developing the necessary treatments was to utilize existing research facilities at universities in the state. Hence, the Commission entered into contracts with Wesleyan and Yale Universities for the performance of this vital work. This approach has proven so effective that contracts with these schools have been renewed annually ever since. Thus, Connecticut has pioneered in developing a number of successful industrial wastewater treatment methods which have become standard approaches. Our research program must be a continuing one in order to keep abreast with the ever-changing character of industrial wastewaters brought about through the development of new products and processes.

An essential part of pollution abatement work is a program for the education of the public in order to obtain its much needed support and assistance. Funds available for this phase of our work have always been very limited. Consequently, our main method of carrying out this program has been through talks before all types of civic-minded groups by the Commission's staff.

During the first several years of the Commission's existence priorities for pollution abatement were based on urgency and necessity. Under this

approach problems studied were scattered throughout the state. Eventually, cooperation with both municipalities and industries became more difficult as it became apparent that the discharges were not receiving equal attention. Industries also were disinclined to cooperate when their competitors and associates were not subject to the same requirements. In the interest of fairness under the statutes new approaches were adopted: the industry-wide approach and the watershed or river valley approach.

Under the first approach representatives of all the polluters in one type of industry, such as paper, brass and copper, textile or sand washing, are gathered together to discuss their mutual problems in order to promote equal and effective requirements for treating their wastes.

In the second approach, after a detailed study has determined what results can accrue from specific action by each municipality and industry in an entire valley, a policy is established. Such policy is one which is equitable to all and includes a reasonable period of time during which they are expected to construct and place in operation the necessary waste treatment facilities. These approaches, although not as effective as we had hoped, nevertheless have vastly improved cooperation with both industries and municipalities.

Connecticut is in an unenviable situation inasmuch as polluted waters from all three of our neighboring states cross into this state. In 1941 we entered into a compact with New York and New Jersey setting up the Interstate Sanitation Commission to control pollution of Long Island Sound. In 1947 Connecticut joined the New England Interstate Water Pollution Control Commission under a compact between the New England States and New York for controlling the pollution of all regional interstate waters. These agencies have worked effectively in the solution of many interestate pollution problems and have clearly proven their value.

An important part of every state's pollution control program is the monetary assistance available to both the state and municipalities from the Federal Government.

The Federal Water Pollution Control Act, administered by the Public Health Service of the Department of Health, Education and Welfare, authorizes grants to state water pollution control programs. This act was approved in 1956. The amount of funds received by each state is based on a complex formula which takes into consideration, among other items, the amount of money in the state's pollution budget. In other words, the federal grant is meant to supplement and not reduce state funds, thus speeding up the state's program. Thus far, Connecticut has been assisted considerably by this program but has yet to qualify for the full amount allocated to us because of our low budget.

The Federal Water Pollution Control Act also makes available grants for the construction of publicly-owned sewage treatment facilities, eligible construction consisting of intercepting sewers, pumping stations, force mains and sewage treatment plants. Under the initial act the grant received was based on 30 per cent of the eligible project costs, not to exceed $250,000. The Act has since been amended retaining the 30 per cent limit but increasing the maximum to $600,000 per project. The total funds appropriated annually by Congress to the program have risen from $50,000,000 initially to $100,000,000 at the present time. Another amendment allows increased grants for projects serving more than one municipality.

The construction grants program is administered by the Public Health Service in cooperation with the Water Resources Commission. Our agency has the responsibility of establishing the priority of each eligible project in the State. Connecticut's initial allocation was $630,000 per year which has risen to about $1,300,000 per year at this time.

It is understandable that no municipality eligible for a construction grant is willing to commence a needed project without one. Therefore, in an effort to keep sewage works construction moving at as brisk a pace as possible and to be fair to all communities, the Water Resources Commission has retained the $250,000 per project maximum limit. Since the inception of this program in 1956, 44 projects in Connecticut have been offered grants totaling $7,631,300. It becomes apparent from this discussion that Connecticut's municipal sewage works construction is tightly keyed to the federal construction grant program.

The Federal Housing and Home Finance Agency, through its Community Facilities Administration, loans money interest free to municipalities for the purpose of planning sewage works facilities. This money can be used for the preparation of reports and/or plans and specifications and does not have to be repaid until the facilities are constructed. However, it should be noted that when such a loan is offered to a community, the Housing and Home Finance Agency assumes that construction will commence within five years and, thus, it is able to loan money to a maximum number of applicants from a revolving fund.

The capability of the Water Resources Commission to abate pollution is based on its power to issue court-enforceable orders, but, as indicated earlier, it has always been the policy to work cooperatively with municipalities and industries toward the correction of their problems, relying on formal actions under the law only as a last resort. Thus, six years passed before the Commission had to issue its first order — to Princeton Rayons, Inc., Watertown, in 1931 for the construction of a textile wastewater treatment plant. To date a total of 36 commission orders have been issued, 31

to municipalities and 5 to industries. It should be noted that 12 of the municipal orders were issued to only 3 communities who have taken each step leading to the construction and operation of sewage treatment facilities only when ordered to do so. The last order was issued in December of 1964 to the Kent Sewer Association for the construction of a sewage treatment plant. The Commission has also held an additional 19 hearings which did not result in the issuance of orders due to agreements made at the hearings.

The Commission's most recent hearing was held just this past Monday and was concerned with the discharge of inadequately treated sewage and kitchen wastes from a restaurant.

The first court action instigated by the Commission was taken in 1932 when Princeton Rayons, Inc. ignored the first Commission Order. Superior Court Judge A. F. Ells issued a Judgment and Order of Injunction which requires the firm to plan, install and place in operation a system for controlling its pollution.

Two industries appealed Commission orders to the Superior Court, United Distillers Products Corporation in 1943 and Matson Mills, Inc. in 1946. The first appeal was denied. In the second case, the firm was ordered by the court to construct sewage disposal facilities, but the industrial waste problem was remanded to the Commission for further study due to process changes made in the six years from the time of the Commission's order to the date of the Court decision. Before studies were completed, the firm went out of business for economic reasons.

The first municipality to appeal a Commission order was the City of Norwich in 1951. In 1956 the cities of Ansonia, Derby and Shelton also appealed orders. The Superior Court, and on further appeal, the Supreme Court of Errors found in favor of this Commission in all instances and the four municipalities were directed, by court order, to construct the necessary collection and treatment facilities. Norwich constructed only three of seven stages of its project and Ansonia, Derby and Shelton did nothing. In 1964 all four communities were issued contempt citations, were found in contempt of the Superior Court and are now proceeding with their projects under new time schedules issued by the court.

It can certainly be concluded that no one has the moral or legal right to pollute and that the courts have no qualms in taking the indicated action. Only the taxpayer suffers, due to the ever-increasing costs of construction; when his town fathers delay the construction of needed sewage works by forcing time consuming and costly legal procedures.

Present Quality of Connecticut's Surface Waters

Over the past few years, through the efforts of many state, interstate, federal and private organizations, our nation's pollution problem has been brought into the limelight but not always into proper focus. Let us endeavor to place Connecticut's problem into its proper perspective by presenting the facts for your appraisal in several ways: according to areas of the state, according to lengths of streams and as over-all statistics on both numbers of problems and volumes of wastewaters.

As Mr. Average Citizen travels across our State he is very apt to be more aware of our larger streams on which are located the majority of our major municipalities and industries and are thus carrying the heaviest loads of municipal and industrial wastewaters, considerable portions of which are either untreated or inadequately treated. Little thought is given to the myriad of smaller streams, almost all of which are clean.

In Figure 1, the shaded areas of the state are those tributary to public water supply reservoirs owned both publicly and privately. These areas cover 785 square miles, or 15.8 per cent of the state's total area. Strict control is exerted by both the utilities and the State Department of Health relative to the disposal of sewage and industrial wastewaters on these watersheds. There are no direct discharges of wastewater of any description either treated or untreated. Subsurface discharges must be in accordance with the State Public Health Code, such regulations being considerably more strict on these watersheds than throughout the remainder of the state. All waters in these areas are of excellent quality. To use them for public drinking water supply, only treatment consisting of chlorination and possibly taste and odor control measures is necessary.

All streams in the unshaded areas, which comprise most of the remainder of the state, are of a quality suitable for bathing or better. Only the crosshatched streams are those where significant pollution exists, and they constitute an insignificant portion of the State's total area. All of their tributaries are of high quality.

Areawise then, the pollution problem which remains to be corrected is located along the streams that are shown crosshatched. There are, of course some minor discharges into streams in the unshaded area, but they are so small and are of a type as to have no appreciable effect on the stream quality.

The water quality picture may also be considered from the viewpoint of length of stream. The total length of Connecticut's rivers and streams has been estimated to be about 8,400 miles. 7,818 miles, or 93.1%, lie

within the shaded and unshaded areas of the State. The remaining 582 miles are represented by the crosshatched streams. Even of this mileage, 324 miles, or 3.9%, are suitable for boating, wildlife and fish habitat. 226 miles, or 2.7%, are only suitable for power, some industrial uses and the transportation of sewage and industrial wastes. This leaves 32 miles, or 0.3%, unsuitable for any purpose.

Classifying water quality by either watershed area or stream length does not present the entire picture of the effect of pollution on our water resources. For example, a given distance along a larger river made unsuitable for any purpose by pollution has a considerably greater effect on our water resources than the same distance of similarily polluted water along a small stream. Our larger streams fall in the lower classifications because of the manner in which this State has developed. At such time as we are able to state that there are no discharges of untreated sewage or industrial wastewaters into our watercourses, all of Connecticut's surface waters will be of a quality at least suitable for boating, wildlife and fish habitat.

Figure 2 presents an indication of the quality of water along our 253-mile shoreline based on the State Department of Health's bacterial evaluation of shore bathing waters conducted during the summers of 1961 and 1962. Shown are the bacterial classification, miles of shoreline in each classification and the distribution along the shoreline. The coliform determination used in this study is indicative of the presence of sewage in the water. Classes A, B and C are considered as "safe for bathing purposes" and Class D, as "not recommended for bathing" Of the 253 miles of shoreline, 221 miles, or 87% are safe for bathing. Most of the Class D waters are located in Norwalk, Bridgeport, New Haven and New London harbors, so practically the entire length of shore suitable for recreation has water of bathing quality. It is encouraging to note that the total mileage of Class A shoreline increased by 64% over that found by the previous survey of 1959 and 1960.

First 40 Years of Progress

During the first few years of the State Water Commission's existence, considerable time and energy was spent in determining the extent of the state's pollution problem and setting up of policies and a program for carrying out steps leading to its correction. Also in these formative years the Commission spent considerable time bringing about the treatment of sewage at all state institutions. Soon our country entered into the long period of depression, in spite of which many sewage and industrial waste treatment plants were installed. From 1940 to 1945 the scarcity of labor

and materials precluded the construction or installation of waste treatment facilities. During the next three years construction costs increased so rapidly that it was deemed inadvisable to require the construction of major treatment plants. During World War II and Post World War II years the population of the State increased rapidly, the greatest increase coming in urban and suburban areas served by public sewerage systems. Industrial production not only increased but processes changed radically due to the use of new raw materials and the development of new products, causing the volume and characteristics of industrial wastewaters to be vastly altered. Much of the time during these years was spent by the Commission in requiring industries and municipalities to prepare detailed plans and specifications for treatment facilities. Thus, in the late 1940's with the country settling down to peace time conditions with manpower and equipment again available, the construction of wastewater treatment facilities increased at an unprecedented rate which has continued to date.

The next illustration, Figure 3, indicates, statistically, the achievements made in wastewater treatment. Shown are the locations of existing treatment facilities and discharges requiring treatment. Not included on this map are minor industrial and commercial discharges to watercourses, subsurface discharges with the exception of a very few industrial waste disposal systems of substantial size and complexity, and all discharges into municipal sewerage systems. It is readily noted that our pollution problems are grouped in major communities and strung out along certain major streams. They are by no means spread evenly over the state.

Precisely how much has been accomplished during the past 40 years — a period during which the population of the State has doubled, industry has mushroomed, and sanitary and industrial wastewaters have increased accordingly — toward our aim of providing treatment for all sources of pollution? There are in operation today 1,231 facilities treating municipal, institutional, industrial and private waterborne wastes throughout Connecticut of which 990 are treating sanitary wastes and 241 are treating industrial wastes.

Table 1 shows the breakdown of sanitary waste disposal facilities. You will note that 95.9% of the sanitary wastes eminating from municipalities is treated in 89 plants, 100% of the sanitary wastes from state-owned facilities is treated in 20 plants and 93.3% of the sanitary wastes from factories is treated in 815 industrially-owned treatment facilities with wastes from an additional 1102 firms being handled by municipal systems. There are 66 sewage treatment plants (13 primary and 53 secondary) serving public and private schools, shopping centers, convalescent homes, restaurants, trailer parks, motels, etc. having discharges to surface waters.

TABLE 1

SANITARY WASTE DISPOSAL

Municipal Facilities

Type	*Number*	*Volume* (mgd)
Primary	50	136.3
Secondary	33	41.8
Other	6	15.0
None	—	8.1
Total	89*	201.2
Percent of Total Treated		95.9

State-Owned Facilities

Type	*Number*	*Volume* (mgd)
Primary	5	1.02
Secondary	9	2.08
Tertiary	4	0.91
Other	2	0.02
None	—	0.00
Total	20*	4.03
Percent of Total Treated		100.00

Industrial Facilities

Type	*Number*	*Volume* (mgd)
Primary	38*	0.032
Secondary	11*	0.030
Subsurface	764*	0.081
Sewered	1102	0.479
Other	2*	0.002
None	—	0.045
Total	1917	0.669
Percent of Total Treated		93.3

Miscellaneous Facilities

Type	*Number*
Primary	13
Secondary	53
Total	66*

* Total Treatment Facilities in Operation — 990

Table 2 is a detailed breakdown of the disposal of industrial wastewaters by major types. Here it is noted that of the 135.33 million gallons per day of industrial wastes produced in this State, 53.2% is treated. Two hundred and forty-one industries operate their own wastewater disposal facilities and the wastewaters from an additional 344 firms are handled by municipal systems.

Future Outlook

The accomplishments to date which have just been reviewed clearly demonstrate that signal progress has been made in pollution control, but they also indicate that considerable work remains to be done. First let us look at sanitary waste disposal. The upper portion of Table 3 shows that to treat the remaining municipal raw sewage discharges, accounting for 4.1% of the sewage produced in the State's sewered communities, we require 44 new, expanded and upgraded plants.

Of the facilities listed two new primary plants and one new secondary plant are under construction, two primary and two secondary plants are being expanded and one primary plant is being upgraded to secondary. Also, before the end of 1965 an additional eight plants are expected to be under construction, thus reducing the total of needed projects to 28 and the percentage of sewage requiring treatment to 1.4.

An additional municipal wastewater problem in Connecticut is caused by the fact that of our estimated 3,000 miles of sanitary sewers, 800 miles are of the combined type having active overflows during wet weather. Almost 100% of these combined sewers are located in eight of our larger communities.

All sanitary wastes being discharged from state-owned facilities are presently being treated on site or are discharged to municipal sewage treatment plants. One of these state-owned treatment systems is now being upgraded from secondary to tertiary treatment.

Our records show that there are still 199 factories discharging sanitary wastes in the amount of 0.045 million gallons per day to surface waters without treatment.

With respect to industrial wastewater treatment needs, 46.8% of the total amount of wastes now produced will require the construction of 234 new treatment facilities with a breakdown as shown in the lower portion of Table 3.

The needs described are those necessary to complete what is considered as a first stage of Connecticut's pollution control program, i.e. the providing of treatment for all sewage and industrial wastewater discharges to meet our present requirements. It is anticipated that all municipalities will be treating their wastes by 1970 and all industrial wastewaters will be treated by 1975.

The second stage of our pollution control program is one which will likely last into eternity. This will be the satisfying of our future needs by enlarging, altering, updating, upgrading and replacing sewage and industrial waste treatment facilities, including the utilization of new and better treatment equipment and processes as they are developed.

A significant first step toward this stage was taken by the Water Resources Commission late last year. The Commission noted that over the past several years it had become increasingly more apparent that secondary treatment of municipal sewage will be required in virtually all Connecticut communities in order to maintain water quality in a condition consistent with public demand. To date, this need has been anticipated by requiring consulting engineers submitting plans for municipal sewage treatment systems providing primary treatment to show, as part of their overall plan, adequate area and appropriate alignment for the future addition of secondary treatment facilities. Cognizance was made of the fact in order for communities with combined sewerage systems to pursue the construction of secondary treatment facilities, sewage and storm water separation would be necessary. Thus the following policy was adopted:

1. Engineering designs and plans for primary treatment works shall include provisions for the addition of secondary treatment facilities, and it is recommended that communities consider the installation of primary and secondary treatment facilities initially under the one project. However, under certain circumstances the actual construction of the secondary facilities would be dependent upon economic, technical, practical and other factors relative to each project.
2. All communities with combined sewer and storm water systems shall initiate and pursue a program of separation of these systems, or appropriate treatment of the combined overflows, the timing of each such project shall depend upon economic, practical and technical factors in each case.

It is expected that the sewage works construction program administered by the Department of Health, Education and Welfare, in cooperation with the Water Resources Commission, will be a continued incentive to our municipalities to proceed with their needed projects. The Federal Grant to our state pollution control program to enlarge the staff, speed up accomplishments and increase the research work carried out at the state level will continue to be helpful.

The ever-growing trend is for the federal government to become more and more intimately involved in the pollution control field. What commenced as a federal program of water pollution control research, technical services to states as needed, training programs for federal, state and municipal personnel and grants-in-aid to state and interstate agencies and municipalities has now expanded to a point where it is apparent that the federal government wishes to accept more and more responsibility over the pollution control program of the states. The Public Health Service is carrying out an increasing number of enforcement measures on interstate and navigable waters as authorized under recent revisions to the Federal Water Pollution Control Act. It behooves Connecticut to proceed as rapidly as possible with its program as the controlling of water pollution is and should be the primary responsibility and right of the state.

Connecticut's progress during the first 40 years of its pollution control activities has been substantial and the effectiveness of the State's program, highly significant. We are approaching the end of the first stage of our program and are already making strides in our final stage. The increased interest being shown by municipalities, industries, civic groups and the general public is a basic reason why our program is moving more swiftly today. With this impetus the goal of "clean waters for the use and enjoyment of everyone" is within sight.

TABLE 2

INDUSTRIAL WASTE DISPOSAL

Industry Type	*Method of Disposal*	*Number of Establishments*	*Volume of Waste* (mgd)
Paper			
	To Stream		
	Treated	10	11.99
	Untreated	9	10.73
	Sewered	1	.11
	Subsurface	2	(less than .01)
	Total	22	22.83
	Percent of Total Treated		53.0
Textile			
	To Stream		
	Treated	5	1.89
	Untreated	25	6.66
	Sewered	14	4.40
	Subsurface	5	.10
	Total	49	13.05
	Percent of Total Treated		49.0
Metallurgical			
	To Stream		
	Treated	56	5.90
	Untreated	124	27.50
	Sewered	146	17.88
	Subsurface	48	1.13
	Total	374	52.41
	Percentage of Total Treated		47.5

Miscellaneous

To Stream			
Treated	50	18.50	
Untreated	76	18.45	
Sewered	183	7.23	
Subsurface	65	2.86	
Total	374	47.04	
Percent of Total Treated			60.8

State Total

To Stream			
Treated	121*	38.28	
Untreated	234	63.34	
Sewered	344	29.62	
Subsurface	120*	4.09	
Total	819	135.33	
Percent of Total Treated			53.2

* Total Treatment Facilities In Operation — 241

TABLE 3

WASTEWATER DISPOSAL NEEDS

Municipal Wastewater Facilities

New Plants		
Primary	12	5.98
Intermediate	1*	15.00
Secondary	10	3.28
Expanded Plants	11	76.58
Upgraded Plants	10	10.56
Total	44	

* NOTE — Replaces Existing Intermediate Plant

Industrial Wastewater Facilities

Industry Type	*Number of Establishments*	*Volume of Waste* (mgd)
Paper	9	10.73
Textile	25	6.66
Metallurgical	124	27.50
Miscellaneous	76	18.45
Total	234	63.34