SUPPLEMENTAL REPORT

ON

POLLUTION IN THE

STATE OF MAINE

1954

SURVEY OF

INLAND WATERS

PART I

THE WATER IMPROVEMENT COMMISSION

in collaboration with

DEPARTMENT OF HEALTH AND WELFARE

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ORGANIZATION

As of July 1, 1955

STATE OF MAINE

EDMUND S. MUSKIE, GOVERNOR

WATER IMPROVEMENT COMMISSION

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DEAN H. FISHER, M.D., Secretary
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PREFACE

The purpose, scope, and organization of the activities resulting in the collection of data herein contained do not differ materially from that of that portion of the 1950 report dealing with the coastal sewer survey.

However the Sanitary Water Board gave way to the Water Improvement Commission as a result of legislative changes in 1951 and certain changes were made in the functions of the commission by the 1953 Legislature. Federal funds which had supported a field survey team were withdrawn in 1952, following which the State appropriated money to carry a partial field survey team.

A field survey team consisting of a chemist and an engineer has during the period covered by this report been financed by the appropriation of the Water Improvement Commission and a group doing similar work, but often even more limited in personnel was financed first by federal allocations and later by State funds, have been engaged in collecting data for this report.

PURPOSE AND SCOPE

The objectives to be achieved by this report are similar to the aims of the 1950 Report.

POLLUTION LAWS

The legislature of 1951 created the Water Improvement Commission and defined its functions, in effect simply changing the name of the Sanitary Water Board, under Chapter 383, P. L. of 1951.

In 1953 the legislature provided minor administrative changes in the functioning of the Water Improvement Commission, established standards of water quality classification proved classification procedure, and established the classification of certain surface waters in the State. It also requires municipalities to provide information to the commission relative to the present method of sewage collection and disposal and specifically applies its pollution restrictions to municipalities whereas the previous law did not. The provisions of Section 6 dealing with the deposit of foreign materials in public waters were reworded and certain waters within the state previously exempted from the provisions of the section were removed from the exemption list as of September 1, 1955.

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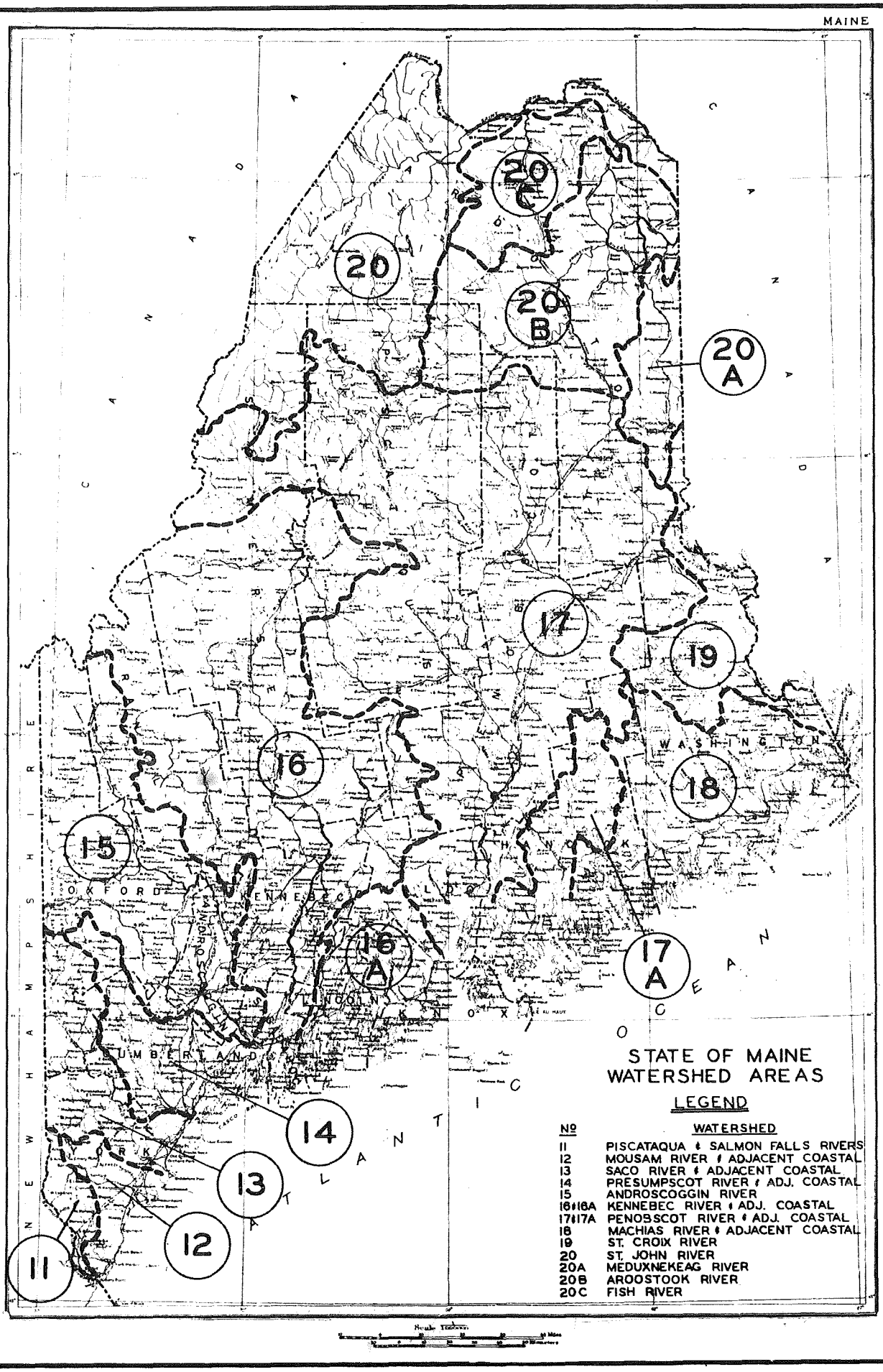
(Data taken and accumulated between
Nov. 1, 1950 and Jan. 1, 1954)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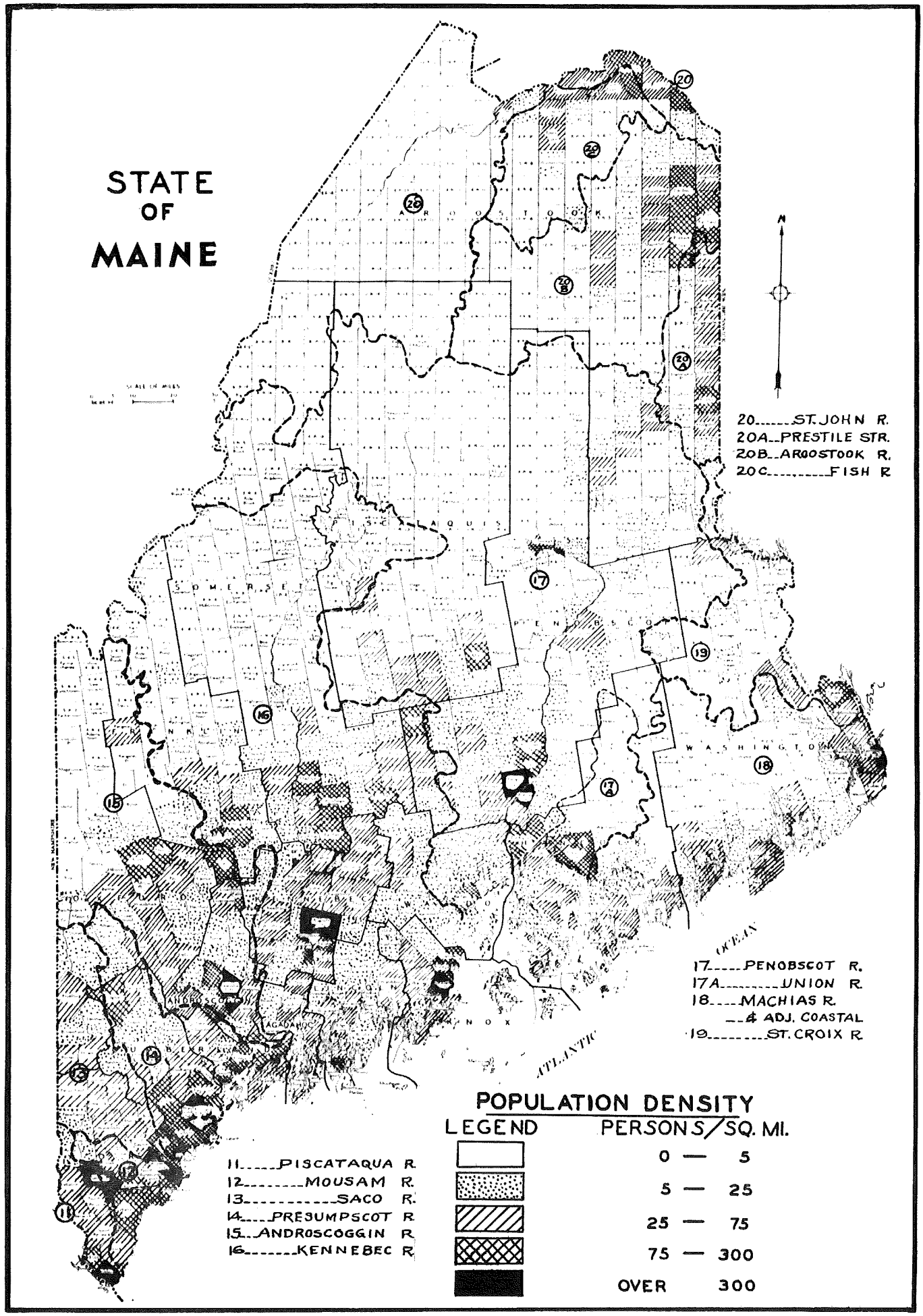
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LEGEND
PERSONS/SQ. MI.
0 — 5
5 — 25
25 — 75
75 — 300
OVER 300

WATER QUALITY SURVEYS OF THE SURFACE WATERS OF MAINE

Although the actual field work often included inland waters and those of tidal estuaries in the same survey and reported results without differentiation it is felt necessary to separate the data concerning them in the tabulations which follow throughout this report.

Accordingly, the data resulting from surveys will be found in three sections under Inland Waters, Tidal Estuaries, and Coastal Waters. Narrative data explaining and supplementing narrative data precedes tabulations for a given stream or segment shore line.

Since there is, in many cases, insufficient data from which to draw conclusions pertaining to a given body of water, all conclusions have been withheld, and this portion of the report is compiled only to serve as a data reference.

During the period immediately following the cut-off date of the last report (Nov. 1, 1950) the personnel of the Sanitary Water Board (which became Water Improvement Commission, Aug. 20, 1951) and of the Division of Sanitary Engineering were concentrated on the task of completing the coastal sewer survey. In the month of July 1951, the Water Improvement Commission trailer was moved from Orono to Presque Isle and work was started on the streams of the eastern portion of Maine's St. John Basin where it remained until March of 1952, thus for the first time water testing from the mobile laboratory was attempted during the winter and much was learned of the problems and of this work. In March (1952) the mobile unit was moved to Ellsworth and work on the sampling of streams and tidewater estuaries was continued until July when the unit was moved from the lower St. Croix to Machiasport for sampling of tidal flats in that area. In November of 1952 the laboratory was moved to Milbridge and the tidal flat survey was extended from Machiasport to Sullivan.

In January of 1953 due to failure of utility service at Milbridge it was necessary to find a new place for the trailer. It was taken to Rockland, parked in the local water company yard, and work was begun on sampling of tidal water from the Penobscot to the town of Damariscotta. Later in the year (August), with headquarters remaining at Rockland, work on sampling of inland waters in the general area of the Sheepscot-Medomak-St. George-March Stream watersheds was started. Data assembled is included herein and the cut-off date of this report follows the completion of sampling in this area.

During this period when the Water Improvement Commission mobile laboratory was engaged in eastern Maine, the trailer belonging to the Department of Health and Welfare was in use in York and Cumberland Counties. After the summer of 1952 only one person worked from this laboratory which was set up at Kennebunkport. Data was collected along the Presumpscot, Saco, Mousam, York, Salmon Falls, and Saco Rivers including both the tidal estuary and fresh water portions of these streams as well as a considerable amount of coastal sampling in the Scarboro Area.

In October of 1953, the chemist employed by the Department of Health and Welfare was reassigned to assist the Water Improvement Commission mobile laboratory personnel at the Rockland station and a man ordinarily stationed here was assigned the task of making physical surveys of the Penobscot East Branch, Mattawamkeag and several other small drainages to establish data for reports upon which to base classification hearings. A similar physical survey was made by Department of Health personnel on the Moose and Dead Rivers and on tributaries to Moosehead Lake.

No work was done on tidewater classification during this period other than that shown under sampling and the sewer survey.

Stream classification progress can be defined for this period by pointing to Section 1A of Chapter 403 of Public Laws of 1953 which sets up criteria of classification as follows:

> Sec. 1-A. Standards of classification. 1953, c. 403, § 2. The commission shall have 4 standards for the classification of surface waters and tidal flats.
>
> Class A shall be the highest classification and shall be of such quality that it can be used for bathing and for public water supplies after disinfection, and the dissolved oxygen content of such waters shall not be less than 75% saturation and contain not more than 100 caliform bacteria per 100 milliliters.

There shall be no discharge of sewage or other wastes into water of this classification and no deposits of such material on the banks of such waters in such a manner that transfer of the material into the waters is likely. Such waters may be used for log-driving or other commercial purposes which will not lower its classification.

Class B shall be the second highest classification and the dissolved oxygen content of such waters shall not be less than 75% saturation and contain not more than 300 coliform bacteria per 100 milliliters.

There shall be no disposal of sewage into such waters except from a sewage treatment plant with disinfected effluent, and no disposal of other wastes except those that will not lower the classification of the water or be injurious to aquatic life or render such dangerous for human consumption if commonly so used. Waters of this class shall be considered acceptable for recreational purposes, and, after adequate treatment, for use as a public water supply.

Class C waters, the third highest classification, shall be free from scum, slicks, odors and objectionable floating solids, and shall be free from chemicals and other conditions inimical to fish life, and the dissolved oxygen content of such waters shall not be less than 5 parts per million. During a period of temporary reduction in the dissolved oxygen content in this class water, due to abnormal conditions of temperature or stream flow, for the particular season involved, the commission shall take no action to reduce the amount of pollution from any source which is allowed in such class water under normal conditions.

Class D waters, the lowest classification, shall be considered as primarily devoted to the transportation of sewage and industrial wastes without the creation of a nuisance condition and such waters shall contain dissolved oxygen at all times. During a period of temporary reduction in the dissolved oxygen content in this class water due to abnormal conditions of temperature or stream flow for the particular season involved, the commission, provided a nuisance condition has not then been created in such water and in the opinion of the commission is not likely to be created during such season, shall take no action to reduce the amount of pollution from any source which is allowed in such class water under normal conditions.

In this connection (that of classification standards) it should also be mentioned here that the control of shellfish areas is under the jurisdiction (jointly) of the State Department of Agriculture, Division of Inspection, and the State Department of Sea and Shore Fisheries who accept the standards of the United States Public Health Service in respect to safe quality for shellfish waters. This has been prescribed as a median of 70 B. Coli (m.p.n.).

The Water Improvement Commission also succeeded in having considerable mileage of inland streams, with the tributary lakes, classified by the legislature and has, with the help of the Department of Health and Welfare, compiled reports of a physical pollution survey on several good sized sub-basins and public hearings have been completed in four instances. Streams classified by the legislature are listed below:

CLASSIFICATION OF SURFACE WATERS

Sec. 12. Classification. 1953, c. 331. The following surface waters shall be classified in accordance with the provisions of this chapter:

Androscoggin River Basin

I. The Magalloway river and its tributaries above the first crossing of the Maine-New Hampshire state line — Class A.

II. Kennebago stream and its tributaries above its confluence with Mooselookmeguntic lake — Class A.

III. Cupsuptic stream and its tributaries above its confluence with Cupsuptic lake — Class A.

Kennebec River Basin

I. Moose river and its tributaries above the outlet of Big Wood pond in Jackman — Class A.

II. North Branch of Dead river and its tributaries above its confluence with Flagstaff lake — Class A.

III. Austin stream and its tributaries above the highway bridge on route 201 in the town of Bingham — Class A.

IV. Carrabassett river and its tributaries above a point immediately downstream of its junction with the West Branch of the Carrabasset river in Kingfield — Class A.

V. Sandy river and its tributaries above Phillips at the highway bridge on route 142 — Class A.

Penobscot River Basin

I. Penobscot river and its tributaries above Seboomook lake — Class A.

II. East Branch of the Penobscot river and its tributaries above the outlet of Mattagamon lake — Class A.

III. The East and West Branches of the Piscataquis river and their tributaries above their confluence near Blanchard — Class A.

IV. The Sebec river and its tributaries above the outlet of Monson stream — Class A.

V. The East and West Branches of the Pleasant river and their respective tributaries above the confluence of these two streams above Brownville Jct. — Class A.

VI. The Passadumkeag river and its tributaries above Grand Falls — Class A.

VII. Olamon stream and its tributaries above the bridge on Horseback road — Class A.

VIII. Orland river and its tributaries above the outlet of Alamoosook lake — Class A.

IX. Great Works stream and its tributaries above the highway bridge on route 178 in the town of Bradley — Class A.

X. Sunkhaze stream and its tributaries above its confluence with the Penobscot river — Class A.

XI. Sourdabscook stream and its tributaries above the dam of the Hampden Water District at Hampden — Class A.

St. Croix River Basin

I. All tributaries of the St. Croix river, the drainage areas of which are wholly within the state of Maine, and including the West Branch of the St. Croix river and its tributaries which enter through Grand Lake flowage — Class A.

Meduxnekeag River Basin

I. The North Branch of the Meduxnekeag river and its tributaries above the Monticello - T C R 2 boundary — Class A.

Aroostook River Basin

I. The Little Madawaska river and tributaries including Madawaska lake and tributaries above the route 161 highway bridge in Stockholm — Class A.

II. Pattee brook at Fort Fairfield and its tributaries above the dam just upstream of the highway bridge on route 167 — Class A.

III. Presque Isle stream and its tributaries above its confluence with the North Branch of Presque Isle stream — Class A.

IV. Little Machias river and its tributaries — Class A.

V. The Machias river and its tributaries above the Garfield plantation - Ashland town line — Class A.

VI. Squapan stream and tributaries above the B. & A. R. R. bridge — Class A.

VII. The Aroostook river and its branches including St. Croix stream above the junction with St. Croix stream — Class A.

St. John River Basin

I. The Fish river and its tributaries above the highway bridge over the Fish river at the outlet of St. Froid lake on highway route 11 — Class A.

II. Negro brook and its tributaries — Class A.

III. The Allagash river and its tributaries — Class A.

IV. The tributaries of the St. Francis river, the drainage areas of which are wholly within the state of Maine — Class A.

V. All tributaries and branches of the St. John river above the outlet of Allagash river, the drainage areas of which are wholly within the state of Maine, including that portion of the river above the St. John pond dam — Class A.

Coastal Streams

I. Dennys river and its tributaries above the highway bridge on route 1 in the town of Dennysville — Class A.

II. Orange river and its tributaries above the highway bridge on route 1 — Class A.

III. East Machias river and its tributaries above the highway bridge on route 191 — Class A.

IV. Machias river and its tributaries above the mill pond at Whitneyville — Class A.

V. Chandler river and its tributaries above the highway bridge on route 1 — Class A.

VI. Pleasant river and its tributaries above the highway bridge on route 1 — Class A.

VII. East and West Branches of the Narraguagus river and their tributaries above the confluence of the two streams — Class A.

VII. Tunk lake and Tunk stream drainage system above the Smithville bridge near the section called Unionville — Class A.

SUMMARY OF FIELD AND OFFICE DATA ON STREAMS ABOVE TIDEWATER

In this report stream data which has been obtained subsequent to the cut-off date of the 1950 report is consolidated. Every effort has been made to duplicate no data which were included in that report, either in the narrative form or in the tabulations.

Streams included in this report are the Salmon Falls, Mousam, Saco, Presumpscot, Coastal Streams between the Penobscot and the Kennebec, Union River and other Coastal Streams in Hancock County, and the St. Croix River. Trunk streams names are applied to the watershed drainages in their entirety and this fact should be kept in mind during perusal of this report.

Stream quality is not discussed except occasionally in the most general of terms, the reader having the opportunity to draw his own conclusions by a review of the tabulated data.

Salmon Falls River: No. 11 on Watershed Map. This river forms the boundary of Maine and New Hampshire for some distance, receiving both industrial and domestic pollution. It is essentially a coastal stream although some of its headwaters are in fairly rugged terrain. If it is remembered that the Salmon Falls River begins at head of tide of the Piscataqua, we find the untreated domestic sewage of between seven and eight thousand persons in Berwick and South Berwick in Maine and Milton, East Rochester, Somersworth, and Salmon Falls in New Hampshire. The sewage of about three hundred inhabitants of Sanbornville, N. H. is added by the Branch River. Inhabitants of North Berwick add the sewage of 1200 more persons to the stream via the Great Works River. Industrial wastes from a tannery, two fiberboard mills, and three textile mills also degrade this stream.

The waters of the Salmon Falls River are used for almost all conceivable purposes — water supply (in N. H.), process waters, recreation, limited use for agriculture, and in its lower extremities as a carrier of waste.

Mousam River Basin: The Mousam River Watershed, number 12 on the watershed map, and its adjacent coastal group lies wholly within the State of Maine. The stream rises near the edge of the coastal plain in low foothills. A stream gaging station at West Kennebunk indicates an average annual run-off of 1.5 c.f.s. per square mile for the Mousam River proper.

This stream is, for its size, economically important. There is a fairly large use of its waters for industrial process, for hydro-electric development (plants existing, date from early days of this type of power), for recreation and for transportation of domestic and industrial waste.

Saco River Basin: Basin No. 13. The Saco River rises on the slopes of the White Mountains in New Hampshire and flows into Maine forming, on the way, several miles of out wash plains in its upper reaches before dropping through the fall line to the coastal belt. The principal use of the stream above the state line is for recreation. Below the state line it is used for recreation, hydro-electric power, some process water and transportation of waters.

Minor pollution enters the streams of this basin before the boundary is reached. On the Maine side the pollution is not excessive until the towns of Biddeford and Saco are reached. Short stretches below towns show what may be loosely thought of as Class "C" water, in more inaccessible regions the water being subject to little organic coloring and is a poor habitat for the common amphibious animals hence is of excellent quality, other streams are balanced between the two depending on culture of their respective drainages.

Run-off is fairly well tabulated by six gaging stations on the various streams and by the fact that several dams can measure stream discharge and pondage figures are generally available.

Presumpscot River Basin: Basin No. 14. This basin contains approximately one fourth of the population of Maine in spite of large areas of sparse population due to the existence of the metropolitan area in the vicinity of Portland. The basin contains many large lakes and ponds which have at least surcharge storage, if no artificial storage exists. Sebago Lake controls the flow almost completely at its outlet and the ease with which this was done, accounts for the high development in the earlier days of hydro-electric power. Other uses of the water are for public water supply (City of Portland), process water, recreation and transportation of waste.

Except for Stevens Brook and possibly Highland Lake at Bridgton, waters of this drainage area are of relatively high quality, until Newhall and South Windham are reached. Of its branches, Tannery Brook in Gorham and Little River, with its North Branch, bring pollution in quantity to the main stem. Below Westbrook, the stream is fit for little use, except as a carrier of waste.

Coastal Streams Between Kennebec & Penobscot Rivers: Basin 16A. Work, included in this report on these streams, together with work on a few streams in the Penobscot Drainage Area (No. 17) was begun late in 1953 and continued into the winter of 1954 with an object of completing classification studies in view. Results of these studies have been submitted to the Water Improvement Commission in the form of a special report, dealing with a physical sanitary survey and the results of samplings at various stations, resumes of these data being included in later pages of this report.

The principal streams include the Sheepscot, Medomak, and St. George Rivers with the drainage basin of the Megunticook River being the most easterly stream considered. These larger streams rise in a rolling country of low relief, behind the flat coastal plain, while many smaller streams considered in the report rise in the coastal belt. The small drainage areas and comparatively flat gradient of the streams has not provided the power sites, which have been responsible for much industrial development in the state, but many small mills found sufficient power for their demands and although in many cases the mills have gone out of existence or now use other power, their ponds still exist, and exert an influence on the life of the stream. Headwaters of most of the larger streams include lakes of moderate size.

Agriculture was once more extensive in the area than now. This decrease has left much farmland in the marginal class and more has grown up to brush. There is no highly concentrated agriculture to-

day and the industry is fairly well diversified. Poultry raising and cannery gardening have grown in importance, some of the heaviest pollution disclosed by the survey was from packing and canning plants.

Some stream degredation resulted from sawmill activity and some from direct pollution and seepage from streamside habitations. There are few cases of municipal sewers entering the fresh water portion of streams of this group. Agriculture accounts for some entering pollution, especially the B. Coli. count picture, and amphibious animals indigent to the area are responsible for more. Bogs, of which there are many, give many of these streams a high organic coloring.

Waters of these basins are now used for many purposes, including: hydroelectric development, irrigation, recreation, process water, etc. In some instances they have been badly damaged by pollution. Extended public sewer systems, abetted by treatment plants, would improve stream segments in some locations, such as at Camden, and industrial waste treatment is needed at several locations, particularly at Waldoboro and Union.

Coastal Streams in Penobscot Watershed: Basin No. 17. These streams, which are included in the Penobscot Basin, are partially tributaries of the Penobscot Estuary and partially of Penobscot Bay. Included are such streams as Little River, Goose River (Belfast), Passagassawaukeag River, Marsh River and Marsh Stream, as well as several lesser coastal streams. The general characteristics of these drainages are similar to those of streams discussed in the preceding section, as to topography, water use, economics, etc. Of the group, only Marsh Stream suffers pollution over a large part of its length, the remainder having definite and concentrated pollutions only in their lower reaches.

In both these areas, the survey found, passage of a stream through farmland and use by amphibious wildlife was apt to induce a B. Coli. count which placed a given stream in Class "C", before upgrading was considered.

Coastal Streams of Hancock County including the Union River: Basin 17A. This area consists largely of streams rising a short distance inland in a coastal belt, the one exception being the Union River, the source of which is many more miles inland than the other streams.

During 1952, samples were taken at many stream stations on the Union River and on smaller coastal streams adjacent to it. Late in 1953 and early in 1954, a physical saniatry survey of the area was accomplished and added to previous work, to provide a basis for public hearings of the Water Improvement Commission.

Generally, the streams of this group showed good quality water, with a tendency to be highly colored. The Union River is of uniformly good quality, until pollution in the vicinity of Ellsworth is reached. Some other streams are contaminated at one point, often close to the outlet.

In this area also, many uses, public supply, industrial supply, hydroelectric development, recreation, etc., are found for fresh surface water, even though it is a region of small towns confined to the water front and an otherwise sparse population. Well-planned public sewer systems would alleviate much of the serious pollution, of both the tidewater and the freshwater portion of the stream, as is the case at Ellsworth, with similar problems at Bucksport and Stonington, among others.

Portions of the Orland River (Orland) were classified by the 1953 legislature.

COASTAL STREAMS OF WASHINGTON COUNTY: Basin No. 18. A considerable quantity of surface water in this basin was classified by the 1953 legislature and has been listed as such, in other places in the report. A physical sanitary survey, in 1953 and in early 1954, was made of the basin for the purpose of gathering information to form a basis for a public hearing, prior to presentation of a classification proposal to the legislature for action in 1955.

The streams which were classified by the 1953 legislature, were among the more important systems, but in many cases the lower reaches of the streams were omitted from classification, because of pollution. The 1953-54 physical surveys took in these segments, as well as previously unclassified streams in Washington County.

Surveys indicated streams emerging from the wilderness were generally of good quality, although often high in organic coloring. Many of them were polluted in their lower reaches, by coastal or near coastal population centers, but not to any extent, and a few small streams, in towns, were heavily burdened by domestic sewage and industrial waste. The more important streams in this group are described, in more detail, later in this report.

ST. CROIX RIVER WATERSHED: This river, which was given its place in the early history of New England by De Champlain and the Sieur le Monts, drains approximately one thousand square miles of Maine and about half as much of New Brunswick. It forms about seventy-five miles of the easterly boundary of Maine, This is a region of low relief, in which soils having their origin in glacial fill and drift, and laid down by meltwater, predominate. The principal industries of the region deal with wood and wood products, and agriculture is limited to the supply of local market only.

After the spring runoff is over, the river flow is almost wholly controlled by 25 B.C.F. of storage at several points, to the extent that flow immediately below Woodland is subject to an almost total out-off, at times when the paper mill, there, is not operating.

Pollution in the stream is limited to a small amount, in the vicinities of Princeton, Vanceboro, and Forest City; until Woodland is reached, where in addition to the domestic sewage of the population, a far heavier load of organic pollution, besides toxic pollution, is delivered by the paper mill. Before the stream has fully recovered from this, it receives the wastes of the Calais - St. Stephen areas, which, although they have little effect on the fresh water portion of the stream, have a profound effect on the tidewater.

ST. JOHN BASIN: In subsequent paragraphs the major branches of the St. John River, the courses of which border civilization to any extent, are considered separately. Such is the case of the Meduxnekeag River and Prestile Stream, the Aroostook River, and the Fish River which each play parts in economy and interest of their areas, sufficient to make them objects of individual study by uses of this report. Some of the tributaries of the St. John, equal to those mentioned in extent of drainage areas, but lacking in basin culture, were classified by the 1953 legislature, while others were unmentioned because their headwaters were in the range road country of Canada, which is fairly well developed agriculturally.

In the following paragraphs only the data applicable to the valley as a whole, and not of any particular interest to users of the report looking for data on the sub-basins, is presented.

Taken as a whole, the basin is typical of a glaciated region in which the movement of the ice sheet was normal to the course of the pre-glacial valleys. Thus, the ice sheet moved slowly and ground the earth surface to a comparatively level plateau, somewhat over half of which is more than 1,000 feet above sea level.

The region is underlain principally by limestone and shale, with an over-burden of glacial till of varying thickness. This bedrock is of low porosity, thus confining nearly all the water to cracks and joints, with a consequent low yield of wells in the basin which is reflected in the fact that 75 percent of municipal supplies (mostly small quantities) are surface water, and 94 percent of all water used (domestic and industrial) is from surface supply. In addition the ground waters of the region are hard, heavily mineral bearing, and contain other undesirable chemicals.

These features of supply and quality of ground waters, increase greatly the importance of surface water in the area and indicate that a certain percentage of the regions surface waters should, with a view to the future, be protected from pollution.

Surface water quantity is considered in the sections dealing with the individual watersheds, but to give an idea of surface water quantity throughout the basin the gage at Grand Falls, New Brunswick, a short distance below the Gatineau Power Company development, indicated over a period of several years a safe yield (min. mean monthly flow) of 1.04 c.f.s. per square mile (0.09 M.G.D. per sq. mi.). However, it should be remembered minimum flows for shorter periods might be lower. Low flows

usually occur during the winter, rather than early autumn, probably due to tight freeze up of this basin, with consequent stoppage of ground water.

In quality, the natural surface waters are soft, except for the lower Aroostook River, and moderate in suspended material. With a few exceptions the color does not render it unsatisfactory for general industrial use, and mineral and other physical characteristics do not preclude its suitability for virtually any use, and for at least half of the year its temperature is below the ground water average of 40°F.

A list of present uses of surface waters in the basin would run the gamut of legitimate functions from public water supply through recreational uses, process water, cooling water, and to transportation as a carrier for domestic and industrial wastes. Numerous sources of water, throughout the basin, supply about 70 to 80 M.G.D. to all users, exclusive of rural private systems. Industry consumes about 95% of this water, domestic users the remainder. Small rural users, representing about two thirds of the basin's 90,000 persons, use slightly under 4½ M.G.D. This is almost entirely ground water, and while most of these private wells are sufficient for dwellings with modern plumbing, they would be overtaxed if agricultural irrigation became prevalent, and their quality may tend to further degenerate as fertilization of agricultural areas continues and increases in intensity. It might be interesting, from the standpoint of readers of this report, to indicate approximately how industrial water use in the county breaks down.
(Data from N.Y.N.E.I.A.C. Survey)

Breakdown by Classification of Use			Breakdown by Type of Industry		
Use	Volume	Percentage	Use	Volume	Percentage
Process Water	41+	56% +	Pulp & Paper	47 +	65%
Cooling Water	31+	43% +	Steam Power	8.5+	12%
Boiler Feed Water	1—	1% +	Food Manuf.	3.5+	5%
			Starch Manuf.	10.5+	14%
			All Other	3.0+	4%

In addition to water users outlined above, an industrial user in Edmundston, New Brunswick draws about 48 M.G.D. from the St. John River.

Future of water use in the area, like other areas is not easily predictable. It is fairly certain the total available water in the basin will not be depleted for many years, but without doubt, conservation will be needed to insure a satisfactory supply close to population centers and in agricultural areas. As in all cases, growth of domestic demand can be expected as more or less proportional to population growth but industrial demand varies widely with the particular type of industry. The basin has several possibilities as to raw materials, some of which, developed industrially, would be heavy water users.

Reference to tabulated data, under the heading of the individual watershed, is necessary for obtaining water quality data in any detail and data regarding sources of pollution is contained in the 1950 report. Briefly, however, for the benefit of the casual reader, data contained in the summary on pollution and its effect on water quality, will be reiterated here. There are fifty-seven known sources of pollution in the area, twenty-one of them from municipalities and other domestic waste sources aggregating a tributary population of about 30,000 (1/3 of the county) and the remaining sources represent industrial pollution, principally from potato starch and other food products. Based on plant capacities, the population equivalent of all industries is about three-fourths of a million persons, two-thirds of which comes from starch factories which normally operate from the digging season to the following spring,

which means the industrial load is about equal to a quarter million people throughout the year and three-quarters of a million during the potato starch season. Fifteen streams of the basin and a portion of one lake, are significantly affected by this pollution. Waste entering the St. John in the vicinity of Madawaska, is a serious detriment to downstream water quality (industrial waste and domestic waste from about 10,000 persons constitute, based upon plant capacity, a population equivalent of about a million persons entering from the Canadian side of the river), as is the case of the Fish River at Fort Kent, the Machias and Aroostook at Ashland, Presque Isle Stream and the North Branch below Mapleton and Presque Isle, Caribou Stream at Caribou and others. The South Branch of the Meduxnekeag and Prestile Stream have also degenerated, from entrance of starch factory wastes and domestic sewage. As is usually the case, the streams which are economically the most important to the present population distribution, are the most effected by pollution. However, this basin does get off, pollution wise, better than some, as there is very little (4 miles) of small tributary streams which, tabulated data indicates, could be in a nuisance condition and between seventy-five and one hundred miles only, are polluted to the extent that their waters are suitable only for " low water quality uses ".

As the population increases, the domestic waste is bound to increase proportionately as does water consumption, while the industrial waste load may vary in any manner, but can scarcely be expected to decrease.

As will be observed in reviewing the tables, sampling has been confined to portions of the streams affected by commercial enterprise and domestic development, the upstream station being placed to precede all, but natural, contamination. Data incorporated in the original " Report on Water Pollution in the State of Maine 1950 ", pertaining to the St. John Watershed, was accumulated during the months of September and October 1947. The testing during 1951 and 1952 was done from July, 1951 through March, 1952, comprising 1,500 samples.

DATA ON STREAMS ABOVE TIDEWATER

PISCATAQUA AND SALMON FALLS RIVER BASIN NO. 11

(See basin map No. 1 in back of book) In this portion of the report only data on the Salmon Falls River will be considered, as the Piscataqua is actually a salt water estuary formed at the junction of several rivers entering from New Hampshire and the Salmon Falls River, which drains about 240 square miles of South Western Maine. Also, only information supplemental to the 1950 report will be considered. It is an interstate stream, the trunk of which forms the Maine-New Hampshire boundary for many miles.

This area is typical of a coastal plains region running back into the foothills. It is slightly rolling with shallow relief. A comparatively shallow bedrock of slates, schists, gneisses, granites, and quartzites is covered by colloidal clay up to a 25 or 30 foot depth. Upon this clay and blending into the rough terrain of the extreme headwaters, are superimposed the usual cames and drumlins of a receding glacier and the eskers and alluvial deltas of the glacial meltwater. Less than twenty percent of the area is cleared and in developed land, the remainder covered with second growth or brush, following the axe and forest fires.

Rainfall is fairly uniform throughout the area, the annual precipitation being about 39 inches with average run-off of 1.5 c.f.s. per square mile and an average minimum of 0.08 c.f.s. per square mile. There are minor storages which are also, no doubt, available for pondage throughout most of the summer, but do not affect runoff too greatly. Lakes tributary to the system are small, so have little surcharge storage. However, the impoundments and natural storages provide an opportunity for the purifying effects of storage to be felt, and the spillways and sluices of dams, along with natural falls and rocky channels, furnish the mixing and aeration necessary to maintain a high recovery rate.

The waters of this basin are, volume considered, among the most important economically in the state. It is used for industrial process water, for hydroelectric power, agriculture, navigation (tidal portion) and the transportation of sewage and industrial wastes.

Domestic pollution in the Maine portion of the watershed is chiefly from Berwick and South Berwick, and along the tributaries, Goodall Brook receives the untreated wastes from about 6,000 persons which is passed along to the Great Works River. At North Berwick more domestic sewage is added to the Great Works River. Considerable industrial waste reaches the main stream and textile waste reaches the Great Works River at North Berwick.

Industrial and domestic waste reaches the river on the New Hampshire side, upstream of any considerable pollution in Maine. Above this point (Milton Mills), the water is suitable for general use, i.e. domestic use with proper treatment, industrial use if use is not too sensitive to color, propagation of fish, general recreation, agriculture, etc. Below Somersworth and Berwick, use of the water, except as a carrier for waste, is limited.

A considerable amount of work was done on this stream prior to the 1950 report and the tabulated results of these analyses appear in that report. Tabulations appearing in this report cover only the work accomplished by the Department of Health and Welfare personnel and mobile laboratory during 1951.

PISCATAQUA & SALMON FALLS RIVERS BASIN

Tabulated Results of Test Data Compiled on the Piscataqua & Salmon Falls Rivers

Sta. No.	Town	Location	Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen % Sat.	pH	CO_2 PPM	B.O.D. PPM	Alkalinity PHEN	Alkalinity MO	Turb
1	Lebanon	old bridge on Rt. 202	77	7/31/51 to 11/5/52	Min.	19.0	2.5	26	6.0	3.0	0.6		0.46	0
					Av.	9.2	9.8	79	6.4	7.2	2.0		0.87	6
					Max.	1.0	14.1	99	6.6	25.0	5.1		2.48	20
2	Berwick	Walnut Grove Bridge above Jct. of Little River	51	8/7/51 to 11/5/52	Min.	24.0	4.1	47	6.1	3.6	0.7		0.24	0
					Av.	12.3	9.0	80	6.3	8.3	1.5		0.91	3
					Max.	1.0	13.4	94	6.6	19.0	3.4		2.66	10
2A	Berwick	last bridge on Little River	58	8/1/51 to 11/5/52	Min.	24.0	4.4	52	5.2	4.2	0.3		0.00	0
					Av.	10.3	10.0	85	6.0	8.8	1.0		0.63	0
					Max.	0.0	14.0	96	6.6	20.0	4.4		1.73	5
3	Berwick	Berwick Interstate bridge on Route 103 above Berwick	63	7/31/51 to 11/5/52	Min.	25.0	4.0	48	5.8	3.8	0.6		0.25	0
					Av.	10.4	9.4	81	6.2	8.6	1.3		0.75	1
					Max.	1.0	13.5	95	6.5	16.6	2.8		2.82	5
3A	Berwick	Somersworth Bridge in center of Berwick	1	7/31/51	Min. Av. Max.	23.0	5.8	67	6.2	12.6	1.0		0.80	<5
4	Berwick	Berwick Power Station canal below Berwick	77	7/31/51 to 11/5/52	Min.	26.0	0.1	1	6.2	2.6	1.0		0.34	0
					Av.	9.3	8.8	70	6.5	9.4	3.8		1.06	4
					Max.	0.0	14.2	97	7.3	21.8	10.6		2.98	15
4A	S. Berwick	Great Works River Bridge at its mouth	77	8/1/51 to 11/5/52	Min.	19.0	4.4	47	6.2	3.2	0.0		0.34	0
					Av.	9.1	11.1	91	6.5	6.3	1.1		1.05	2
					Max.	0.0	14.5	100	7.0	17.6	2.4		10.90	15

PISCATAQUA & SALMON FALLS RIVERS - BACTERIOLOGICAL TESTS

Summer -- 1953

Sta. No.	No. Samples	Test Period		B. Coli M.P.N.
1	10	5/27/53 to 6/23/53	Min.	< 240
			Av.	27,583
			Max.	160,000
2	10	5/27/53 to 6/23/53	Min.	200
			Av.	11,020
			Max.	35,000
2A	10	5/27/53 to 6/23/53	Min.	5
			Av.	151
			Max.	350
3	10	5/27/53 to 6/23/53	Min.	45
			Av.	1,352
			Max.	3,500
4	10	5/27/53 to 6/23/53	Min.	2,700
			Av.	529,270
			Max.	1,600,000
4A	10	5/27/53 to 6/23/53	Min.	17
			Av.	118
			Max.	220

MOUSAM RIVER

Basin No. 12

(See Map No. 2)

The Mousam River was covered to some extent in the 1950 report, so only additional material will receive attention in this supplement.

The valley of the Mousam is largely within a coastal plain, its lower extremities are through an area of colloidal clay overburden, covering a bedrock of shists, gneisses, etc. with granite intrusions. The valley blends from the extreme coastal area, through an area of meltwater formations such as eskers and alluvial cones, and of cames, drumlins and moraines, to a rather rugged foothill area. In general, the character of the valley is low and rolling, with low relief, and there are more sand plateaus in this valley, than in many other areas within the coastal belt.

The valley experiences a mean annual precipitation of slightly under forty inches, which converted into runoff, as indicated by the U.S.G.S. Gage at West Kennebunk (d.a. 105 sq. mi.), gives a 1.5 c.f.s. per sq. mi. runoff average and an 0.04 c.f.s. per square mile minimum, which probably reflects week end pondage at a hydroelectric development.

One of the most important uses, economically, is the development of hydroelectric power. There is little storage in the system, but a comparatively complete development exists although many of the plants border on obsolete. Other uses include: industrial water above Sanford, recreation (above Sanford) and the carrying of waste below Sanford, except where recreation persists in spite of pollution, and below the Estes development where the combination of storages and aeration have recouped the water sufficiently for certain uses.

Locations of sampling stations and dates of sampling are included in the tabulation.

MOUSAM RIVER BASIN & ADJ. COASTAL AREA

Tabulated Results of Test Data Compiled on the Mousam River

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	% Sat.	pH	CO_2 PPM	B.O.D. PPM	Alkalinity PHEN	Alkalinity MO	Turb.
1	Springvale	Goodall-Sanford canal just below dam	4	12/29/52 to 1/7/53	Min.	2.0	13.0	94	6.4	3.4	0.5		0.46	0
					Av..	1.0	13.1	92	6.4	4.0	0.6		0.53	0
					Max.	1.0	13.2	93	6.5	4.6	0.7		0.60	0
1A	Emerys Mills	just above bridge on road to N. Lebanon	4	12/29/52 to 1/7/53	Min.	3.0	12.5	93	6.4	3.6	0.4		0.50	0
					Av.	3.0	12.6	94	6.4	4.8	0.6		0.67	0
					Max.	3.0	12.8	95	6.5	7.8	1.0		0.84	0
2	Sanford	River Street bridge near Front Street	4	12/29/52 to 1/7/53	Min.	0.0	12.6	86	6.4	3.4	1.2		0.45	0
					Av.	1.0	13.4	93	6.5	3.9	1.4		0.50	0
					Max.	1.0	13.7	96	6.6	4.4	1.8		0.53	0
3	Sanford	Butler bridge on outer School Street	4	12/29/52 to 1/7/53	Min.	2.0	8.7	63	6.4	5.2	3.8		0.54	0
					Av.	2.0	10.7	77	6.5	8.7	11.5		1.07	9
					Max.	2.0	12.3	89	6.6	14.0	17.2		1.44	20
4	Sanford	Bridge on Route 4	4	12/29/52 to 1/7/53	Min.	2.0	5.9	42	6.1	11.0	2.9		0.74	0
					Av.	1.0	7.1	50	6.2	14.7	5.9		0.94	4
					Max.	1.0	8.8	62	6.3	19.6	7.3		1.22	5
4A	Sanford	face of dam at Jagger Brothers Mill	1	12/30/52	Min. Av. Max.	2.0	5.4	39	6.2	16.0	5.1		1.32	0
5	Sanford	bridge near junction with Middle Branch River	3	12/31/52 to 1/7/53	Min.	1.0	6.3	44	6.0	7.6	1.6		0.41	0
					Av.	1.0	8.1	56	6.1	11.9	3.1		0.88	0
					Max.	0.0	10.6	72	6.2	16.2	4.4		1.32	0
5A	Kennebunk	bridge near Route 99, near West Kennebunk	4	12/30/52 to 1/7/53	Min.	1.0	13.4	94	6.5	4.6	1.3		0.40	0
					Av.	1.0	13.5	94	6.6	5.5	1.5		0.49	0
					Max.	0.0	13.7	94	6.6	6.0	1.7		0.63	0
5_1	Sanford	Wichers Mill bridge	1	12/30/52	Min. Av. Max.	1.0	11.5	81	6.2	9.6	2.5		0.65	0
6	Kennebunk	power station canal, below Kennebunk	1	12/30/52	Min. Av. Max.	0.0	14.0	96	6.6	4.6	1.3		0.72	0
6A	Kennebunk	bridge on Route 1	4	12/30/52 to 1/7/53	Min.	0.0	13.6	93	6.5	4.0	1.3		0.51	0
					Av.	0.0	13.8	95	6.6	5.2	1.5		0.58	0
					Max.	0.0	14.0	95	6.6	6.0	1.7		0.72	0

MOUSAM RIVER - BACTERIOLOGICAL TESTS

Spring - 1953

Sta. No.	No. Samples	Test Period		B. Coli M.P.N.
1	10	5/7/53 to 5/26/53	Min.	17
			Av.	154
			Max.	540
1A	10	5/7/53 to 5/26/53	Min.	0
			Av.	10
			Max.	33
2	10	5/7/53 to 5/26/53	Min.	1,300
			Av.	6,250
			Max.	24,000
3	10	5/7/53 to 5/26/53	Min.	28,000
			Av.	53,000
			Max.	92,000
4	10	5/7/53 to 5/26/53	Min.	13,000
			Av.	58,000
			Max.	160,000
5	10	5/7/53 to 5/26/53	Min.	1,300
			Av.	6,400
			Max.	17,000
5A	10	5/7/53 to 5/26/53	Min.	45
			Av.	345
			Max.	1,500
6	10	5/7/53 to 5/26/53	Min.	490
			Av.	1,492
			Max.	2,400

SACO RIVER

Basin No. 13

The Saco River was reviewed and a quantity of data presented in the 1950 report, and since this report is only supplemental to this previous information, only supplemental information and listings will be presented.

The Saco River rises among the steep slopes of the White Mountains in New Hampshire and descends through foot hills to a coastal plain. The region is of course glaciated, and shows enough age to have developed river flats all the way from Conway, N. H., to Hiram and at intervals nearer the coastal plain. Much of the wash plain below the state line is of coarse texture (gravel), the fines having been carried farther downstream.

These wash plains are an excellent ground storage, giving the river a somewhat better natural regulation of flow, than would ordinarily be expected from a stream which otherwise presented the same watershed characteristics. The total drainage area of the Saco, at tidewater, amounts to about 1700 square miles. At the downstream gage of the U.S.G.S., located at Salmon Falls (d.a. 1595 sq. miles), the average annual basin runoff is 1.9 c.f.s. per square mile, the average minimum is 0.175 c.f.s. per square mile, and the minimum of record is 0.13 c.f.s. per square mile.

A few storages exist on the Ossipee System, and in the Fryeburg-Lovell area several ponds and lakes further level out the yearly flow by surcharge storage, thus cushioning somewhat the flashiness displayed by the river in New Hampshire. Annual unit yield for the Maine portion of the basin (800 square miles out of a total of 1700) is somewhat less than that of the New Hampshire watershed, due to the lighter rainfall and evaporation from pond surfaces. Summer temperatures average a little under 66° F., at the inhabited altitudes, and those of the winter season vary from 15° in the mountain areas, to 25° at the seacoast.

Rainfall and temperature records are available in the basis at Conway, Cornish, and Salmon Falls on the Saco, at Effingham Falls and Cornish on the Saco, and at South Limington on the Little Ossipee.

About thirty per cent of the land area of the Saco Basin is in farmland, with pasturage and farm wood lots included. Most of the agricultural activity is concerned with dairying and poultry raising. Lumbering and lumber products lead the industrial activity of the basin, followed by leather and textile products. Recreation is a growing activity in Maine, but to date is mostly an overflow of the New Hampshire industry. The Saco-Biddeford area represents the largest concentration of population in the valley, with a 1950 count of about 31,000. Total population for the valley was a little below the 60,000 mark.

The highest use of water in the basin is for municipal supply, among these Saco and Biddeford. Other uses run the list of normal uses.

Tabulation of summation of tabulated results of field work subsequent to the 1950 report follows.

SACO RIVER BASIN & ADJ. COASTAL AREA

Tabulated Results of Test Data Compiled on the Saco River

Sta. No.	Town	Location	No. Samples	Test Period		Temp. °C	Dissolved Oxygen PPM	Dissolved Oxygen % Sat.	pH	CO_2 PPM	B.O.D. PPM	Alkalinity PHEN	Alkalinity MO	Turb.
1	Fryeburg	bridge on Rte. 113	48	7/26/51	Min.	25.0	7.7	92	6.2	3.0	0.3		0.34	0
				to	Av.	10.0	11.0	94	6.5	4.2	0.6		0.65	1
				10/30/52	Max.	1.0	13.8	97	6.8	8.0	1.4		2.68	15
2	Cornish	Baldwin bridge on Route 5	56	7/26/51	Min.	27.0	7.4	92	6.2	2.8	0.2		0.35	0
				to	Av.	10.0	11.2	95	6.6	4.3	0.7		0.64	0
				10/30/52	Max.	0.0	14.3	101	6.8	7.8	1.4		1.44	5
2A	Cornish	S. Hiram bridge on Route 160	56	7/26/51	Min.	28.0	7.4	94	6.3	2.0	0.2		0.22	0
				to	Av.	10.4	11.2	96	6.6	4.2	0.6		0.61	0
				10/30/52	Max.	0.0	14.0	96	7.0	9.2	1.1		1.56	5
2B	Limington	Steep Falls bridge on Route 11	56	7/26/51	Min.	27.0	7.5	93	6.1	2.6	0.2		0.30	0
				to	Av.	10.0	11.3	97	6.5	4.5	0.7		0.59	1
				10/30/52	Max.	1.0	14.4	101	6.9	8.6	1.6		1.29	20
2C	Buxton	West Buxton bridge (From Rte. 35 to Rte. 112)	56	7/27/51	Min.	26.0	7.1	86	5.7	2.4	0.0		0.35	0
				to	Av.	10.2	11.0	93	6.5	4.7	0.7		0.71	1
				10/31/52	Max.	1.0	14.4	101	6.7	13.6	1.8		1.42	20
2D	Buxton	bridge on Rte. 117	50	7/27/51	Min.	26.0	7.0	85	5.8	2.2	0.0		0.34	0
				to	Av.	11.4	10.8	95	6.5	4.7	0.8		0.69	1
				10/31/52	Max.	0.0	14.6	100	6.8	12.4	1.7		1.42	20
$2D_1$	Bar Mills	bridge on Rte. 202 (near Rogers Fiber Co. waste discharge)	5	12/28/51	Min.	0.0	14.6	100	6.4	3.8	0.5		0.51	0
				to	Av.	0.0	14.6	100	6.4	4.1	0.8		0.62	1
				2/1/52	Max.	0.0	14.7	100	6.5	4.6	1.3		0.79	5
$2D_2$	Bar Mills	about 0.4 mi. upstream (along Bank) from Rte. 202A, 4A bridge	1	2/29/52	Min. Av. Max.	0.0	14.1	97	6.4	5.4	0.9		0.60	0
3A	Biddeford	At the filter plant	56	7/27/51	Min.	27.0	6.5	81	5.7	2.8	0.0		0.33	0
				to	Av.	10.7	10.9	93	6.5	4.9	0.7		0.73	2
				10/31/52	Max.	3.0	14.3	106	6.7	9.4	1.9		3.20	20
3B	Saco	Biddeford Bridge, just below falls on the western side of the island	12	10/31/51	Min.	26.0	6.9	84	6.5	3.2	0.8		0.74	0
				to	Av.	17.9	8.7	90	6.7	4.7	1.6		0.97	0
				10/31/52	Max.	9.0	10.2	89	6.9	9.8	2.6		1.77	0
4	Saco	Saco Bridge near railroad station and on the eastern side of island	12	10/31/51	Min.	26.0	6.8	81	6.4	3.6	0.4		0.63	0
				to	Av.	17.3	8.3	84	6.6	4.7	1.6		0.84	0
				10/31/52	Max.	8.0	10.2	86	6.7	5.8	9.7		1.03	5

SACO RIVER - SUMMER 1953

Bacteriological Tests & Additional D.O. Tests

Sta. No.	No. samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen % Sat.	B. Coli M.P.N.	Salinity
1	10	7/4/53	Min.				58	
		to	Av.				1,001	
		7/29/53	Max.				2,200	
2	10	7/4/53	Min.				230	
		to	Av.				707	
		7/29/53	Max.				1,300	
2A	10	7/4/53	Min.				700	
		to	Av.				1,208	
		7/29/53	Max.				1,700	
2B	10	7/4/53	Min.				130	
		to	Av.				215	
		7/29/53	Max.				350	
2C	10	7/4/53	Min.				21	
		to	Av.				87	
		7/29/53	Max.				220	
2D	10	7/4/53	Min.				490	
		to	Av.				3,255	
		7/29/53	Max.				16,000	
3A	10	7/4/53	Min.				8	
		to	Av.				176	
		7/29/53	Max.				540	
3B	10	6/24/53	Min.	26.0	7.3	89	13,000	2
		to	Av.	24.0	7.6	89	51,900	51
		7/29/53	Max.	22.0	8.0	90	160,000	183
4	10	7/4/53	Min.				4,900	
		to	Av.				24,680	
		7/29/53	Max.				92,000	

PRESUMPSCOT RIVER

Basin No. 14

The Presumpscot River rises in rather rugged terrain, in the approximate center of Oxford County, and flows southward and southeastward from these foothills, to the coastal belt and the coast. The region is glaciated and so does not differ greatly from the Saco and Mousam valleys, except in extent.

The drainage area of the Presumpscot River is long and narrow, some 615 square miles in extent. The stream is almost completely controlled at Sebago Lake (the trunk watercourse above the lake is known as Crooked River), but otherwise, there is little regulation of flow. There is only one stream gaging station on the system, at Sebago Lake, which with 436 square miles of drainage to back it up, shows an average annual runoff of 1.5 c.f.s. per square mile, in spite of a seasonal rainfall averaging about 42 inches. The low runoff can probably be attributed to the fact that the water supply of the City of Portland is taken from it and that about seventeen percent of the drainage area is in lake surface, thus making evaporation a tremendous factor in mean runoff.

There is probably more sand and gravel overlying the granite bedrock in this basin than in any other, perhaps due to a far larger drainage using this valley in the meltwater era, than at present. But for this feature of soil conditions, in the upper valley, it is entirely possible that agriculture would have played a larger part in the history of the valley, than it has. The lower valley has a fertile soil. The population of the valley in 1950 was approximately 265,000, of which, about half was in the metropolitan area of Portland.

The surface waters of the area serve many purposes, the most important of which is public water supply. There are many small hydroelectric developments in operation, for the most part dating back many years, utilizing a great deal of the available head. The Crooked River also has minor developments. Recreation has become important in recent years and its importance is increasing.

Below Westbrook, the stream is usable for little except waste transportation and some of the system, for a considerable distance above Westbrook, is suitable only for limited usage.

Prinicple sources of polluting waste in the basin, are covered in the 1950 report and there is not sufficient change to warrant a review of these conditions at the present time.

A summarized tabulation of data, with locations of sampling stations and dates of sampling is included.

PRESUMPSCOT RIVER BASIN & ADJ. COASTAL AREA

Tabulated Results of Test Data Compiled on the Presumpscot River

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen % Sat.	pH	CO_2 PPM	B.O.D. PPM	Alkalinity PHEN	Alkalinity MO	Turb.
1	Windham	bridge across river at Newhall	(No Samples Collected)											
2	Windham	Mallison Bridge at S. Windham near reformatory	88	12/5/50 to 7/3/51	Min. Av. Max.	20.0 7.0 1.0	8.7 12.4 14.3	95 100 100	6.4 6.7 6.9	2.0 3.0 11.0	0.0 1.1 2.8		0.64 0.91 7.29	0 1 20
3	Westbrook	Bridge on Cumberland Street	135	7/22/50 to 7/3/51	Min. Av. Max.	23.5 10.3 1.0	7.5 11.4 14.6	87 98 102	6.5 6.8 8.4	1.0 3.4 38.0	0.1 1.2 3.5		0.46 0.92 1.99	0 6 50
4	Westbrook	Westbrook-Portland Bridge on Route 302	134	7/24/50 to 7/3/51	Min. Av. Max.	24.5 10.7 1.0	7.0 11.0 14.3	83 95 101	7.1 8.1 8.4	1.0 2.7 6.0	0.5 7.1 19.6	0.04 0.57 2.90	0.17 2.64 10.23	20 50 100
4A	Falmouth	Lambert Street Bridge (West of Route 26)	130	8/7/50 to 7/3/51	Min. Av. Max.	22.0 10.2 2.0	6.0 10.9 14.1	68 93 102	7.3 8.2 8.4	0.8 2.0 2.0	2.6 6.5 12.2	0.04 0.46 3.48	1.55 2.55 6.31	20 42 100
5	Falmouth	Bridge on Rte. 26	(No Samples Collected)											
6	Falmouth	Smelt Hill Power Station (near head of tide)	130	8/7/50 to 7/3/51	Min. Av. Max.	23.0 10.1 1.0	4.1 10.4 14.1	48 88 98	7.4 8.2 8.4	0.8 2.3 6.0	2.3 6.7 19.5	0.04 0.40 2.88	1.60 2.76 10.26	10 33 120

PRESUMPSCOT RIVER - BACTERIOLOGICAL TESTS

Summer 1953

Sta. No.	No. Samples	Test Period		B. Coli M.P.N.
1	10	8/4/53 to 8/20/53	Min. Av. Max.	22 269 1,600
2	10	8/4/53 to 8/20/53	Min. Av. Max.	40 468 1,100
3	10	8/4/53 to 8/20/53	Min. Av. Max.	3,300 15,920 54,000
4	10	8/4/53 to 8/20/53	Min. Av. Max.	790 32,469 92,000
4A	10	8/4/53 to 8/20/53	Min. Av. Max.	3,300 27,030 92,000
6	10	8/4/53 to 8/20/53	Min. Av. Max.	7,900 15,390 35,000

ANDROSCOGGIN RIVER

Basin No. 15

(See Map No. 5)

There is no data available at the present time on any of the waters within this basin. However, the map of the watershed is being published to keep the continuity of this report intact and for whatever information the map itself may present.

COASTAL STREAMS AND TRIBUTARIES ENTERING TIDEWATER

Basin No. 16 A

(See Map No. 6)

This group of streams is comprised of several small river basins and many smaller coastal streams. For purposes of this report only, the major streams and those presenting unusual problems of pollution or pollution causing heavy damage to the receiving waters are given consideration, outside of a possible check sampling. Since no data on the watershed area herein considered was incorporated in the 1950 Report considerable detail is included.

Sheepscot River: In years past the Sheepscot River was far more important commercially than it is today, due to mills scattered throughout its basin.

The methods used amounted to a sanitary survey of the waters in question to determine the location of sewage discharges to them and the extent of other waste discharge, plus the results of test data compiled on 15 sampling stations established along the watercourse. On the 39 samples taken, a total of 175 chemical, 50 bacteriological and 74 physical tests were performed. The chemical analyses included tests for dissolved oxygen, pH, carbon dioxide, B.O.D. (biochemical oxygen demand) and alkalinity. The bacteriological test was made with a series of dilution tubes to give a bacterial density in terms of M.P.N. (most probable number) and the physical tests included the recording of water temperatures at the time of sampling and the amount of color in the sample was determined by comparison with standards.

Hydrological data is limited to the records of the stream gaging station at North Whitefield, which has a drainage area of 148 square miles and is located on the main stem of the Sheepscot River. A review of the records of the past ten years reveals that the average minimum summer runoff was 0.0919 sec. ft./sq. mi. An extreme minimum runoff for this same period of time was found to be 0.0338 sec. ft./sq. mi. There is no control of the flow of water throughout the basin, although there is an old dam at Head Tide it does not constitute a restriction, as its condition makes its use questionable.

The drainage area of the Sheepscot River and its tributaries including Carleton Brook, Finn Brook, Clary Lake, Long Pond, Travel Pond, Dodge Pond, French Pond, Lovejoy Stream, Savade Pond, Bull Brook, Dearborn Brook, Moody Pond, West Branch, Hewitt Brook, Meadow Brook, Black Brook, Crummett Brook, Turner Pond, Sheepscot Pond, Colby Brook, Deadwater Slough, Beech Pond, Lindscot Branch, Foster Pond, Bear Pond, Chisholm Pond and Branch Pond, receive some pollution from five outlets which serve four buildings. One of the buildings is a small office for a sawmill and another discharges blood and floor washings from the grinding room of a fish hatchery. Two sink drains empty direct and five sawmills or old sawdust piles on the banks contribute pollution from sawdust, shaving, etc.

The points of pollution, as observed at the time of survey, are as follows:

Head Tide — A large sawdust pile on the West bank, just north of the bridge, near a burned sawmill.

North Whitefield — On the southeast side of route 218 and on the south bank of the stream flowing from Clary Lake to the Sheepscot River is an outlet for one small office building, also at this same point, but on the northeast side of route 218, is a sawdust pile on the bank of the stream.

Coopers Mills — One building on the east bank of the river, southeast of route 17, has two outlets to the bank, also there is a sawdust pile from a sawmill located about 300 feet further along the southeast bank of the river.

Town of Windsor — (near Coopers Mills Village) — A sink drain, from a building on the first easterly branch stream of the West Branch of the Sheepscot River, empties to the stream at about 0.1 mile from its confluence with the West Branch and about 40 feet northeast of the road.

Weeks Mills — An outlet for one building to the west bank of the stream and on the north side of the road at Weeks Mills.

Branch Mills — An outlet for a sink, to the West Branch, about 175 feet north of the first bridge below Branch Mills on the road from Branch Mills to Pidgeon Plains School; also sawdust and shaving from a sawmill on the north side of route 3 as it crosses the outlet of Branch Pond.

Somerville Plantation — At the south end of Turner Pond are sawdust and shaving from a sawmill on Lovejoy Stream.

Town of Palermo — At the first road crossing on Colby Stream south of Jones Corner in East Palermo is a sawmill where some shavings are blown to the stream and old piles of shaving, sawdust and a few edgings are on the bank. An outlet from the Fish and Game Fish Hatchery, about 100 feet east of the bridge over the outlet for Sheepscot Pond, empties wash water containing some blood and small particles of liver from the grinding room (the liver is used as Fish Food).

Damariscotta River: Investigation of this watershed disclosed relatively little pollution by sanitary domestic wastes, except to the fishway stream at the outlet of Damariscotta Lake, very near the mouth of the river at the head of tidewater. Except near the lake outlet there seemed to be no direct pollution by sewage, at any point. Several instances were found where sewage disposal facilities were not considered to be entirely adequate and contamination by bacteria seems probable. These were scattered about the lake at summer properties and near the village of Jefferson.

The only industry remaining along the waters in the area is a sawmill which is built over the stream known as West Branch at the village of Jefferson. Some waste is reported to enter the water. The villages of Damariscotta Mills and Jefferson are the only centers of population in this watershed. They are located at the outlet and at the mouth of the principal inlet of Damariscotta Lake respectively.

The waters are relatively unpolluted except by small amounts of domestic wastes and inert material from a sawmill.

During the period of the survey the sawmill, owned by Meserve Lumber Company, seldom operated. The extent of the pollution by sawdust is not clear. The mill is built directly over the stream and uses waterpower provided by a dam about ten feet high. A waste pile is located across the highway from the mill. No sawdust pollution was apparent, but due to the location some pollution probably occurs. Since a boat was not available, no attempt was made to determine the presence of wood waste on the lake bottom near the inlet, where waste would be expected to settle if the stream was polluted by such material.

The shore of Damariscotta Lake has been somewhat developed for summer properties. Since the lake is large, there is likely to be many more camps and cottages in the future. There is not likely to be any real abuse of the waters, since the lake itself is the principal attraction providing recreational facilities for the summer population and possibly sometimes domestic water supplies. However, it appears from the sanitary survey that some property owners do not realize the possibility of pollution from inadequate sewage disposal systems, and in several instances sanitary facilities have been located illegally. At least twelve properties, most of them used only during the summer months, are reported to have facilities located too close to the shoreline, but only one drain was found which directly enters

the lake. There is direct sewage disposal to the fishway at the lake outlet. At least eight houses are served by such sewers.

Analytical results are tabulated on the following pages which represents the results of tests taken at the sample stations described. Testing of the samples was carried out by the field personnel of the Water Improvement Commission.

Medomak River: The drainage of the Medomak is comprised of 40 square miles of a rolling coastal area, predominately wooded but interspersed with farm lands, much of which is marginal. There are a few villages in the area but none of them contribute greatly to pollution in the stream. At Waldoboro process wastes from a chicken slaughter house and sanitary wastes from the same plant enter the stream directly. At Winslow's Mills wastes from a canning factory enter the stream and near North Waldoboro waste from a small sawmill enters the Medomak. At Washington and at South Liberty there are also sawmill wastes entering the system and near South Liberty a fish rearing station on Fish Stream discharges a weak formaldehyde solution directly to the water. Throughout the course of the stream seepage waste is received and occasional direct pollution from households was found and of course much of the bacterial pollution, shown by the tabulation of tests, stems from drainage of agricultural lands and seepage from adjacent houses in villages.

Rainfall records are available for the region but there are no stream gaging stations in the basin. Flows probably show much the same characteristics as is presented by the Sheepscot watershed. Regulation of flow on this river is negligible.

The drainage area of the Medomak River and its tributaries including Benner Brook, Kalers Pond, Meadow Brook, Medomak Pond, Little Medomak Pond, Hope Brook, Little Medomak Brook, Washington Pond, Crystal Pond, Fish Brook, Washington Brook, and Pettengill Brook and Washington Stream receive pollution from 10 outlets to the water, which discharge sanitary wastes of about 20 people fairly direct; blood, feathers and wash water from a chicken slaughter house; some oily wastes; some formaldehyde from a fish hatchery; and some canning wastes through a ditch drain from a canning plant which cans apples and blueberries. About 11 other buildings may contribute some pollution through seepage and three sawmills add sawdust, shingle hair and like waste. The points or areas of pollution are as follows:

1. About 400 feet south of the first bridge on the river above the tidewater are 2 buildings discharging overflows to a gulley at about 80 feet above the river which may contribute some pollution from seepage; also at a point between the first brige above tidewater and the turn in the river near the small bridge over the branch stream is an outlet for sink only for 1 building discharging to the rocks at about 15 feet above the water and 4 other buildings close may contribute some pollution through seepage; also 2 other buildings close to the brook which enters near the bend in the river may contribute some pollution through seepage; also about 400 feet west along the river and on the south side are outlets direct for floor washings, blood, and chicken feathers from a chicken slaughter house, and sanitary wastes of about 50 employees may contribute some pollution through seepage; also a sewer outlet to the north side of the river serving 1 building located on a dead end street at about opposite the smaller building of the chicken slaughter house.

2. About 500 feet southwest of the point at which the first stream on the west bank of the river joins the river or about 200 feet west of the Route 1 bridge over the river are two outlets from 1 building to a brook, one a septic overflow and the other a cellar drain from a filling station which may discharge some oily waste; also a dump on the bank of the same stream may contribute some oily or other pollution; one other building close to the stream may contribute some pollution through seepage.

3. A septic tank overflow from a restaurant, which enters a brook flowing to the west side of the river at Winslow's Mills, empties about 35 feet west from the road at the intersection of Route 32 and the road to the canning factory; also about 300 feet north along Route 32 a ditch drain to the river which contains wastes from the canning factory overflows from a septic tank (canning wastes from apples and blueberries, plant established 1917).

4. An outlet to a brook for sink only and serving 1 building located at about .2 of a mile north beyond Orffs Corner where the dirt road leaves Route 32. This is the third small stream crossing the road north of Winslow's Mills.

5. A sawmill about ½ of the way between Flanders Corners and North Waldoboro adds some sawdust and shingle hair to the river.

6. An outlet from a filling station empties to Little Medomak Brook on the east side at Washington; also waste from 10 other buildings contribute pollution; also a sawmill located about 200 feet north of the filling station adds sawdust to the stream.

7. A fish rearing station on Fish Brook and about 1 mile east of South Liberty may contribute some pollution through seepage and does add some weak formaldehyde solution direct; also a sawmill on the river at South Liberty which probably contributes some sawdust to the river (most sawdust is blown to the southeast bank of the river but some would wash down stream at high water) is not in use at present; also 1 other building in South Liberty, close to the water, and on the bend of the river may contribute some pollution through seepage.

Assuming about 4 people per building except as otherwise stated the Medomak River and its tributaries would receive sanitary wastes of about 20 people direct and at least 70 people contribute some pollution fairly direct through seepage. Other wastes from the chicken slaughter house, canning plant, filling station, fish hatchery, and sawmills constitute the rest of the pollution.

Analytical results are tabulated on the following pages, these data being compiled from the results of samples taken from several stations which are described in the tabulation.

St. George River: Data in this report is based upon work accomplished in 1953 and the early part of 1954.

Since the general area within the drainage basin is fairly well inhabited, and industries were known to be in the locale, a sanitary survey of the watershed was made in December, 1953 and is supported by test data compiled at sampling stations along the watercourse. Possible sources of sanitary or industrial waste, indicated by any source of information, were spot investigated.

The waters which have been listed above drain a largely wooded area with some farmland and a considerable quantity of marginal farmland interspersed. The topography is typical of the coastal belt, rolling with shallow relief, the watercourses and particularly the lakes showing considerable age, with many bogs now existing where, no doubt, lakes have disappeared. Although this stream receives greater pollution than either the Sheepscot or the Medomak, it appears to recover somewhat better, probably because of less agricultural drainage throughout its length and the fact that much of its water is repeatedly subjected to the beneficial action of natural storages. Throughout its length, the St. George River picks up some pollution in the successive villages through which it passes, as well as wastes from two canning factories, one creamery, one chicken slaughter house, seven sawmills and one restaurant.

There is no hydrological data available on the St. George River drainage basin, except rainfall. Any direct runoff calculations would have to be made, by means of a careful comparison with a similar type watershed, on a unit area basis.

The drainage basin of the St. George River and its tributaries including North Pond, South Pond, Sidensparker Ponds, Back River, Fuller Brook, Alford Brook, Levensaler Brook, Seven Tree Pond, Crawford Pond, Quiggle Brook, Grassy Pond, Fish Pond, Hobbs Pond, Lermond Pond, Alford Lake, Lilly Pond, Mansfield Pond, Round Pond, Sennebec Pond, Jam Brook, Black Brook, Cook Brook, Lawry Pond, Quantabacook Pond, Stearns Brook, Wilson Brook, Bartlett Stream, Thompson Brook, Dolliff Pond, Dead River, Harriet Brook, Newbert Pond, Trues Pond, Ledge Pond, Kingdom Bog, Stevens Pond, Mud Pond, St. George Lake and Cargill Pond, receive pollution from sanitary wastes discharged through 14 outlets, directly to the water. Other wastes from two canning factories, a creamery, a chicken slaughter house, a restaurant, seven sawmills and four sink drains, are also discharged to the water courses at various points. The points of pollution, as observed at the time of survey, are as follows:

Town of Warren — At the southeast corner of the bridge, over the St. George River in Warren Village, is an outlet serving two buildings. Under the buildings at the northwest corner of the bridge, are two outlets, each serving one building and the wastes from a restaurant is included in the flow from one of the outlets. Opposite the end of the first street west of the bridge, is an outlet that reportedly serves three buildings. Along the east bank of the river, about 400 feet north of the bridge and just above tidewater, is another outlet for one building. About 600 feet northwest of the bridge is a septic tank overflow for one building to a brook. Another septic tank overflow to the same brook, enters at a point about ¼ mile northeast on Route 90 from its junction with Route 131. About 300 feet northeast of this same junction, still another septic tank overflow enters the brook through an open ditch. Approximately 0.8 mile north of the school in Warren, on Route 131 and located opposite the end of the private road, is a sink drain outlet directly to the river. About 0.8 mile farther north, of the private road mentioned and on a stream entering the east bank of the river, is a sawmill with sawdust piles extending to the stream. A sink drain on the east side of South Pond, serves a camp located about 0.2 mile south of Warren Station.

Town of Union — An outlet enters the stream connecting Round Pond and Seven Tree Pond, at a point about 300 feet west of the bridge. A canning factory discharges wash water and canning wastes to the north end of Seven Tree Pond. Blueberries, corn and squash are processed at this plant. A casket company in the Village of South Union also has an outlet to the same lake that discharges the sanitary wastes of about twenty employees. A sawmill is located on Lermond Brook, which enters Crawford Pond. A septic tank overflow for one building (two apartments) flows to the east bank of the St. George River at a point about 50 feet north of the Route 17 bridge in the Village of Union. About 300 feet farther north of the bridge and on the west side of the river, is a creamery which discharges wash water, sanitary wastes of five employees, and 1,000 gallons per day of cheese whey. A poultry processing plant has a drain outlet for blood, washings and feathers, to the small stream which crosses Route 17 and enters the loop in the St. George River near the Union Fairgrounds.

Town of Appleton — Sawdust and shavings pollution from sawmill on brook entering the northeast side of Sennebec Pond.

Town of Searsmont — About 3 miles below the outlet of Quantabacook Pond is a sawmill on the St. George River, near the Ghent School. The mill blows most of the sawdust to a pile on the opposite bank of the river, but some sawdust evidently does get to the water. Another sawmill, about 0.5 mile west of Searsmont on the road to West Searsmont, dumps sawdust, edgings and shingle hair to the river.

Town of South Montville — A sawmill near the outlet of Trues Pond, may get some sawdust to the south end of the pond from a pile on the bank.

Town of Liberty — An outlet through a ditch drain, for a canning factory in Liberty, discharges waste wash water to the St. George River. The waste consists of some blueberries, particles of corn and a little sugar from blueberry canning, and the outlet is about 1,500 feet southeast of the bridge on Route 220. About 400 feet farther upstream is a sawmill that blows sawdust to a pile that is approximately 75 feet from the water. Two sink drains discharge to St. George Lake, from camps along the west shore of the lake and near where the first section of the old road connects with Route 3.

Analytical results are tabulated as compiled on test data taken at the sampling stations and this tabulation is included as part of this report.

A limited amount of information is available from chemical and bacteriological analyses data, that was assembled for purposes of this survey. The discussion that follows concerns the present condition of the waters as ascertained from the facts presented by the results of the analytical tests and the sources of pollution as revealed by the sanitary survey.

Due to the number of samples that were examined for color properties, it is difficult to determine what the average would be over a much longer period of time. Of the samples tested, the variance for the same sampling points was a wide range from slightly colored to high coloring.

Test results indicate an acid condition exists almost uniformly throughout the watershed and evidently this low pH stems from natural causes and is not due to the discharge of any specific wastes.

High bacterial densities were predominant in the waters of the St. George River basin. Although the sampling has necessarily been limited, the results indicate that none of the waters are of a Class "A" quality due to the domineering presence and densities of the coliform organism. While there is only marginal farmland in this general area, it is to be assumed that the contamination of the waters stems mainly from industrial and domestic wastes discharged by man.

Although the nature and amount of wastes is comparatively higher in this drainage basin than in surrounding areas, the oxygen balance does not seem to be upset. However, this can be attributed to several causes. The test results indicate that there is an upward trend in pollution indices, after the stream passes through a village, then the waters recover naturally due to the time lag provided by the adequate storage quality of the intervening lakes and ponds. However, there is at least one nuisance condition that must exist, even at times of high flow, on the small brook where heavy concentrations of poultry industrial pollutants are discharged. While the main stem of the river, below the confluence with this particular brook, has an abnormally high coliform density and B.O.D., the dissolved oxygen content is likewise exceedingly high. The only apparent way to account for this contradictory condition is the existence of a heavy algae bloom that is liberating oxygen, in a form that indicates a high D.O. This fallacy is further explained by the abnormally high carbon dioxide content, in samples from this particular point and also from others throughout the watershed, that would indicate the action of algae working to break down the nitrates produced by the polluting organic wastes. A product of this synthesis is carbonic acid, which is indicated as carbon dioxide, followed by the liberation of oxygen. While an unusually large bloom of algae will produce these conditions, it is not truly indicative of normal stream conditions and should not be interpreted as such.

Megunticook River and Tributaries: The specific waters mentioned above represent the drainage from a comparatively small, rolling, coastal watershed.

An investigation disclosed considerable amounts of wastes, both domestic and industrial, were being discharged to the main stem of the Megunticook River, below the outlet of Megunticook Lake. Some 23 outfalls were discovered to be discharging sanitary sewage from about 177 buildings. In addition, 3 industries were disposing of their employees' wastes along with discharges that include: Fish Market floor washings, wash, scouring, and bleach and dye water from wool processing.

Since none of these wastes are treated, in any way, the receiving body of water must necessarily be of Class "C" quality, based on present statutes. This is further borne out in the results of test data assembled at sampling stations on this section of the river. It also appears, from the test results, that possible nuisance or Class "D" conditions would exist, were it not for a high dissolved oxygen content, due largely to a high bloom of oxygen synthesizing plant life.

The sanitary survey of the area disclosed that there were apparently no wastes, of any kind, being discharged to the waters above the Megunticook Lake outlet. Test results, from a sampling station near the outlet, indicate that better chemical conditions and a smaller bacterial density exist at this point and should, also, in the upstream waters. It is likely to assume that drainage from upstream farmland will create a coliform count high enough to have water of a "B" quality. However, since no further tests were made above the outlet, and conditions here are of Class "B" quality, this trend of thought seems to be reasonable.

Other Streams Entering Tidewater Between Rockport & Belfast: There are no large drainage areas among these streams, only short coastal streams are represented, with no complex pollution problem existing in any case.

Following is a chronological listing of the sources of pollution, on the individual streams, as disclosed by the sanitary survey:

(a) No direct outfalls to the Goose River and its tributaries, including Hosmer Pond, were observed. However, one outlet from a building to an open ditch, running about 100 feet to a branch stream of the river, might conceivably add to the results obtained from the coliform count.

(b) No direct sources of pollution to this stream, an unnamed brook to Rockport Harbor, were observed.

(c) Five sources contribute pollution to this small brook entering Rockport Harbor, just south of Goose River. They are as follows:

1. — Old 6" tile at N. E. corner of old stone dam below Pascal Avenue. (No flow evident now.) Probably sewer for only one house.
2. — 6" tile — one house — about 30' upstream from old dam and about 50' up on side of east bank.
3. — 18" tile to stream at west bank and 100' downstream from Pascal Ave. (old U. S. #1) bridge. This serves 2 houses.
4. — 8" tile to stream at west bank and about 50' upstream from Pascal Avenue bridge. No flow evident.
5. — Septic tank overflow from one house probably reaches stream at point about 50' west of U. S. #1 on south bank.

(d) There are no direct outfalls to this stream, an unnamed brook to Camden Harbor, but a large public sewer, in the stream bed, runs through the village to the harbor.

(e) No direct sources of pollution were observed on Great Brook, in Camden.

(f) No direct sources of pollution to this stream, an unnamed brook at Lincolnville Beach, were observed above the high tide line. However, samples are taken at U. S. Rt. #1 bridge, which is below high tide, and were taken at or near low tide. There is pollution to tidewater, at and near U. S. Rt. #1 bridge, from 3 houses, a garage and 2 summer restaurants.

Other Streams Entering Tidewater Between Wiscasset & Rockport: Except for wood waste from several sawmills, there is no pollution by industrial waste to be found in this area. During the period of the survey none of these mills operated regularly, and two did not seem to have been in use during 1953. The only waste pile indicating some attempt to keep waste out of the water, is located beside the outlet of Adams Pond at Boothbay. Some sawdust does get into the water however. The section of stream affected is short and waste quickly reaches tidewater. At East Boothbay a sawmill is located at the very outlet of a pond at the head of tide. The pond apparently was once a tidal creek, and might still be filled with salt water if it was drained at low tide. No pollution of fresh water occurs here, but waste does go to the tidewater. A mill near the mouth of Pemaquid River deposits wood waste in the water. Only a short section of the river is polluted, but waste can often be distinctly seen for very long distances along the shoreline, in tidewater. The Water Improvement Commission has granted a permit to deposit all waste from a sawmill into Goose River, which forms the town line between Waldoboro and Friendship. Several miles of the stream are effected. The two mills which have not been operated lately are located in the Town of Warren. At South Warren the mill is built over the stream and there is no evidence that any attempt was ever made to keep waste from the water. The mill is in poor condition now, and the dam does not hold water. The other mill is located on Oyster River. When operated, all waste went to the stream. The dam is in good shape and the mill is ready for use, though it has not been used recently. An old sawdust pile still remains beside a small stream (BB) in Bristol, which flows to the western cove of Johns River. Very little of this will get into the water in the future.

The shores of several lakes, especially in the Pemaquid River watershed have been developed for summer properties. There is evidence that private disposal systems for domestic wastes might be improved, in that they should be located at a greater distance from the water. It seems unlikely that any real pollution arises from these camps and cottages, since the location of such properties is usually selected in order to have the water available for recreational use. Often the water is used for domestic purposes as well.

(N) At Sherman Lake, in Newcastle, there is a possibility of waste drainage to a cattail swamp at the edge of the lake, from about twenty cabins near route 1. These were closed for the season at the time of the survey, but a trench indicates a drain toward the lake.

(R) The survey indicated no direct pollution but probable drainage from facilities quite close to the shore of both Campbell Pond and Knickerbocker Pond in Boothbay Harbor.

(AA) At South Bristol, at the pond which drains to tidewater near Clarks Cove, the drains from three septic tanks enter the pond within 200 feet of the dam at the head of tidewater. Samples collected showed no evidence of that pollution.

(J) The Pemaquid River is entered by one sewer, just upstream from the bridge on route 130. The sawmill of a lumber company is just downstream from this bridge. Some domestic waste enters the river at the village of Bristol. Though the survey disclosed several instances of disposal facilities located quite close to the shore of the lakes, there seems to be no real pollution above the village of Bristol.

(EE) At New Harbor, in the Town of Bristol, a small brook flowing to Back Cove is polluted by the overflow of septic tanks.

(II) At Round Pond, the stream at the north end of the village seems to be polluted by drainage from one or more septic tanks, just west of highway route 32. One tank is reported to be under water during periods of high flow.

(AF) At Tenants Harbor, in the town of St. George, two sewers enter a small stream entering the cove just north of the village, at the head of tidewater, but the stream itself is not otherwise polluted.

(M) At Rockville, an inlet to Chickawaukee Lake flows through pasture lands not far behind a group of houses and a slaughter house. No waste from the slaughter house seems to enter the stream, but drainage from the whole area seems most likely to carry coliform bacteria, and this was borne out by the results of tests.

Small farms and pasture lands border many of the small streams throughout the area. Others flow from bogs and swamps, and high bacteria tests from such streams probably do not represent true coliform organisms. As at Rockland, some streams drain lands which are strictly urban in character. Some streams, because of a high bacteria count, fail to meet standards higher than Class C quality, even though there is no contamination from human sources. Agricultural uses of the land account for some, but not all, of the high bacteria tests from unpolluted streams. Farming is not carried on extensively in this part of the state, but there seems to be enough to effect the drainage from some lands.

There seems to be no waste discharges of a type or quantity to upset the oxygen balance in the streams. There is no evidence of serious pollution by organic wastes.

Analytical results are tabulated on the following pages. This data represents the results of tests taken at the sample stations described. The work of testing the samples was carried out at the trailer laboratory of the commission by the personnel of the commission, assisted after mid October by a chemist of the Bureau of Health staff. The trailer was located at Rockland during the period of this survey.

In general only bacteriological samples were taken at key points on these streams, these being included on the following pages.

KENNEBEC RIVER BASIN & ADJ. COASTAL AREA

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Color
Sheepscot River													
1	Alna	Bridge at Head Tide	3	10/5/53 to 1/25/54	Min.	16.0	10.0	100	6.5	2.7	0.0	43	Slight
					Av.	6.7	12.0	96	6.8	3.9	0.4	117	> 50
					Max.	0.0	13.3	91	7.2	5.3	1.2	240	High
2	Whitefield	Old wooden bridge below village of Whitefield	3	10/5/53 to 1/25/54	Min.	16.0	9.5	95	6.4	2.7	0.6	75	Slight
					Av.	6.7	11.7	93	6.8	3.3	1.1	118	> 50
					Max.	0.0	13.5	92	7.1	3.6	1.6	210	High
3	Whitefield	Bridge near gaging station on Route 126 near North Whitefield	3	10/5/53 to 1/25/54	Min.	15.0	9.0	89	6.4	3.6	0.6	93	Slight
					Av.	6.3	11.6	92	6.8	4.4	1.0	382	> 50
					Max.	0.0	13.5	92	7.0	5.3	1.6	1,100	High
3A	Whitefield	Outlet of Clary Lake at dam above bridge near Chase's Mill	4	10/5/53 to 1/25/54	Min.	0.0	6.5	48	5.7	6.2	1.0	< 3	Slight
					Av.	6.0	8.7	71	6.1	10.3	2.0	50	> 50
					Max.	3.0	9.9	73	6.3	20.0	4.0	150	100
3B1	Windsor	Bridge over West Branch Sheepscot River on Route 17	3	10/5/53 to 1/25/54	Min.	15.0	9.2	91	6.6	4.4	0.2	93	Slight
					Av.	7.0	11.6	94	6.9	6.5	0.6	> 443	> 50
					Max.	1.0	13.2	93	7.2	9.7	1.2	> 1,100	High
3B2	Windsor	Bridge between Dearborn and Hewitt Brooks	2	10/5/53 & 11/17/53	Min.	13.0	8.4	79	7.0	3.6	0.6	75	Slight
					Av.	8.0	10.2	84	7.1	4.9	0.9	180	> 50
					Max.	3.0	12.0	89	7.1	6.2	1.2	460	High
3B2A	Windsor	Bridge at outlet of Moody Pond on Route 32	1	12/3/53	Min.								
					Av.							240	High
					Max.								
3B3	China	Bridge about one-half mile above Weeks Mills	2	10/5/53 & 11/17/53	Min.	15.0	9.4	93	7.1	3.6	0.0	75	Slight
					Av.	10.0	11.0	96	7.1	3.6	0.8	286	> 50
					Max.	5.0	12.6	98	7.1	3.6	1.6	460	High
3B4	China	Bridge below village at Branch Mills (just off Route 3)	2	10/5/53 & 11/17/53	Min.	16.0	8.8	88	7.1	1.8	0.6	240	Slight
					Av.	10.5	10.4	91	7.1	2.7	1.2	390	Mod.
					Max.	5.0	11.9	93	7.1	3.6	1.8	1,100	50
3B5	China	Palermo town line above dam at Branch Pond	3	10/5/53 to 1/25/54	Min.							< 4	Mod.
					Av.							23	< 50
					Max.							43	< 50
4	Whitefield	Above dam at Coopers Mills near Route 17	3	10/5/53 to 1/25/54	Min.	16.0	8.5	85	6.2	3.6	0.8	> 9	Slight
					Av.	7.7	10.8	88	6.6	4.8	1.0	112	< 100
					Max.	2.0	12.3	89	6.8	7.1	1.8	240	High
4A	Jefferson	Bridge over Travel Brook about one mile above Coopers Mills	2	10/5/53 & 11/17/53	Min.	15.0	8.7	86	6.2	4.4	1.2	23	
					Av.	10.0	10.0	87	6.4	5.8	1.4	87	High
					Max.	5.0	11.3	88	6.6	7.2	1.6	150	
4B	Somerville Pltn. (Turner Pond)	Bridge on Route 105 at Franchs' Mill	2	11/18/53 & 12/2/53	Min.	6.0	10.1	81	6.4	4.4	0.2	23	Slight
					Av.	5.0	10.5	82	6.5	4.9	0.4	33	Some
					Max.	4.0	10.9	83	6.6	5.3	0.6	43	Some
5	Somerville Pltn.	Bridge on Route 105	3	11/18/53 to 1/31/54	Min.	7.0	10.9	90	6.4	5.3	0.4	14	Slight
					Av.	4.0	11.5	87	6.4	7.4	0.9	80	> 50
					Max.	0.0	12.2	84	6.5	9.7	1.6	150	High
6	Palermo	Bridge on Route 3	3	11/17/53 to 1/31/54	Min.	4.0	11.3	86	6.3	6.2	0.6	> 9	Slight
					Av.	2.0	11.8	85	6.5	9.1	0.8	48	Some
					Max.	2.0	12.1	87	6.7	14.0	1.2	93	50
Damariscotta River													
1A	Nobleboro	Bridge over tidewater at mouth of river	2	9/29/53 & 11/16/53	Min.							430	
					Av.							680	
					Max.							930	
1	Nobleboro	Dam at fishway Damariscotta Mills	4	9/29/53 to 2/6/54	Min.	18.0	8.8	92	5.9	2.6	0.2	> 9	
					Av.	9.0	10.7	91	6.6	5.0	0.7	74	< 50
					Max.	2.0	11.9	86	6.9	9.7	1.0	240	
2	Jefferson	Bridge near lake on Route 32	4	9/29/53 to 2/6/54	Min.	17.0	7.5	77	6.0	6.3	0.0	210	
					Av.	7.3	10.9	87	6.3	7.6	0.6	342	< 50
					Max.	1.0	13.3	94	6.5	10.6	1.0	460	
2A1	Jefferson	Bridge on back road over Davis Stream	3	9/29/53 to 12/3/53	Min.	15.0	9.1	90	6.8	3.5	0.0	43	
					Av.	9.0	9.3	93	6.9	4.4	0.7	189	Some
					Max.	3.0	12.9	96	6.9	5.3	1.4	460	
2A2	Washington	Bridge on Route 17	3	9/29/53 to 12/2/53	Min.	14.0	9.5	92	6.5	3.5	0.2	14	
					Av.	6.7	11.6	93	6.6	4.7	2.5	43	Some
					Max.	2.0	12.8	94	6.8	5.3	6.4	93	
2B	Jefferson	Face of dam at Meserve Lumber Co. on West Branch	3	9/29/53 to 12/3/53	Min.	17.0	8.5	87	6.3	5.0	0.2	43	
					Av.	10.5	10.2	89	6.4	5.6	1.1	182	High
					Max.	4.0	11.9	91	6.4	6.2	2.0	460	
2A1A	Jefferson	Bridge over small stream on Route 126 in village	1	12/3/53	Min.								
					Av.							39	
					Max.								

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Color
Medomak River													
1	Waldoboro	Bridge above head of tide near old sawmill	7	9/28/53 to 2/3/54	Min.	18.0	8.4	88	6.2	4.4	0.6	150	> 50
					Av.	6.3	11.8	94	6.4	6.8	2.2	> 32,064	High
					Max.	0.0	14.2	97	6.8	11.0	3.5	> 110,000	High
2	Waldoboro	Old bridge abuttment just below Route 1 at Picnic Area	7	9/28/53 to 2/3/53	Min.	17.0	8.0	82	6.1	4.4	0.4	140	> 50
					Av.	5.7	11.2	87	6.3	7.6	1.2	524	High
					Max.	0.0	13.5	92	6.8	14.0	2.6	1,100	High
3	Waldoboro	Bridge at Winslows Mills	7	9/28/53 to 2/3/54	Min.	18.0	8.7	91	5.9	2.6	0.6	23	< 50
					Av.	6.0	11.6	91	6.3	7.8	3.3	> 434	High
					Max.	0.0	13.6	93	6.9	14.0	14.5	> 1,100	High
3A	Waldoboro	Bridge at Benner Brook	2	9/23/53 & 10/8/53	Min.	16.0	8.6	86	6.5	7.0	0.9	460	
					Av.	12.0	9.3	85	6.6	7.5	1.0	780	
					Max.	8.0	9.9	84	6.6	8.0	1.1	1,100	
3B	Waldoboro	Ditch from Medomak Canning Factory at Highway by R.R. track	5	11/10/53 to 1/22/54	Min.	6.0	1.1	8	4.6		4.5	23,000	
					Av.	4.2	4.9	37	5.3	13.2	> 972	445,000	Slight
					Max.	2.0	10.3	74	6.0		>2420	1,100,000	
4	Waldoboro	Bridge about 1 mile south of Orffs Corner	5	9/28/53 to 2/3/54	Min.	18.0	8.4	88	6.1	4.0	0.3	43	> 50
					Av.	8.0	10.8	89	6.4	7.5	0.9	486	High
					Max.	0.0	13.2	90	6.8	14.0	1.5	2,400	High
5	Waldoboro	Bridge above Mank's mill near North Waldoboro	3	9/28/53 to 11/10/53	Min.	17.0	8.2	84	6.3	4.4	0.5	75	
					Av.	11.3	9.2	83	6.5	6.1	1.0	160	High
					Max.	6.0	10.6	85	6.7	9.0	1.5	240	
5A1	Washington	Bridge on Route 17 at Little Medomak Brook	6	9/28/53 to 2/3/54	Min.	17.0	7.8	80	5.8	4.0	0.6	43	Slight
					Av.	5.5	11.2	87	6.1	7.8	1.2	238	Some
					Max.	0.0	13.2	90	6.3	11.0	2.0	930	< 50
5A2	Washington	Bridge on Route 105 at village on Little Medomak Brook	6	9/29/53 to 1/22/54	Min.	17.0	9.0	93	6.3	2.6	0.4	23	Slight
					Av.	7.1	11.7	95	6.7	3.4	2.0	322	Slight
					Max.	0.0	13.4	92	6.9	4.0	6.0	1,100	Slight
6	Washington	Union town line on Route 17	4	9/28/53 to 2/3/54	Min.	16.0	7.8	78	6.1	6.0	0.9	23	> 50
					Av.	7.2	10.0	81	6.5	10.1	1.2	424	High
					Max.	0.0	12.0	82	6.8	18.5	1.5	1,100	High
6A	Union	Bridge at Pettengill Brook	4	9/28/53 to 12/11/53	Min.	17.0	5.1	52	5.8	9.0	0.4	75	
					Av.	8.5	7.9	65	5.9	12.4	1.7	154	High
					Max.	2.0	10.3	75	6.0	16.0	2.9	240	
7	Washington	Union town line bridge near Burkettville	6	9/28/53 to 1/22/54	Min.	17.0	8.1	83	6.3	4.0	0.2	75	High
					Av.	6.0	11.6	91	6.4	6.5	1.5	478	High
					Max.	2.0	13.2	96	6.9	12.3	4.0	1,100	High
8	Liberty	Bridge on Route 220 at South Liberty	3	9/29/53 to 11/10/53	Min.	16.0	8.2	82	5.6	8.0	0.8	< 4	
					Av.	10.3	9.5	84	5.8	9.0	1.1	367	Some
					Max.	6.0	11.5	92	6.0	11.0	1.4	1,100	
St. George River													
1	Warren	Bridge in village on Route 90 (above dam at head of tide)	5	8/27/53 to 2/4/54	Min.	21.0	7.3	81	6.2	4.4	0.1	23	Slight
					Av.	9.6	10.5	89	6.5	6.6	0.5	1,523	> 30
					Max.	1.0	13.0	91	6.7	12.0	1.2	4,600	50
2	Warren	Bridge on Middle Road	5	8/27/53 to 2/4/54	Min.	22.0	7.2	81	6.1	3.5	0.0	> 9	Slight
					Av.	9.5	9.9	82	6.4	6.6	0.6	31	> 30
					Max.	1.0	12.3	86	6.6	13.0	1.3	93	50
2A	Warren	Bridge at outlet of North Pond	2	9/25/53 & 12/2/53	Min.	15.0	7.0	69	6.5	3.5	0.5	75	
					Av.	10.0	8.8	76	6.6	5.8	0.6	153	High
					Max.	5.0	10.7	83	6.7	8.0	0.6	230	
2B	Warren	Bridge at Fuller Brook	2	9/25/53 & 12/2/53	Min.	10.0	10.1	89	6.2	7.0	0.4	21	
					Av.	6.0	11.5	91	6.6	7.5	0.7	126	High
					Max.	2.0	12.9	93	7.0	8.0	0.9	230	
2C	Union	Bridge at outlet of Crawford Pond	2	8/27/53 & 9/25/53	Min.	22.0	7.8	88	6.3	2.6	0.3	93	
					Av.	19.5	8.5	91	6.6	3.1	0.4	167	
					Max.	17.0	9.2	94	6.8	3.5	0.5	240	
2C1	Warren	Bridge at Wattons Mills over Quiggle Brook	1	12/2/53	Min. Av. Max.	3.0	12.7	94	6.8	3.5	2.0	43	Slight
2C2	Hope	Bridge on Route 17 over outlet of Fish Pond at South Hope	2	9/25/53 & 12/2/53	Min.	19.0	9.0	96	6.8	4.4	0.0	23	
					Av.	11.5	10.5	94	6.9	4.4	1.0	117	
					Max.	4.0	11.9	91	6.9	4.4	1.9	210	
2C3	Union	Bridge on Route 17 over outlet of Lermond Pond at East Union	2	9/25/53 & 12/2/53	Min.	16.0	8.9	89	6.6	2.6	0.3	< 3	
					Av.	9.5	10.8	91	6.8	3.1	0.6	< 232	
					Max.	3.0	12.6	93	6.9	3.5	0.8	460	
3	Union	Bridge over Round Pond outlet	5	8/27/53 to 2/4/53	Min.	22.0	9.1	103	6.1	0.9	0.9	43	Some
					Av.	9.6	10.9	94	6.8	5.2	3.7	545	< 30
					Max.	1.0	12.8	90	7.7	12.0	8.6	1,100	< 50
3A	Union	Mouth of small stream (Castner Brook) below Hillcrest Poultry Co.	2	8/27/53 & 9/25/53	Min.	14.0	0.0	0	7.0		112.0	> 110,000	
					Av.	18.0	0.0	0	7.2		138.5	>5,555,000	
					Max.	22.0	0.0	0	7.3		165.0	11,000,000	
3A1	Union	Bridge at Castner Brook on Route 17 below drain of Hillcrest Poultry Co.	3	11/19/53 to 2/4/53	Min.	8.0	10.4	88	6.1	7.0	12.0	11,000	Some
					Av.	3.7	11.9	89	6.5	8.6	27.1	39,667	> 30
					Max.	2.0	12.7	92	6.8	10.0	56.0	93,000	> 50

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Color
St. George River (Cont.)													
3A2	Union	Wooden farm bridge north of Rte. 17 over Castner Brook	2	11/19/53 & 1/26/54	Min. Av. Max.	8.0	11.9	100	6.6	3.5	1.6	43 572 1,100	Slight > 25 < 50
4	Union	Bridge to Union Fairground	5	8/27/53 to 2/4/54	Min. Av. Max.	21.0 9.2 1.0	7.6 10.9 13.7	84 90 96	6.1 6.5 6.7	2.6 5.6 9.0	0.6 4.2 14.1	750 8,070 24,000	Slight > 30 > 50
5	Union	Bridge near Nye School	5	8/27/53 to 2/4/54	Min. Av. Max.	21.0 9.4 1.0	8.5 11.4 13.7	94 96 96	6.1 6.7 7.1	2.6 4.9 9.0	0.3 1.0 1.8	21 45 75	Some < 30 < 50
6	Appleton	Bridge at village	2	8/28/53 & 9/26/53	Min. Av. Max.	23.0 19.5 16.0	7.9 8.7 9.5	91 93 95	6.9 7.0 7.0	2.6 3.5 4.4	0.7 0.9 1.0	43 252 460	
7	Searsmont	Above dam at Robbins sawmill	2	8/28/53 & 9/26/53	Min. Av. Max.	22.0 19.0 16.0	6.1 7.2 8.2	69 76 82	6.3 6.4 6.5	5.3 5.8 6.2	0.9 1.3 1.6	43 > 572 > 1,100	
7A	Searsmont	Bridge on Rte. 131 over outlet Quantabacook Pond	3	8/28/53 to 1/31/54	Min. Av. Max.	23.0 13.0 0.0	7.1 8.3 9.9	82 76 66	6.2 6.3 6.4	5.3 8.8 15.0	1.0 1.5 2.4	< 4 186 460	> 50
7A1	Searsmont	Dam at Ruffingham Meadow on Rte. 3	2	8/28/53 & 9/26/53	Min. Av. Max.	26.0 20.5 15.0	7.5 7.9 8.2	91 86 81	6.7 6.7 6.7	5.3 5.3 5.3	0.0 1.6 3.1	150 625 1,100	
8	Searsmont	Bridge on Rte.131 at village at part of river known as Dead Stream	2	8/28/53 & 9/26/53	Min. Av. Max.	23.0 19.5 16.0	8.2 8.8 9.4	94 94 94	6.9 7.0 7.0	3.5 3.5 3.5	0.2 0.6 0.9	23 49 75	
9	Montville	Dam at Trues Pond at South Montville	3	8/28/53 to 1/31/54	Min. Av. Max.	24.0 13.3 0.0	7.7 9.8 12.9	90 88 88	6.4 6.7 7.0	3.5 5.7 10.0	0.9 1.7 2.6	23 49 75	50
9A	Montville	Bridge on Rte. 3 at head of Trues Pond near Liberty-Montville town line	2	8/28/53 & 9/26/53	Min. Av. Max.	23.0 18.5 14.0	4.3 5.3 6.3	50 56 61	6.0 6.1 6.1	8.0 10.5 13.0	0.0 1.7 3.3	43 252 460	
10	Liberty	Dam at Stevens Pond	3	8/28/53 to 1/31/54	Min. Av. Max.	23.0 13.0 0.0	7.8 9.7 12.7	90 88 87	6.4 6.5 6.6	2.6 5.4 10.0	0.0 0.8 1.3	14 525 1,100	< 25
11	Liberty	Old bridge to abandoned factory below village	3	8/28/53 to 1/31/54	Min. Av. Max.	24.0 13.0 0.0	8.1 10.6 13.7	95 94 94	6.6 6.9 7.0	1.8 2.8 4.0	0.0 0.4 1.0	14 2,338 4,600	50
12	Liberty	Bridge on Rte. 220 at dam at foot of St. George Lake	3	8/28/53 to 1/31/54	Min. Av. Max.	24.0 13.3 0.0	7.1 9.4 13.0	83 84 89	6.2 6.4 6.6	3.5 4.6 6.0	0.4 1.0 1.4	9 29 75	< 25
Megunticook River													
1	Camden	Dam at mouth of river	8	8/26/53 to 2/7/54	Min. Av. Max.	22.0 9.9 1.0	8.4 11.2 14.5	95 95 102	6.4 7.0 7.8	1.8 3.8 7.0	1.4 5.7 13.8	9,300 59,663 240,000	> 50
2	Camden	Bridge at Knowlton St.	8	8/26/53 to 2/7/54	Min. Av. Max.	22.0 9.6 0.0	8.5 11.1 14.2	96 96 98	6.4 6.7 7.0	1.8 4.3 7.0	0.0 1.2 2.4	> 11,000 > 26,222 46,000	> 50
3	Camden	Bridge at Washington St.	8	8/26/53 to 2/7/54	Min. Av. Max.	22.0 9.6 0.0	8.3 11.4 14.4	94 97 99	6.3 6.7 7.0	2.0 3.5 8.0	0.0 1.1 1.6	240 > 2,486 > 11,000	> 50
4	Camden	Bridge on Mt.Battee Ave.	8	8/26/53 to 2/7/54	Min. Av. Max.	22.0 9.5 1.0	8.0 11.1 14.0	90 94 98	6.2 6.7 7.1	2.6 4.5 10.0	0.0 1.2 2.4	230 490 930	> 50
5	Camden	Bridge at head of river at Megunticook Lake near old fish hatchery	7	8/26/53 to 2/7/54	Min. Av. Max.	22.0 11.3 1.0	8.4 10.7 13.0	95 95 91	6.2 6.8 7.1	2.0 3.5 9.0	0.0 0.9 1.6	> 9 103 460	> 50
(a) Goose River (Rockport)													
1	Rockport	Mouth of river at head of tidewater	(No Samples Taken)										
2	Rockport	Bridge on Rte. 1	2	10/1/53 & 11/20/53	Min. Av. Max.	17.0 12.0 7.0	5.5 8.5 11.4	56 75 94	6.6 6.7 6.8	6.2 9.7 13.2	0.6 0.9 1.2	150 180 210	
3	Rockport	Bridge downstream from Simonton Corners	1	10/1/53	Min. Av. Max.							230	
4	Rockport	Bridge at Simonton Corners	1	11/20/53	Min. Av. Max.							43	

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(a) Goose River (Rockport) (Cont.)													
5	Rockport	Bridge upstream from Simonton Corners near old quarry	1	10/1/53	Min. Av. Max.							230	
6	Rockport	Bridge near Hosmer Pond	(No Samples Taken)										
(b) Unnamed brook to Rockport Harbor													
T	Rockport	At bridge near mouth of brook	2	12/13/53 & 1/7/54	Min. Av. Max.							93 152 210	Slight
(c) Unnamed brook to Rockport Harbor (just south of Goose River)													
S1	Rockport	Below old footbridge near mouth of brook	2	12/13/53 & 1/7/54	Min. Av. Max.							4,600 12,800 21,000	Slight
S2	Rockport	About 100 ft. north of Pascal Ave. bridge	2	12/13/53 & 1/7/54	Min. Av. Max.							> 1,100 > 2,500 3,900	Slight
(d) Unnamed brook to Camden Harbor													
Q	Camden	At bridge on US Rte. 1 in Camden Village	3	12/13/53 to 1/15/54	Min. Av. Max.							> 9 3,750 11,000	Slight Slight Slight
(e) Great Brook (Camden)													
P	Camden	Bridge on US Rte. 1	2	12/13/53 & 1/7/53	Min. Av. Max.							< 3 < 5 < 11	Slight
(f) Unnamed brook at Lincolnville Beach													
0	Lincolnville	At tidewater on US Rte. 1 bridge	2	12/13/53 & 1/15/54	Min. Av. Max.							230 580 930	Slight
(g) Montsweag Brook													
1	Woolwich-Wiscasset town line	Bridge on highway Rte. 1	3	11/13/53 to 2/6/54	Min. Av. Max.	4.0 3.0 1.0	12.3 12.6 13.3	94 94 94	6.0 6.4 6.6	6.2 6.7 8.8	0.8 1.2 1.6	75 209 460	
2	Wiscasset	First bridge wholly in Wiscasset	2	11/13/53 & 11/18/53	Min. Av. Max.	4.0 4.5 5.0	12.4	94	6.2 6.2 6.2	9.6 10.1 10.6	0.6 1.0 1.4	43 97 150	
(h) Dyer River													
1	Newcastle	Bridge at No. Newcastle just below head of tide	5	11/13/53 to 2/6/54	Min. Av. Max.	3.0 2.3 0.0	12.2 12.5 12.9	91 91 88	5.9 6.4 6.6	6.2 6.2 6.2	0.4 0.9 1.6	36 306 1100	
2	Jefferson	Bridge on highway Rte. 215	1	12/3/53	Min. Av. Max.							240	
3	Jefferson	Little Dyer Pond outlet at highway bridge on Rte. 215	1	12/3/53	Min. Av. Max.							23	
(i) Deer Meadow Brook													
1	Newcastle	Highway bridge near head of tide	5	11/13/53 to 2/6/54	Min. Av. Max.	0.0 2.7 4.0	12.1 12.5 12.9	83 92 98	5.8 6.2 6.6	5.3 8.8 15.0	0.2 0.7 1.4	28 117 240	
2	Newcastle	Bridge on highway Rte. 215	1	12/3/53	Min. Av. Max.							93	
(j) Pemaquid River													
1	Bristol	Bridge on highway Rte. 130	3	10/2/53 to 12/7/53	Min. Av. Max.	16.0 14.5 13.0	9.3 9.8 10.3	93 95 97	6.9 6.9 6.9	3.0 3.5 4.0	0.7 0.8 0.8	23 89 150	

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Color
				(j) Pemaquid River (Cont.)									
2	Bristol	Bridge, on Bristol to Round Pond road	4	10/2/53 to 2/6/54	Min.	16.0	9.3	93	6.0	4.0	0.1	230	
					Av.	9.7	11.0	94	6.5	5.9	0.2	1307	< 50
					Max.	1.0	13.1	92	6.9	8.8	0.4	2400	
3	Bristol	Bridge at village of Bristol on Biscay Pond road	3	10/2/53 to 12/7/53	Min.	15.0	8.5	84	6.6	4.0	0.3	43	
					Av.	14.0	9.1	88	6.7	4.0	0.4	60	
					Max.	13.0	9.7	92	6.8	4.0	0.4	93	
4	Damariscotta Bremen town line	Bridge over stream between Biscay Pond and Pemaquid Pond	3	10/2/53 to 2/6/54	Min.	16.0	9.1	91	5.9	3.0	0.2	20	
					Av.	10.7	10.6	93	6.6	5.0	0.6	30	< 50
					Max.	2.0	12.9	93	6.9	7.9	0.9	43	
				(k) Goose River									
1	Waldoboro Friendship town line	Bridge on highway	5	6/5/53 to 2/1/54	Min.	7.0	9.6	79	5.4	13.2	0.5	93	
					Av.	3.3	11.0	82	5.7	16.4	0.9	202	
					Max.	3.0	11.8	88	6.0	22.0	1.5	240	
2	Waldoboro Friendship town line	Bridge just above Tibbetts Sawmill	3	11/30/53 to 2/1/54	Min.	4.0	9.5	72	5.3	14.1	0.0	11	
					Av.	5.5	9.7	77	5.4	14.5	0.6	300	
					Max.	7.0	9.9	81	5.4	15.0	1.1	460	
3	Waldoboro Friendship town line	Second bridge above Station #2	1	12/7/53	Min.								
					Av.							1100	
					Max.								
				(l) Oyster River									
1	Warren	Highway bridge at Highland	3	10/1/53 to 2/1/54	Min.	16.0	9.1	91	6.2	6.2	0.6	750	
					Av.	8.0	10.9	88	6.6	9.1	1.0	1250	
					Max.	0.0	13.6	93	6.9	12.3	1.5	1500	
2	Rockport	Bridge near Rockland town line	3	10/1/53 to 2/1/54	Min.	9.0	8.3	72	6.2	9.7	0.8	230	
					Av.	8.0	9.7	80	6.5	11.1	1.0	525	
					Max.	0.0	12.4	85	6.7	14.0	1.3	1100	
				(m) Mill River									
1	Thomaston	Bridge on highway Rte. 1 near head of tide	2	10/9/53 & 2/1/54	Min.	8.0	11.8	99	6.7	4.4	0.1	430	
					Av.	4.0	12.1	92	7.0	10.2	0.6	1415	
					Max.	0.0	12.3	84	7.3	15.8	1.0	2400	
2	Thomaston	Lower bridge over Meadow Brook	2	10/1/53 & 10/9/53	Min.	16.0	8.8	88	6.9	5.3	0.8	93	
					Av.	12.0	9.5	88	7.0	5.6	1.1	165	
					Max.	8.0	10.3	87	7.0	6.2	1.4	240	
3	Rockland	Meadow Brook at gate at Chickawaukee Lake	3	10/1/53 to 2/1/54	Min.	17.0	9.7	100	6.8	1.8	0.0	> 9	
					Av.	10.0	11.1	95	7.1	4.1	1.0	19	
					Max.	0.0	13.6	93	7.4	6.2	2.1	23	
4	Rockport	Bridge on highway Rte. 17 at inlet to Chickawaukee Lake	2	10/1/53 & 10/9/53	Min.	18.0	8.6	90	6.4	9.7	1.0	430	
					Av.	14.0	9.4	90	6.5	11.9	1.1	445	
					Max.	10.0	10.2	90	6.5	14.0	1.2	460	

	Station & Stream	Town	Location	No. Samples	Test Period		B. Coli M.P.N.
A	Unnamed stream to tidewaters of Montsweag Brook in Woolwich, Sagadahoc County	Woolwich	Bridge-highway Route 1	3	12/20/53 to 2/1/54	Min.	93
						Av.	338
						Max.	460
C	Unnamed stream to Chewonki Creek on Montsweag Bay in the township of Wiscasset, in Lincoln County	Wiscasset	Bridge on road to Westport Island	3	12/20/53 to 2/1/54	Min.	150
						Av.	783
						Max.	1100
D	Ward Brook in Wiscasset, Lincoln County	Wiscasset	Bridge on highway Route 1	3	12/20/53 to 2/1/54	Min.	43
						Av.	199
						Max.	460
E	Unnamed stream to harbor south of village of Wiscasset, Lincoln County	Wiscasset	Bridge on highway Route 1	2	12/20/53 & 1/18/54	Min.	75
						Av.	84
						Max.	93
F1	Unnamed stream to cove north of harbor in township of Wiscasset, Lincoln County	Wiscasset	First bridge above head of tidewater just off Route 218	3	12/18/53 to 2/1/54	Min.	240
						Av.	600
						Max.	1100
F2	"	Wiscasset	Bridge west branch 3rd. above tidewater	2	12/18/53 & 1/18/54	Min.	1100
						Av.	1100
						Max.	1100
G	Unnamed stream southeast of Alna School near Route 218 in township of Alna, Lincoln County	Alna	Bridge near school and just off Route 218	2	12/18/53 & 1/18/54	Min.	75
						Av.	257
						Max.	460
H	Trout Brook in Alna, Lincoln County	Alna	Trout brook bridge on Route 218	1	12/18/53	Min.	
						Av.	93
						Max.	
I	Unnamed stream to Sheepscot River from east side of Head Tide in township of Alna, Lincoln County	Alna	Bridge at Head Tide at mouth of stream	3	12/18/53 to 2/1/54	Min.	150
						Av.	283
						Max.	460

Tabulated Results of Test Data Compiled on Streams

Station & Stream	Town	Location	No. Samples	Test Period		B. Coli M.P.N.
J Ben Brook in Alna, Lincoln County	Alna	Ben Brook-bridge at Alna	3	12/18/53 to 2/1/54	Min. Av. Max.	23 418 1100
M1 Unnamed stream to tidewater of Deer Meadow Brook in Newcastle, Lincoln County	Newcastle	Lower bridge on dirt road	2	12/18/53 & 1/18/54	Min. Av. Max.	21 130 240
M2 "	Newcastle	Bridge on Sheepscot-Newcastle road	2	12/18/53 & 1/18/54	Min. Av. Max.	150 195 240
N1 Sherman Lake in Newcastle, Lincoln County	Newcastle	Dam at bridge at highway Route 1	2	12/18/53 & 1/18/54	Min. Av. Max.	21 32 43
N2 Sherman Lake in Newcastle, Lincoln County	Newcastle	Bridge at inlet on east side of lake	1	12/18/53	Min. Av. Max.	 75
O Libby Pond outlet in Edgecomb, Lincoln County	Edgecomb	Bridge on outlet of Libby Pond	2	12/17/53 & 1/14/54	Min. Av. Max.	23 31 39
P Unnamed stream to Back River in township of Boothbay, Lincoln County	Boothbay	Bridge on highway Route 27	2	12/17/53 & 1/14/54	Min. Av. Max.	93 277 460
Q1 Adams Pond Outlet in township of Boothbay in Lincoln County	Boothbay	Dam at Adams Point	2	12/17/53 & 1/14/54	Min. Av. Max.	> 7 25 43
Q2 "	Boothbay	Just above high tide	2	12/17/53 & 1/14/54	Min. Av. Max.	150 150 150
R1 Campbell Pond in Boothbay Harbor, Lincoln County	Boothbay Harbor	Dam at outlet of Campbell Pond	2	12/17/53 & 1/14/54	Min. Av. Max.	43 181 240
R2 "	Boothbay Harbor	Bridge at Campbells Brook	2	12/17/53 & 1/14/54	Min. Av. Max.	< 4 232 460
S Unnamed stream to Mill Creek, in Boothbay Harbor, Lincoln County	Boothbay Harbor	Bridge	2	12/17/53 & 1/14/54	Min. Av. Max.	43 68 93
T1 Meadow Brook in Boothbay Harbor, Lincoln County	Boothbay Harbor	Bridge on highway Route	2	12/17/53 & 1/14/54	Min. Av. Max.	43 97 150
T2 "	Boothbay Harbor	Bridge at mouth of stream	2	12/17/53 & 1/14/54	Min. Av. Max.	43 68 93
U Unnamed stream to Damariscotta River, Dodge Lower Cove, in township of Edgecomb, Lincoln County	Edgecomb	Highway bridge on Newcastle to Boothbay road	2	12/17/53 & 1/14/54	Min. Av. Max.	21 32 43
V Oyster Creek in Nobleboro, Lincoln County	Nobleboro	Oyster Creek-lowest bridge below head of tide	2	12/10/53 & 1/4/54	Min. Av. Max.	43 251 460
W Unnamed stream to tidewater of Oyster Creek in township of Damariscotta, Lincoln County	Damariscotta	Bridge nearest mouth of stream	3	12/10/53 to 1/4/54	Min. Av. Max.	> 9 23 43
X Unnamed stream to Damariscotta River near fairground in Damariscotta, Lincoln County	Damariscotta	Bridge nearest mouth of stream	3	12/10/53 to 1/4/54	Min. Av. Max.	43 227 460
Y Unnamed stream to Damariscotta River in township of Bristol, Lincoln County	Bristol	Bridge on highway Route 129	2	1/4/54 & 1/18/54	Min. Av. Max.	11 80 150
Z Wiley Brook in township of South Bristol in Lincoln County	So. Bristol	Wiley Brook-bridge on Route 129	2	12/10/53 & 1/4/54	Min. Av. Max.	150 305 460
AA Pond outlet just east of Clark Cove, in township of South Bristol, Lincoln County	So. Bristol	Dam at bridge at outlet of pond	2	1/4/54 & 1/18/54	Min. Av. Max.	23 33 43
BB Unnamed stream to western cove of Johns River in township of South Bristol, Lincoln County	So. Bristol	Bridge near mouth of stream at west arm of Johns Bay on Pemaquid Pt.	2	12/10/53 & 1/4/54	Min. Av. Max.	14 18 23
CC Little Falls Brook in Bristol in Lincoln County	Bristol	Little Falls Brook-bridge near Route 130	2	12/10/53 & 1/4/54	Min. Av. Max.	240 240 240
EE Unnamed stream to Back Cove in township of Bristol, Lincoln County	Bristol	Bridge near mouth of stream to Back Cove at New Harbor	3	12/10/53 & 1/14/54	Min. Av. Max.	150 783 > 1100
FF Unnamed stream to north end of New Harbor in township of Bristol, Lincoln County	Bristol	Bridge on highway Route 32 at north end of village of New Harbor	2	12/10/53 & 1/4/54	Min. Av. Max.	> 7 25 43
GG1 Unnamed stream to Long Cove in township of Bristol, Lincoln County	Bristol	Bridge at highway on Route 32	1	12/10/53	Min. Av. Max.	 240

Tabulated Results of Test Data Compiled on Streams

	Station & Stream	Town	Location	No. Samples	Test Period		B. Coli M.P.N.
GG2	Unnamed stream to Long Cove in township of Bristol, Lincoln County	Bristol	Bridge near mouth of stream	2	12/10/53 & 1/4/54	Min. Av. Max.	43 68 93
HH	Unnamed stream to south side of Round Pond in township of Bristol, Lincoln County	Bristol	Bridge near mouth of stream at south end of village of Round Pond	2	12/10/53 & 1/4/54	Min. Av. Max.	150 195 240
II1	Unnamed stream to north end of Round Pond in township of Bristol, Lincoln County	Bristol	Bridge at highway Route 32	1	12/10/53	Min. Av. Max.	240
II2	Unnamed stream to north end of Round Pond in township of Bristol, Lincoln County	Bristol	Bridge nearest mouth of stream at north end of village of Round Pond	1	1/4/54	Min. Av. Max.	23
JJ	Webber Pond outlet in township of Bristol, Lincoln County	Bristol	Webber Pond outlet at highway bridge on Route 32	2	12/10/53 & 1/4/54	Min. Av. Max.	20 56 93
KK	Unnamed stream to Medomak River from the west in township of Waldoboro, Lincoln County	Waldoboro	Bridge at highway Route 32	3	12/10/53 to 1/19/54	Min. Av. Max.	20 210 460
LL	Unnamed stream just west of Slaigo Brook in township of Waldoboro, Lincoln County	Waldoboro	Bridge at highway Route 220	3	12/13/53 to 1/19/54	Min. Av. Max.	93 264 460
MM	Slaigo Brook in township of Waldoboro, Lincoln County	Waldoboro	Bridge at highway Route 220 Slaigo Brook	5	1/22/53 to 1/19/54	Min. Av. Max.	93 175 240
NN	Farnsworth Brook in township of Waldoboro in Lincoln County	Waldoboro	Bridge at highway Route 220 Farnsworth Brook	2	12/13/53 & 1/5/54	Min. Av. Max.	43 43 43
OO	Unnamed stream to Back River in township of Waldoboro, Lincoln County	Waldoboro	Bridge on road to Jones Neck	1	12/13/53	Min. Av. Max.	14
QQ1	Forest Pond outlet in township of Friendship, Knox County	Friendship	Forest Pond inlet at bridge	1	12/13/53	Min. Av. Max.	> 9
QQ2	"	Friendship	Forest Pond outlet at bridge	2	12/13/53 & 1/5/54	Min. Av. Max.	< 3 > 6 > 9
RR	Crystal Lake outlet in township of Friendship, Knox County	Friendship	Crystal Lake outlet briage on road to Martin Point	2	12/13/53 & 1/5/54	Min. Av. Max.	< 7 > 10 14
SS	Unnamed stream to Hatchet Cove in township of Friendship, Knox County	Friendship	Bridge on road to Martin Point	1	12/13/53	Min. Av. Max.	14
TT	Unnamed stream to Back River in township of Friendship, Knox County	Friendship	Bridge on highway Route 220	3	12/13/53 to 1/19/54	Min. Av. Max.	150 283 460
UU	Meduncook River, Salt Pond outlet between Friendship and Cushing, Knox County	Friendship Cushing line	Bridge on highway Friendship to South Cushing	4	4/16/53 to 1/14/54	Min. Av. Max.	> 9 128 240
VV	Fresh Pond outlet to Maplejuice Cove in township of Cushing, Knox County	Cushing	Bridge near mouth of stream	4	6/5/53 to 1/19/54	Min. Av. Max.	23 283 460
WW	Beaverdam Brook to Broad Cove in township of Cushing, Knox County	Cushing	Bridge near mouth of stream Beaverdam Brook	2	12/16/53 & 1/5/54	Min. Av. Max.	29 36 43
XX	Unnamed stream to St. Georges River near town line of Cushing in township of Warren, Knox County	Warren	Bridge at old sawmill off Route 220	3	12/16/53 to 1/19/54	Min. Av. Max.	150 174 460
AB	Unnamed stream to Otis Cove in township of St. George, Knox County	St. George	Bridge at tidal creek near mouth	3	12/16/53 to 1/19/54	Min. Av. Max.	93 551 1100
AC	Unnamed stream to Turkey Cove in township of St. George, Knox County	St. George	Bridge at road near mouth of Turkey Cove	3	12/16/53 to 1/19/54	Min. Av. Max.	43 748 1100
AD	Unnamed brook to northern cove at Port Clyde in township of St. George, Knox County	St. George	Bridge at mouth of stream in tidewater	3	12/16/53 to 1/19/54	Min. Av. Max.	120 560 1100
AE	Unnamed stream to Mosquito Harbor in township of St. George, Knox County, (tidal creek)	St. George	Bridge over tidal inlet at Martinsville tidewater highway Rte. 131	2	12/16/53 & 12/20/53	Min. Av. Max.	150 150 150
AF1	Unnamed stream to head of Tenants Harbor in township of St. George, Knox County	St. George	Bridge on highway Route 131	3	12/16/53 to 1/19/54	Min. Av. Max.	29 391 1100
AF2	"	St. George	Dam about 75 feet upstream from Route 131	4	1/22/53 to 1/19/54	Min. Av. Max.	14 147 460

Tabulated Results of Test Data Compiled on Streams

Station & Stream		Town	Location	No. Samples	Test Period		B. Coli M.P.N.
AG	Unnamed stream to cove north of Tenants Harbor in township of St. George, Knox County	St. George	Bridge on highway Route 131	3	12/16/53 to 1/19/54	Min. Av. Max.	43 447 1100
AH	Unnamed stream to head of Long Cove in township of St. George, Knox County	St. George	Bridge at highway near road to Clarks Island	2	12/16/53 & 12/20/53	Min. Av. Max.	> 9 51 93
AI	Unnamed stream to Sharkeyville Creek in township of So. Thomaston, Knox County	South Thomaston	Bridge near mouth Rockland to Sprucehead road	3	12/16/53 to 1/19/54	Min. Av. Max.	< 4 194 460
AJ	Unnamed stream just north of Sharkeyville Creek in township of So. Thomaston in Knox County	South Thomaston	Bridge near mouth Rockland to Sprucehead road	3	12/16/53 to 1/19/54	Min. Av. Max.	240 600 1100
AK	Marsh Brook to Weskeag River in township of South Thomaston	South Thomaston	Marsh Brook-bridge on back road to Rockland	3	12/16/53 to 1/19/54	Min. Av. Max.	430 607 930

Tabulated Results of Miscellaneous Test Data Compiled on Streams

Sta. No.	Town	Stream	No. Samples	Test Period		B. Coli M.P.N.
1	Rockport	Goose River	1	6/7/53	Min. Av. Max.	2,400
2	Rockport	Goose River	2	6/7/53 & 7/14/53	Min. Av. Max.	> 1,100 > 2,850 4,600
3	Rockport	Goose River	1	7/14/53	Min. Av. Max.	4,600
4	Rockport	Goose River	1	7/14/53	Min. Av. Max.	2,400
1	Camden	Megunticook River	5	1/25/53 to 8/4/53	Min. Av. Max.	43,000 53,200 110,000
2	Camden	Megunticook River	5	1/25/53 to 8/4/53	Min. Av. Max.	9,300 > 29,760 > 110,000
3	Camden	Megunticook River	3	3/6/53 to 8/4/53	Min. Av. Max.	> 11,000 > 17,000 23,000
4	Camden	Megunticook River	2	7/19/53 & 8/4/53	Min. Av. Max.	460 695 930
5	Camden	Megunticook River	3	1/25/53 to 8/4/53	Min. Av. Max.	> 3 118 460

PENOBSCOT RIVER

Basin No. 17 & 17 A

(COASTAL STREAMS IN WALDO COUNTY)
(See Map No. 7)

Including: Marsh Stream Watershed, Passagassawaukeag River Watershed, Goose River (Belfast) Watershed, Marsh River Watershed, Wescot Stream Watershed, Little River Watershed and small Coastal Streams in Stockton Springs and Searsport.

The above listed waters have been conveniently grouped, for purposes of this report, as they are small, neighboring coastal watersheds with adjoining coastal streams, interspersed. Since the waters are confined to the same locale and are all limited in size, it is deemed more advisable to make a group report, such as this, so as not to entail the repetition necessitated by individual reports on the watercourses concerned. Little or no data on this watershed was incorporated in the 1950 Report so considerable detail is included in this supplement.

A sanitary survey of the area revealed, with reasonable accuracy, facts relating to sewage disposal as learned by actual inspections of the areas and from interviews with a sufficient number of home occupants in the different culture locales. Similar culture was inspected in the rural areas, that were accessible over traversable roads, and investigations were made of points indicated as critical by any of the sources of information.

No hydrological data are available on the streams, but it would be feasible for streams with a drainage area of measurable size, to make direct runoff calculations by means of careful comparison with similar basins, on a unit area basis. It is doubtful whether it would be of any advantage to gather data of this sort on the small coastal streams, either by construction of weirs or by the use of a portable gaging instrument. Such detailed information does not seem warranted, except maybe in a particular nuisance case, on streams of this size.

Description of Present Stream Conditions: Following is a summary, chronologically arranged, of the information obtained by the sanitary surveys in regard to sources of pollution as located on the various streams and their tributaries.

(a) Following is a list of pollution to Marsh Stream and its tributaries:

1. West bank just above Rt. #1 bridge — signs of oil dumping from garage nearby.
2. Northeast corner of Rt. #1 bridge is a road drainage conduit that quite likely contains overflow of septic tank serving one house.
3. Littlefield Brook — Septic tank overflow direct to stream on east bank and just south of Rt. #139 bridge, 1 house.
4. Littlefield Brook — Cesspool overflow to west bank just north of Rt. #139 bridge, 1 house.
5. Meadow Brook — About .6 mile from mouth and on north bank, 1 house now uses privy 60′ from bank, but hole for septic tank has been dug about 25′ from brook and sink wastes are going in this now.
6. Marsh Stream — Approximately 0.4 mile upstream from Meadow Brook is one house with sink drain to stream.
7. No. Branch — 50′ below dam at Monroe and on west bank is a large chicken house. It is reported that dead chickens, etc. occasionally find their way to the stream.
8. North Branch — At bridge in Jackson. There is a sawmill here on the west bank but waste pile is about 100′ from stream.
9. Marsh Stream at Brooks Village — From a point about 0.2 mile east of bridge in village to about 0.1 mile west of same bridge, there are at least 11 direct sewers to the stream serving at least 18 dwellings, a theater, and 5 stores. In addition to the above, there is a drainage ditch from

a canning factory which discharges all wastes to the stream. Peas, corn, and applesauce are canned in season. The factory is on the south bank of the stream and about 0.1 mile east of bridge.

Note: Extreme high water made it impossible to locate these outfalls individually. The information was gathered from local residents.

(b) Following is a list of sources of pollution, both direct outfalls and sources that probably contaminate indirectly, to Passagassawaukeag River and its tributaries:

1. Septic tank overflow about 40' from north bank and about 0.1 mile east of second bridge from the mouth. Serves one house.
2. Large chicken house on north bank just west of the bridge on Rt. #137.
3. Warren Brook at second bridge about mouth and on the east bank and south side of the road is a large chicken farm. Chickens range along banks. Manure pile about 50' from edge of stream.
4. Sheep and cow pasture along banks of unnamed stream on southwest side of Rt. #137 and about half way from Whitcomb's to Philbricks Corner.
5. Beef cattle pasture along west bank of Passagassawaukeag River and on both the north and south sides of Route #131. This is just below Passagassawaukeag Lake.
6. Poland Stream — Old pea vine waste on bank of ravine to Poland Stream about 0.4 mile east of Morrill Village.
7. Poland Stream — South bank and west side of bridge in village. Large chicken house very close to stream.
8. Poland Stream — North bank and west side of bridge in Morrill Village. Considerable dumping here.

(c) Following is a list of pollution sources to the Goose River and tributaries starting from its mouth in Belfast Bay:

1. On west bank and just south of first bridge on Rt. #141 is Sherman and Co. Shankboard manufacturer. All wastes, both sanitary and industrial, go directly to the river. The company employs about 8 persons and make about 350 tons of product per year working two 8-hour shifts per day. The manufacturing wastes are about 30%, by weight, of the raw material which are cardboard, paper, and scrap leather. The above information was received from the plant manager.
2. Barnyard and manure pile on west bank and about 100 yards south of bridge at foot of Swan Lake.
3. Hidden outfall on west bank, about 25' north of bridge at foot of lake, serves one store and 2 other dwellings.
4. Swan Lake, starting along west shore and circling the lake — septic tank with drain to shore serves year round dwelling opposite C.M.P. Co. pole #39.
5. Six inch tile to small stream bed about 50' from lake shore serves one summer hotel. There may be a septic tank buried underneath the hotel, but it could not be located.

In addition to the above listed sources, there are 26 privies, septic tanks and cesspools very close to the lake water, that would prabably result in some pollutional effect and induce a high coliform count, the west side of the lake being the worst offender, since most of the cottage lots do not have more than 50 feet from highway to the water's edge. Therefore, little opportunity exists for waste disposal and it is reported that some cottages dump the containers from chemical toilets into the lake directly. Also, there are 3 sink drain outlets discharging to Swan Lake.

Although there are many cottages on the north and west shores of Swan Lake, very little pollution will result from them, as they have ample land and in most cases have privies that are 100 feet or more back from the shore.

There is also some pasture land adjacent to Goose River, that undoubtedly causes some contamination.

(d) There are no direct sources contributing pollution to Marsh River, the only possible pollution might come from pasture land along the river banks.

(e) There is no evidence of any pollution contributing sources along the banks of Carley Brook.

(f) This brook, unnamed brook to Mill Cove, runs through the village of Sandy Point. There are no direct sewer connections to this stream, but there is definitely pollution reaching it from the houses in the village.

1. Between the mouth and the bridge on U. S. #1-A, there are 8 houses with septic tanks and 2 with privies that are so close that drainage most certainly gets to the stream during rainy periods and perhaps even in dry periods.
2. Just west of Rt. 1-A and on south bank of stream, is a garage and house which are served by one large septic tank approximately 60' from water's edge and not too much above level of water in stream. It appeared that oil had been dumped into stream here at times, though the garage owner says he has discontinued doing this.
3. Near first bridge above U. S. #1-A is one house which also has a septic tank and drainage field about 25' from the bank of the stream.

(g) No sources of pollution, direct or indirect, were in evidence along this stream, an unnamed brook emptying to Salt Pond on neck of Cape Jellison.

(h) This stream, an unnamed brook that runs through Stockton Springs Village just west of the U. S. Rt. #1 and Rt. #3 intersection, has no direct sewers. However, there is seepage from septic tanks and privies of approximately 25 houses, 1 school, 2 garages and 3 large chicken houses, along the banks from the mouth to U. S. Rt. #1 bridge.

(i) No evidence of any sources of pollution was noted on this stream, an unnamed brook (Stockton Springs) on the Searsport Town line.

(j) No direct sources of pollution were located along Long Cove Brook in Searsport.

(k) The following sources of pollution were found on this unnamed brook (Searsport), at the eastern edge of the Village:

1. Garage on south side of U. S. #1 has septic tank with overflow to stream.
2. House on west bank and on north side of U. S. #1 has septic tank, but seepage to stream is quite possible.
3. One house direct to stream, north side of highway and about 200' upstream.
4. Eight inch tile enters stream on east bank and not far north of U. S. #1. Town official reports this sewer to serve 20 houses. Outfall was not seen.
5. A normally dry run entering stream on east bank and perhaps 100 yards from U. S. #1 contains sewage of 2 houses.

Note: Some people on Warren Street reported that they were connected to a private sewer that also emptied into this stream near point #4 above. However, it is possible that this may be included in the sewer at point #4.

(l) The following sources were found to be contaminating Mill Brook (Searsport) and its tributaries.

1. Between mouth of stream and U. S. #1 bridge there are about 12 houses that may contribute sewage to stream, although water was too high to observe any outfalls. Some of these houses have septic tanks, but most of them do not.
2. Eight inch tile to stream at northeast corner of Rt. #1 bridge, serving approximately 25 houses.
3. A small stream enters Mill Brook from the east just north of the Mill Pond, and contains following sources of pollution:
   a. Ten inch tile, containing sewage of at least 3 houses, drains to stream at southwest corner of bridge near high school.
   b. Manure pile, less than 20' from edge of stream, just east of bridge near high school.

c. About 100 yards east of above bridge is the drainage field of the high school septic tank, which may reach stream in wet weather.

(m) The only sources of pollution along Wescot Stream (Belfast) and its tributaries are various pasture lands along the banks.

(n) No direct sewage discharges were observed to Little River (Belfast) and the only possible pollution would come from the considerable amounts of pasture and crop land adjacent to the river and its tributaries.

(o) A sanitary survey was not made of the Ducktrap River and its tributaries, because of the apparent lack of culture in the area.

(p) There are no direct sources of pollution along Shaw Brook, in Northport, but there is considerable pasture land along the upper branches.

(q) A drain, from a 3-room schoolhouse septic tank, enters the stream, an unnamed brook (Northport) just west of Bayside Community, about 100 yards from the mouth and on the east bank.

The results of analytical test data, taken at the individual sampling stations on the waters mentioned above, are tabulated on the following pages.

The results of only a limited amount of test data are available, for interpretation, to aid in determining the present conditions of the waters in question. It is believed that enough chemical and bacteriological tests have been made on most of the streams, to reasonably substantiate the information obtained by the sanitary surveys. The discussion that follows is based on fact as ascertained by the test results and as actually observed by employees of the Water Improvement Commission making the Sanitary Survey.

Only an occasional sample was tested for organic coloring, on the majority of the streams, and all seemed to show a uniformity of very slight coloring. There were six exceptions to this mutuality, which are as follows:

(b)	Passagassawaukeag River	— fairly high organic coloring
(c)	Goose River (Belfast)	— no color tests made
(d)	Marsh River	— " " " "
(m)	Wescot Stream	— " " " "
(n)	Little River	— " " " "
(o)	Ducktrap River	— " " " "

This would appear to indicate that the land, in general, in the area of these waters, is similar in nature. This property, however, is not of primary consideration in determining water quality under Maine Law.

Samples from the smaller coastal streams did not have any chemical tests made on their respective samples, including pH, but seven of the watersheds produced the following pH results:

(a)	Marsh Stream	— slightly acid — neutral
(b)	Passagassawaukeag River	— acid — slightly acid
(c)	Goose River	— slightly acid — neutral
(d)	Marsh River	— slightly acid
(m)	Wescot Stream	— slightly acid
(n)	Little River	— acid
(o)	Ducktrap River	— acid

While most of these waters are of a slightly acid nature, only two of them having stronger acid tendencies, none of them have an extremely low pH that would be characteristic of water that has flowed through bogs or swampy land.

Other Streams of Penobscot Basin in Hancock County: The total number of streams entering tidewater in the Penobscot section of Hancock County is large. While the greater portion of these streams have no pollution, several are polluted to varying degrees and in different ways, though discharge of domes-

tic wastes is by far the most frequent form of pollution. Often small streams flow, too conveniently, through the villages of these coastal towns.

It seems best to consider the streams of this county by towns. A note is included to indicate the number of streams, believed to be of a permanent nature.

The description of present conditions, where sources of pollution were found to exist, will be considered, town by town:

Orland: There is no pollution of surface waters, except within the Orland River watershed in this town.

Penobscot: Clements Brook is polluted by drainage from a septic tank, just east of the highway and about 100 yards from tidewater.

Winslow Stream is often polluted by wood waste, about two miles from its mouth. Only about 100 yards from tidewater it is polluted by wastes from a blueberry canning factory. Even the waste pulp from cooked squash is shoveled into this stream. Some sewage enters a very small tributary of this stream.

Castine: There is no pollution of surface waters within this town.

Brooksville: Shepardson Brook has farmyard drainage and drainage from a cesspool in the stream segment downstream from the highway near Smith Cove.

Walker Pond gets drainage of sewage from tile pits serving four cottages a short distance east of the outlet.

Walker Pond outlet is sometimes polluted by wood waste from a mill located at the foot of the lake. This stream may also get indirect drainage from one septic tank.

Sedgwick: Sargent Brook, which flows through Sargentville Village, is polluted by the sewage from five houses.

A small stream just north of Sedgwick Village crossing Route 172 is polluted to some extent by drainage from one private sewer on the stream bank west of the road.

A small stream, just north of this last stream, flows past a manure pile, and over the next rise of ground, another small stream flows very close to a large poultry house. These streams have no source of human pollution, but probably show some abnormal coliform bacteria count.

A stream, about one-half mile south of North Sedgwick, flows through pasture land of a dairy farm. Often it overflows its banks, to spread out over a wide area. It then enters Salt Pond.

Deer Isle: Lilly Pond outlet is polluted only in the marshy area very near tidewater. Sewers of the church and high school enter here. Other streams have no pollution.

Stonington: There seems to be no pollution of surface waters within this town.

Brooklin: There seems to be no pollution of surface waters within this town.

Blue Hill: Carleton Stream is very badly polluted by wood waste from a sawmill. Above this mill there is no pollution. The segment of stream which is polluted contains sawdust and shavings, along with short edgings, butt ends and broken shingles. It is a terrible tangle of wood waste, from the mill to its mouth at tidewater.

On the south edge of Blue Hill Village, a very small stream (x) is polluted by sewage from two houses, at a point near Route 175.

Another small stream (x), which is crossed by Water, Main and High Streets, is polluted first at High Street. It becomes increasingly more polluted as it passes through the village. At its mouth, the sewer of the Blue Hill Memorial Hospital enters tidewater.

Mill Brook (v) flows through the heart of the town. It is first polluted by indirect drainage of the septic tank of the consolidated school, which drains to a swamp not far from the stream. Further downstream, about the same situation is found serving the high school. Several private dwellings, a filling station and two restaurants have sewers to the stream or to its banks.

About 100 yards east of this stream, a smaller one enters tidewater. This is polluted by domestic wastes of several houses and a garage, and at the very head of tide by a filling station, a barber shop

and a house. Wastes from at least three houses, and some times old motor oil from the garage, enters the stream.

Surry: There is no pollution of streams within this town. The sawmill which once polluted Patten Stream (zz) has been destroyed, but some waste piles still remain, but it is doubtful if waste now enters the water.

Ellsworth: A small stream west of Union River, at the very edge of the Ellsworth City limits, is badly polluted by a public sewer. In dry seasons this becomes only an open sewer ditch.

On the east side of Union River, near the southern limits of the city, Card Brook (t) crosses U. S. Highway Route 1 and finally enters tidewater. This stream is first polluted, about 250 yards east of Route 1, by two houses. This is just downstream from a farm pond dam. As it approaches the highway, it is further polluted by a small tributary from the south carrying septic tank drainage from houses and filling stations, and sometimes old motor oil. An ice cream stand and a restaurant kitchen have sewers to the stream, near the highway, and other houses, a garage and the restaurant have septic tanks draining to the brook. Behind the restaurant, the stream is messy with debris consisting of cans, bottles and paper. Near the mouth of the stream, three other houses have sewers to the water, making a total of eight houses.

Other streams show no evidence of pollution.

Basin No. 17 & 17 A

PENOBSCOT BASIN (Continued)

(HANCOCK COUNTY SECTION)

Orland River: The name, Orland River, seems to be applied by the U. S. Geological Survey only to the tidewater portion of the river, while that segment of the river above tidewater is called Narrimissic River. The watershed comprises portions of eight towns, but the total population, including Orland Village, is probably only about 1,500 persons. In summer, this is increased by cottage occupants, especially at Phillips Lake, to at least twice that figure. At Orland Village nine houses have sewers direct to the river. Color of the water seems to be only moderate, and in the case of Jacob Buck Pond outlet (the upper portion of Whites Brook) it was quite low. Turbidity should not be a problem anywhere in the area.

All of this watershed above the dam at the outlet of Alamoosook Lake was placed in Class "A" by the 1953 Legislature.

Hydrological data for this watershed is difficult to obtain, and is complicated by the fact that water from Alamoosook Lake is pumped to Silver Lake for the water supplies of Bucksport and the St. Regis Paper Company. The flow is controlled by dams at Alamoosook Lake and at Toddy Pond. At times the runoff of Whites Brook makes up the greater portion of the flow of Narrimissic River. While there is a dam at the mouth of the river, it serves only to hold the water level, and there is little or no control of the flow at that point. While the lakes and ponds already classified by legislative act are somewhat developed for summer recreational use, those ponds remaining unclassified have only a very few small cottages without the improvements occasioned by the availability of electric power. The presence of many small farms, having a few cattle or sheep requiring pasturage, scattered widely through the lower portion of the Whites Brook watershed has already been mentioned. In several instances manure piles were located very near the streams. Once there were small industries at several locations along these streams, but they have not existed for many years. There is no swift river flow at low tide below the dam at the river's mouth, as at least a channel of tidewater extends up to this point. This tidewater area is an inlet from the Penobscot River, and incoming waters from that source probably are more polluted than the Narramissic River itself, though partially salt from mixing with ocean water in Penobscot Bay. In the area already classified, there is but one sawmill located near the water. There is none in the

area of unclassified waters. This mill continues to add waste, in the process of extending fill into Toddy Pond, at East Orland.

(HANCOCK COUNTY — Continued)

(r) **Union River and Tributaries:** Much of this watershed runoff flows from wilderness areas and is fairly well isolated from human habitations. The principal exceptions are that for about three months during the summer, the shorelines of several of the lakes and ponds are well populated. Development of camp and cottage properties, already well established at some places, is proceeding rapidly and extending to new areas. The city of Ellsworth is located at the head of tidewater at the mouth of this river.

An investigation of this watershed disclosed no pollution by sanitary sewage entering this river above the public sewers of Ellsworth, and only one sawmill which causes any pollution, though waste from another, which has now moved away from its old site, may continue to enter the water in small quantities. The pollution from the existing sawmill has not thus far been extensive, but threatens to become worse. Pollution from this source appears to be illegal.

Hydrological data is limited to rainfall records and a stream gaging station at Amherst on West Branch Union River.

There is strict control of the flow from Graham Lake and the overflow of several other lakes is controlled to a lesser degree. When flow data is required for streams covered in this report, it will be necessary to rely upon data derived from careful comparisons with known flows.

Outside of Ellsworth, the permanent population of this drainage basin is less than 1000 persons. This is widely scattered and divided among several towns. There are no real villages in any of these towns. There are six entire townships and varying portions of nineteen others in this watershed.

There is considerable concentration of seasonal populations at some of the lakes. Major colonies have grown up at Phillips Lake, Green Lake, Branch Lake and Beech Hill Pond. Other lakes have smaller, but rapidly growing developments. At the time of the survey the camps and cottages were not occupied, but a careful check at two lakes, Green Lake and Beech Hill Pond, failed to reveal any indication that wastes were being discharged directly to the lake at any point. It was found that many cottages were taking their domestic water supplies from the lakes. It is to be assumed that similar methods of disposal of wastes are employed at other lakeshore properties.

The potential cottages population of the area is very large. There are sixty-three lakes or ponds large enough to have names, and without doubt many of them are suitable for future development. At present, there might be about 3000 persons living around these lakes at the peak of the summer season.

Two sawmills were found to be located near the water at present. Only one of these is likely to be a problem in the future. The sites of several old mills were visited which were known to have at one time caused pollution. The waste piles of one of these, seems likely to continue to pollute the water for some time to come. No large volumes of waste should enter the stream, but the pile probably will wear away to some extent. This old mill site is on Webb Brook in Waltham, while the sawmill operation likely to result in pollution is also in this town on the East Branch Union River.

While most of the sanitary wastes of the City of Ellsworth are discharged to tidewater through the public sewer system, there is one public sewer to the river above the dam serving about fifty houses and commercial buildings, a school, and a canning factory. In recent years this factory has processed only blueberries, which results in wastes which are relatively low in pollutional qualities. This sewer enters Union River about one and one-half miles above the dam, near tidewater, and just downstream from the mouth of Gilpatrick Brook.

A new dam is projected, for the near future, near the location of this sewer outfall. It will overflow considerable land in the area, especially along Gilpatrick Brook.

A new textile mill, now nearly ready to install equipment, is locating in Ellsworth. For the present it will have no wet processes and no wastes, but plans are to include these processes later. At that time plans call for using river water from above the present dam and to return the wastes to the same point.

This drainage basin has the usual swamps and bogs and softwood growths which serves to produce organic coloring and low pH values, neither of which is a factor in considering water quality, under Maine law. The largest lake, Graham Lake, was created artificially by a dam on Union River. A large acreage was flowed over about thirty years ago, and much of the shoreline is still piled deep with driftwood of trees, branches and roots. A wide and shallow lake resulted, into which nearly all of the many tributaries emptied either directly or indirectly after passing through other lakes or ponds. Branch Lake Stream is the only major tributary not contributing to this lake.

Phillips Lake is peculiar in that it has two outlets, one toward Union River and one toward Orland River. The waters of this lake were apparently classified by action of the 1953 Legislature.

Since there have been only limited chemical and bacteriological examinations of these waters in the past, and none attempted for purposes of this survey, the discussion of facts upon which an estimate of the water's quality is based will be concerned only with their present condition, which is related closely with the sources of pollution revealed by this survey.

Some of the lakes and their outlets, particularly in the western portion of the watershed, have very little color, but generally these waters seem to have some organic coloring. Other physical qualities are good, with a possibility of some turbidity during high flows in the lower segment of the river.

Bacteriological quality should be good above the mouth of the public sewer from Ellsworth Falls, except for a small segment of Gilpatrick Brook, (u), where three houses, west of U. S. Highway Route 1, indirectly pollute the stream. Except for domestic wastes, there is no discharge to the river which will add to the bacterial contamination.

There is no pollution load upon this stream which will materially reduce the dissolved oxygen content of the water.

The likely continued pollution, though limited to small quantities of waste, of the lower segment of Webb Brook seems to bar it from being of either Class "A" or Class "B" quality.

The past history of Graham Lake, together with its masses of driftwood and its pollution by sawdust from both Webb Brook and, at least once, from East Branch Union River, seems to bar this body of water from having water of either Class "A" or Class "B" quality. This should not eliminate the outflow from this lake from the consideration of having higher water quality, however, another factor, thus far but little considered in evaluating water quality in this state, may at times affect the section of the river below the dam at Graham Lake. At certain times the entire flow from the lake is cut off for considerable periods of time when power is not being produced at Ellsworth. In times of hot weather and low flow this reduces the water in this river segment to a very small quantity. Without doubt water temperatures become abnormally high, which may seriously injure aquatic life.

The East Branch Union River between the lumber company sawmill and Graham Lake is considered to be unpolluted, but it is subject to pollution by wood waste at any time. The waste which went in the river during the high flows of last year, is considered to have been flushed from this portion of the river. This mill has once polluted the water to a limited extent.

The pollution of the waters of the Union River watershed is not severe. Time alone can efface the damage done to the waters of the river by the creation of Graham Lake. This is already well under way, with the cutting and wearing of a new shoreline, already completed, along much of the lake. Floating debris is now seldom in evidence, near the outlet, indicating that it has now mostly found a permanent lodgment.

The continued pollution of Webb Brook seems to defy abatement. Removal of such a waste pile is impractical and apparently time, again, must provide the means for permitting the quality of the water of this stream, which except for this pile, to be of Class "B" quality.

Provision for some minimum, but continuous, flow from Graham Lake, down to the Union River, would immediately permit this stream segment above Gilpatrick Brook, to become water of Class "B" quality.

The lower segment of Gilpatrick Brook might well be improved if truly adequate private disposal methods were adopted at three dwellings.

Improvement of the river below the outfall of the Ellsworth Falls sewer, would require either treatment or diversion of this sewer, to the other public sewers which discharge below the head of tide.

The area near the shore road, in the vicinity of Ellsworth High School, is at present used to some extent for recreational purposes, including swimming. This is the proposed location for discharge of future wet process wastes from the new textile mill. Untreated wastes should not be permitted, and their discharge might still further lower the quality of a small portion of the river.

Just below the dam, and a very short distance above the head of tide, a large public sewer discharges into an open ditch and several other private sewers enter. Treatment of all sewage, after collection at one point, would be necessary to permit upgrading of this portion of the river.

The tidewater section of Union River, near the City of Ellsworth, is not well suited for recreational purposes. Some of the area of the bay is closed to the taking of clams, due to pollution, but that portion of tidal flats is not of great economic importance. While the treatment of municipal sewage would reduce the pollution of the tidal river and bay, the benefits from treatment would be of an aesthetic nature and removal of possible health hazards.

Tabulated Results of Test Data Compiled on Streams in Waldo County

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen % Sat.	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Color
(a) Marsh Stream													
1	Frankfort	bridge on U.S. Rte. 1 above dam at head of tide	3	11/12/53 to 1/29/54	Min.	3.0	12.9	96	6.5	4	0.9	430	
					Av.	1.7	13.2	94	6.8	6	1.3	450	Slight
					Max.	2.0	13.5	97	7.0	10	1.8	460	
1A	Frankfort	bridge at mouth of stream flowing from the So. at W.Winterport	2	11/12/53 & 12/4/53	Min.	3.0	11.6	86	6.4	8	0.6	43	
					Av.	2.5	11.8	86	6.5	8	0.7	252	Slight
					Max.	2.0	11.9	86	6.5	8	0.8	460	
2	Frankfort	Monroe town line bridge just below mouth of No. Marsh Stream (Branch)	3	11/12/53 to 1/29/54	Min.	3.0	12.6	94	6.5	5	0.2	240	
					Av.	1.7	12.9	93	6.8	7	1.2	590	Slight
					Max.	2.0	13.1	94	7.0	9	1.7	1,100	
$2A_1$	Monroe	bridge on route 139 at village	3	11/12/53 to 1/29/54	Min.	3.0	12.7	94	6.7	4	0.5	43	
					Av.	1.7	13.0	92	7.0	6	1.2	208	Slight
					Max.	2.0	13.2	95	7.1	9	1.6	430	
$2A_2$	Monroe	bridge near Thurlow School	2	11/12/53 & 12/4/53	Min.	3.0	12.7	94	7.1	4	0.6	120	
					Av.	2.5	12.9	94	7.1	5	1.0	290	Slight
					Max.	2.0	13.0	94	7.1	5	1.4	460	
3	Monroe	bridge on route 141	3	11/12/53 to 1/29/54	Min.	4.0	12.0	91	6.5	4	0.7	150	
					Av.	2.3	12.8	93	6.8	6	1.2	283	Slight
					Max.	0.0	13.3	91	7.0	10	1.8	460	
4	Monroe	bridge near Brooks town line	3	11/12/53 to 1/29/54	Min.	4.0	12.2	93	6.5	5	0.7	930	
					Av.	2.3	12.7	92	6.8	7	1.2	1,420	Slight
					Max.	0.0	13.2	90	7.0	9	2.0	2,400	
5	Brooks	bridge above village on route 7	3	11/12/53 to 1/29/54	Min.	3.0	12.3	91	6.5	5	0.6	43	
					Av.	2.0	12.6	91	6.7	6	1.0	76	Slight
					Max.	0.0	12.8	87	6.8	8	1.4	93	
(b) Passagassawaukeag River													
1	Belfast	bridge at Head Tide (east of Rte. 137 and second bridge upstream from mouth	3	12/3/53 to 2/2/54	Min.	6.0	11.8	94	6.2	4	0.3	23	
					Av.	2.3	13.1	95	6.6	6	1.2	518	<50
					Max.	0.0	13.9	95	6.8	7	1.9	1,100	
2	Belfast	bridge just off route 137 at Holmes Mill	2	12/3/53 & 12/10/53	Min.	6.0	11.9	95	6.6	4	0.3	93	
					Av.	3.5	12.8	95	6.7	5	1.0	234	<50
					Max.	1.0	13.6	95	6.7	5	1.6	460	
2A	Belfast	Warren Brook at bridge near mouth	2	12/3/53 & 12/10/53	Min.	7.0	10.7	88	6.7	6	0.0	23	
					Av.	4.0	11.9	90	6.8	6	0.4	424	<50
					Max.	1.0	13.0	91	6.8	6	0.8	1,100	
3	Belfast	upstream bridge at Poors Mill	3	12/3/53 to 2/2/54	Min.	6.0	11.0	88	6.2	4	0.3	28	
					Av.	2.7	11.9	87	6.4	7	0.7	149	<50
					Max.	2.0	12.5	90	6.5	8	1.0	210	
$3A_1$	Morrill	Poland Stream at bridge in village	3	12/3/53 to 2/2/54	Min.	0.0	6.5	44	5.6	8	0.7	> 9	
					Av.	3.0	9.8	73	5.9	9	0.9	97	<50
					Max.	2.0	12.9	93	6.1	10	1.1	240	
$3A_2$	Morrill	Poland Stream at bridge above village	2	12/3/53 & 12/10/53	Min.	6.0	10.9	87	6.2	7	0.3	43	
					Av.	3.5	11.9	89	6.3	7	0.6	252	
					Max.	1.0	12.9	90	6.3	7	0.8	460	
4	Waldo	bridge above mouth of Poland Stream	2	12/3/53 & 12/10/53	Min.	7.0	11.0	91	6.4	4	1.0	93	
					Av.	4.5	11.9	92	6.5	5	1.8	291	<50
					Max.	2.0	12.8	92	6.6	6	2.5	460	
5	Waldo	bridge on old route 7 or road upstream from route 137	3	12/3/53 to 2/2/54	Min.	7.0	10.6	87	6.2	4	0.8	93	
					Av.	3.0	11.8	87	6.4	6	1.5	> 448	<50
					Max.	2.0	12.5	90	6.6	8	1.9	> 1,100	
(c) Goose River (Belfast)													
1	Belfast	above dam just above U.S. route 1	2	11/15/53 & 12/1/53	Min.	3.0	12.0	90	6.6	3.5	1.2	> 1,100	
					Av.	3.0	12.3	92	6.8	3.8	1.2	> 1,100	
					Max.	3.0	12.6	94	6.9	4.0	1.2	> 1,100	
2	Belfast	bridge just above Sherman Company Mill on Rte. 141	2	11/15/53 & 12/1/53	Min.	3.0	11.7	87	6.5	5.0	0.8	43	
					Av.	3.0	12.0	89	6.7	5.2	1.0	68	
					Max.	3.0	12.3	91	6.8	5.3	1.2	93	
3	Swanville	east bank between dam at Swan Lake & bridge below but above sewer near br.	2	11/15/53 & 12/1/53	Min.	5.0	11.7	92	6.7	2.6	1.2	< 3	
					Av.	4.5	11.9	93	7.0	3.3	1.5	> 550	
					Max.	4.0	12.0	93	7.2	4.0	1.8	> 1,100	
(d) Marsh River													
A	Prospect	Bridge on U. S. Route 1	2	11/12/53 & 12/4/53	Min.	3.0	12.5	93	6.8	4.4	0.4	230	
					Av.	2.5	12.7	93	6.8	4.9	0.6	261	
					Max.	2.0	12.9	93	6.8	5.3	0.8	460	

Tabulated Results of Test Data Compiled on Streams in Waldo County

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen % Sat.	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Color
(e) Carley Brook													
B	Stockton Springs	at bridge near Stockton-Prospect line	3	12/13/53 to 1/15/54	Min.							23	Slight
					Av.							152	Slight
					Max.							240	Slight
(f) Unnamed brook to Mill Cove (Stockton Springs)													
C_1	Stockton Springs	near mouth of stream	3	12/13/53 to 1/15/54	Min.							460	Slight
					Av.							9,690	Slight
					Max.							24,000	Slight
C_2	Stockton Springs	bridge just west of Route 3	2	12/13/53 & 1/7/54	Min.							21	
					Av.							32	Slight
					Max.							43	
(g) Unnamed Brook (Stockton Springs) to Salt Pond on Cape Jellison													
D	Stockton Springs	at lower bridge (Stockton Springs)	2	1/7/54 & 1/15/54	Min.							43	Slight
					Av.							68	Slight
					Max.							93	Slight
(h) Unnamed brook (Stockton Springs) Just West of U.S. Rt. #1 & Rt. #3 Intersection													
E_1	Stockton Springs	at R.R. bridge near mouth of Stream	3	12/13/53 to 1/15/54	Min.							930	Slight
					Av.							3,377	Slight
					Max.							4,600	Slight
E_2	Stockton Springs	bridge at U.S. Route 1	2	12/13/53 & 1/7/54	Min.							93	
					Av.							122	Slight
					Max.							150	
(i) Unnamed brook (Stockton Springs) on Searsport Townline													
F	Stockton Springs	at U.S. Route 1 bridge	1	1/7/54	Min.								
					Av.								
					Max.							> 1,100	Slight
(j) Long Cove Brook													
G	Searsport	bridge on U.S. Rte. #1	2	12/13/53 & 1/7/54	Min.							93	
					Av.							167	Slight
					Max.							240	
(k) Unnamed brook (Searsport) At Eastern Edge of Village													
H	Searsport	East edge of Village at U.S. Rte. #1 bridge	2	1/7/54 & 1/15/54	Min.							930	Slight
					Av.							2,765	Slight
					Max.							4,600	Slight
(l) Mill Brook (Searsport)													
I_1	Searsport	at mouth of stream	3	12/13/53 to 1/15/53	Min.							430	Slight
					Av.							3,443	Slight
					Max.							7,500	Slight
I_2	Searsport	at old bridge site, north of village	2	12/13/53 & 1/7/54	Min.							23	
					Av.							33	Slight
					Max.							43	
(m) Wescot Stream (Belfast)													
J	Belfast	bridge near mouth just above head of tide	2	11/15/53 & 12/1/53	Min.	3.0	11.9	89	6.6	3.5	0.8	150	
					Av.	3.0	12.1	90	6.7	4.0	1.5	150	
					Max.	3.0	12.3	91	6.8	4.4	2.2	150	
(n) Little River (Belfast)													
K	Belfast	above dam just above seoond bridge (first bridge above U.S.Rte. #1	2	11/15/53 & 12/1/53	Min.	4.0	10.8	82	6.2	5.3	0.8	93	
					Av.	4.5	11.3	87	6.4	5.3	1.0	122	
					Max.	5.0	11.7	91	6.6	5.3	1.2	150	
(o) Unnamed Brook (Northport) just west of Bayside Community													
L	Northport	at bridge just west of Bayside	2	12/13/53 & 1/7/54	Min.							23	
					Av.							58	Slight
					Max.							93	

Tabulated Results of Test Data Compiled on Streams in Waldo County

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Color
(p) Shaw Brook (Northport)													
M	Northport	A bridge near Saturday Cove	2	12/13/53 & 1/7/54	Min. Av. Max.							240 350 460	Slight
(q) Ducktrap River (Lincolnville)													
N	Lincolnville	Bridge on Route 137	2	12/1/53 & 12/3/53	Min. Av. Max.	4.0 3.0 2.0	11.3 12.1 12.9	86 90 93	6.6 6.7 6.7	3.5 3.5 3.5	0.7 0.9 1.0	23 127 230	

Tabulated Results of Test Data Compiled on Streams in Hancock County

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen % Sat.	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Salinity
(r) Union River													
1	Ellsworth	bridge at dam, Graham Lake	3	4/25/52 to 5/9/52	Min. Av. Max.	11.0 10.0 10.0	10.0 10.7 11.0	90 94 97	6.5 6.6 6.6		0.4 0.8 1.2	< 3 < 3 < 3	0
2	Ellsworth	face of dam near Royal Street	3	4/25/52 to 5/9/52	Min. Av. Max.	12.0 10.3 9.0	10.3 11.0 11.5	95 98 99	6.5 6.6 6.7		0.4 0.5 0.8	9 21 39	0
3	Ellsworth	Highway br. at Main Street (Route 3)	8	4/25/52 to 6/4/52	Min. Av. Max.	18.0 12.3 9.0	9.3 10.3 11.3	97 95 98	6.2 6.5 6.6		0.0 1.4 6.0	93 1,155 4,600	0 6 10
4	Ellsworth	wharf at public landing off Water Street	8	4/25/52 to 6/4/52	Min. Av. Max.	16.0 11.9 9.0	9.3 10.3 11.4	94 95 99	6.3 6.7 7.5		0.8 1.2 1.8	1,500 60,450 460,000	12 394 2,400
(s) Branch Pond Stream													
1	Ellsworth	bridge near mouth of stream	1	6/6/52	Av.				6.5			93	
(t) Card Brook													
1	Ellsworth	bridge near mouth of stream	2	6/6/52 & 6/17/52	Min. Av. Max.				6.6 6.9 7.1			430 680 930	
2	Ellsworth	behind Dairy Joy at Route 1	2	6/6/52 & 6/17/52	Min. Av. Max.				6.0 6.2 6.3			430 765 1,100	
(u) Gilpatrick Brook													
1	Ellsworth	bridge near mouth just off route 1	1	6/6/52	Av.				6.2			430	
(v) Mill Brook													
1	Blue Hill	dam at head of tide	2	6/6/52 & 6/17/52	Min. Av. Max.	15.0			6.7 6.8 6.9			430 2,506 4,600	
2	Blue Hill	ledges above bridge on High Street	2	6/6/52 & 6/17/52	Min. Av. Max.	15.0			6.7 6.8 6.9			230 330 430	
(w) Peters Brook													
1	Blue Hill	bridge on road to East Blue Hill	1	6/17/52	Min. Av. Max.	14.0			6.6			23	
(x) Unnamed Small Brooks													
1	Blue Hill	bridge on road to Bar Harbor Memorial Hospital	1	6/17/52	Min. Av. Max.				6.8			> 110,000	
1	Blue Hill	bridge by Blue Hill Garage	1	6/17/52	Min. Av. Max.				6.7			11,000	
(y) Mill Stream (Bucksport)													
1	Bucksport	bridge on route 15	1	4/8/52	Min. Av. Max.	4.0	16.4	125	6.9		0.6	43	low (Turb)
2	Bucksport	bridge above Blodgett Bros. Tanning Co.	1	4/8/52	Min. Av. Max.	4.0	14.1	107	7.0		0.6	39	low (Turb)
(z) Mill Brook Stream													
1	Surry	bridge on route 15	2	6/6/52 & 6/17/52	Min. Av. Max.	15.0			6.2 6.3 6.4			23 33 43	
(zz) Patten Stream													
1	Surry	bridge on route 15	2	6/6/52 & 6/17/52	Min. Av. Max.	19.0			6.4 6.5 6.6			39 41 43	

BASIN NO. 18

STREAMS ENTERING TIDEWATER IN HANCOCK AND WASHINGTON COUNTIES

(See Map No. 8)

Several of the watersheds of Washington County were classified by legislative act in Chapter 403, Public Laws of 1953. The streams remaining to be classified are for the most part small coastal streams, together with the lower reaches of the rivers already partially classified. Considerable detailed data is included in this portion of the supplement as little or no such data was available for the 1950 Report.

Washington and Hancock County streams and rivers flow from lands which are virtually wilderness; then they cross a narrow populated belt before reaching tidewater. The few and scattered villages are located at the mouth of some of these rivers or are situated on a tidewater harbor. There are no inland villages of importance and practically no industry away from the coast.

Collection of field data consisted solely of a reconnaissance of the populated areas made in February and March, 1954, supported by information supplied by town officials, members of the Warden Service, Department of Inland Fisheries and Game, local postmasters and local residents familiar with the area. Due to the isolated nature of most of this territory there will be very little possibility for improvement of stream conditions.

In view of the large number of streams involved, it seems best to consider them town by town from east to west. Many of them may flow through more than one township, but each will be taken up according to the location of its mouth at tidewater.

Most streams form in remote areas, but flow toward the coast crossing a narrow belt of farmland, some now deserted, which may result in coliform bacteria counts higher than normal for mild lands, due to drainage from barnyards, hen pens and pasture lands. As a rule no evidence of direct contamination from human sources is to be found.

Where the degree of pollution by cattle and other agricultural use is uncertain, and probably irregular from year to year or from season to season, much weight has been placed upon probable future stream use, rather than upon actual bacterial count, which can be determined only by lengthy periods of testing.

Some hydrological data is available on some rivers from the records of gaging stations, but on many streams such data can be secured only by comparison with other rivers whose flow is known. On several of the larger rivers, there is considerable regulation of flow from certain lakes and at stations for the production of power, and for the operation of water power mills flow is often regulated, or cut off entirely.

The lands, from which these waters flow, are characterized by soft wood forests and blueberry barrens, which are kept free of other vegetation by periodic burning.

Some of the watersheds are very small, while others, like that of Machias River, cover many townships.

Lakes and ponds are numerous, and many of them have been somewhat developed for summer properties, and the population along these lake shores greatly increases the population of the area through the summer season. Since the waters are used for recreational purposes and often as a source of water supply for household use, there seems to be little reason to consider that pollution sources are tolerated in these summer developments. No investigation of these areas was undertaken, but the meager information available suggests that proper sanitary disposal methods are employed by cottage owners.

Description of present stream conditions will be taken up in the same manner and in the east to west geographical order.

Perry: Boyden Stream is the principal stream in this town. It flows from Boyden Lake, and serves as a public water supply source for the City of Eastport. The lake has large areas of swampy shore and

in hot weather is turbid with algae growth. The stream flows through farmland areas, mostly pasture lands for dairy cattle, after passing the first highway bridge. Flow is controlled, except for leaks in the dam at the pumping station of the Eastport Water Company, and it is often cut off entirely at that point. A sewer to the stream, serves the pumping station. Part of the pumping is done by water power.

Short sections of several very small streams flow through narrow areas of farmland near their mouths, but are free of human contamination.

There appear to be seven streams, having continuous flow, entering tidewater within this town.

Eastport: The island, upon which this city is located, is so small, that streams are hardly more than drainage ditches, and the only permanent flow would be an open sewer ditch to Broad Cove.

Pembroke: The Pennamaquan River is the principal stream entering tidewater within this town.

Near the new highway, Route 1, there is a dam which once served as a source of power. At this point, sewage from a restaurant and cabins reach the river, and above the dam several houses are located very near the river bank. Since some of these are occupied only in summer, thorough investigation of sewage disposal was impossible. All year-round dwellings are reported to have septic tanks, but above the bridge near the dam, but there might be some question regarding drainage from the tanks. It appears that the river is unpolluted, upstream, from an east-west line through the tip of the point, between the two small bridges, just above the Iron Works Dam. Below this line there is a strong possibility of pollution by sewage, and such pollution is definitely known to exist only a short distance downstream. (The line might be more conveniently taken as the railroad bridge.)

A very short segment of Willow Brook, in West Pembroke, below the new highway, is polluted by domestic waste, and by drainage from two manure piles not far from the banks.

Other streams have sources somewhat removed from sources of pollution. Five streams entering tidewater in this town seem likely to have continuous flow.

Another dam and a power station are located on Pennamaquan River, about three miles above the village of Pembroke.

Dennysville: Dennys River, which separates Dennysville and Edmunds, is the principal stream of this town. Tidewater extends inland, nearly to the bridge on highway Route 1. There is some regulation of flow, of the river, at a power station at Meddybemps Lake. There is no evident source of pollution, to the river above the head of tide, but sewers enter the tidewater area. In Edmunds, a sawmill (which is, itself, not near the river) south of the bridge near Dennysville Station, occasionally dumps waste over the bank. This waste can enter the water only during flood conditions.

A small stream, flowing for the most part within the triangle of highways south of King David Hill, drains cultivated lands and manured fields near small farms. The waters are undoubtedly often high in coliform bacteria count, and therefore, considered of a low quality. This stream probably does not have a permanent flow of water.

Other than Dennys River, there are only two streams, both of which drain remote areas, having a flow of water all through the year.

Dennys River has already been placed in Class " A " by legislative act.

Edmunds: There is no evidence of pollution of any streams in this town. They flow from uninhabitated areas.

There are three streams in this township likely to flow continuously throughout the year.

Whiting: Orange River is the principal stream of this town. It has, in part, already been classified as Class " A " by legislative act.

That segment of the river, between the head of tide and the dam at the lumber company, is grossly polluted by sawdust, shavings and other wood waste.

There seems to be no pollution, upstream, from this dam to the beginning of the existing classification.

There is some regulation of flow on this river. A power station is located about one mile above the mouth of the river.

There is some possibility of pollution of Indian Pond, near highway Route 1, from a restaurant and cabins, which are now closed.

One other stream, which enters Holmes Bay after flowing from uninhabited lands, is the only other permanently flowing stream in this town.

Trescott: A very short section of Wiggins Brook is polluted, by drainage of a manure pile and barnyard, before it reaches Haycock Harbor. Otherwise, the streams of the town seem to have no pollution.

There are but four streams, entering tidewater within this town, which are considered to be of a permanent nature.

Lubec: There seems to be no evidence of pollution, of any of the streams of this town.

Six streams seem likely to maintain a flow throughout the year.

Cutler: There seems to be no pollution of streams, above the head of tidewater, within the town.

There are five streams, some in very remote areas, which might be expected to flow throughout the year.

East Machias: The greater part of East Machias River has been placed in Class "A" by legislative act.

There are no active sources of pollution within that portion of the watershed already classified, nor in most of that remaining unclassified. Below, or south of an east-west line, one-half inch south of the north border of the Machias Quadrangle of the U.S.G.S. map, pollution may be considered to start. Wood waste is used as fill, all along the west side of the river. Wastes from a blueberry canning factory also enter the river. A few private sewers also enter above the dam. A dividing point, of the water quality, may be taken at the line described above.

A dam, for power production, is located not far from the head of tide. The lower part of the river, below this dam, is entered by numerous small sewers.

There is a dam, providing some regulation of flow, at the outlet of Gardner Lake. There is only one stream, other than East Machias River, likely to have continuous flow.

Marshfield: Middle River is the principal stream. It is a long tidal inlet, now controlled by a tidal gate at the railroad track in Machias, together with the outlet of several lakes above tidewater. Tidewater extends up to the first bridge on Route 192.

A sawmill is located just downstream from the second highway Route 192 bridge. The mill apparently has not operated for several years, though the machinery is in working order. When operated, much of the waste falls directly into the stream, though a blower took some across the stream to a large pile. When inspected, water was flowing over frozen and tightly packed wood waste, and washing the foot of the waste pile.

Except for a considerable amount of rubbish, thrown into the stream near the highway, there seems to be no human contamination.

While the mill is not now being used, there is no evidence it has been abandoned, and future pollution of this stream may be expected here.

Only one other very small stream enters tidewater within this town.

Machias: The Machias River is the principal stream in this town. Most of the watershed of this river has already been placed in Class "A" by legislative act.

The first pollution of the river, by sewage, seems to be just below the dam, near the pumping station of the Machias Water Company. Public sewers enter on both sides of the river, below this dam. From this point on, downstream, the pollution increases.

Except for a dump on the river bank on the canal road, at Whitneyville, and a large amount of rubbish in a small stream on highway Route 1A, near the Marshfield-Whitneyville town line, there seems to be no pollution above this dam.

Besides Machias River, there are three streams which enter tidewater, which seem likely to have some flow all through the year.

Machiasport: There seems to be no pollution of streams in this town, though small amounts of drainage from lands used for agricultural purposes, is possible.

Streams are small and in remote sections of the town. It may be that none have a continuous flow.

Roque Bluffs: There seems to be no source of pollution of any stream within this town.

Only Englishman River seems likely to have a flow throughout the year.

Jonesboro: Chandler River, including some tidewater area, has already been placed in Class "A" by legislative act.

The area through the village is cut by many gullies and very small streams, through farmlands and rural type dwellings. It seems very likely that any flow, south of any of the highways between Ebenezer Brook and Beaver Brook, will have a coliform bacteria count greater than the Class "B" standard.

The remote location of the blueberry canning factory at Jonesboro Station makes pollution of any stream very unlikely.

Beaver Brook and Ebenezer Brook are the only streams, other than Chandler River, likely to have a flow of water all of the year.

Jonesport: There are no streams in this town which are polluted above the head of tide. Only Indian River, which forms the Addison town line, is likely to have continuous flow. Since much of the interior of this town is made up of swamps and heaths, it is possible that some of the smaller streams can maintain a flow at all times.

Addison: There seems to be no source of stream pollution within this town.

There are eight streams, which enter tidewater, which may have a permanent flow.

Columbia Falls: Pleasant River is the only permanent stream entering tidewater in this town. This river has already been classified by legislative act as Class "A". A private sewer, with six houses served, and the sewer from the high school, having about fifty pupils, enter the river at about the same point in the area above the highway bridge, now established as Class "A". It is possible that drainage from the blueberry factory may reach the river at the top of the bend northwest of the head of tide, at the dam of a sawmill.

A gully and very small stream, often dry in summer, carry drainage from the blueberry factory. What flow there is, in this stream during the berry season, is polluted.

Columbia: Only two streams enter tidewater in this town. One of these, Dyke Brook, is polluted by wastes from a canning factory. Wastes flow along the ditch beside the railroad track and enter the east branch of the brook, near the source of water supply. Except for this one pollution source, streams flow through practically unoccupied lands.

Harrington: An open ditch containing sewage, in the form of septic tank effluent, flows into a small stream in the heart of the village. The stream becomes polluted about 200 feet above the bridge on the main street, or highway Route #1. Otherwise the streams of this town are unpolluted above the head of tidewater.

Most of the streams of this town flow from isolated area. There appear to be seven streams likely to have at least some flow at all times.

Milbridge: The tidewater segment of Narraguagus River is bordered by many very small streams. The lands on both sides of the river were once actively farmed, but this is no longer generally true. It is possible that some of these small streams sometimes have a high coliform bacteria count, but this is not likely to be of human origin.

Only Mill River at the Harrington town line, Beaver Meadow Brook and a stream from remote areas, west of the village, seem likely to maintain a flow continuously. Other streams are numerous, but very small.

Cherryfield: As in Milbridge, the tidewater segment of Narraguagus River is bordered by many small streams, through a narrow belt of old farms along both sides of the river. No real source of pollution to these streams is evident.

Narraguagus River has been classified as Class "A" by legislative act, above the junctions of the two branches of the river.

The first pollution of Narraguagus River starts at a sawmill, where some wood waste enters the water. This is located on the west bank, at the sharp bend of the river, just east of the railroad bridge.

On the east side of the river, and just downstream, two blueberry canning plants discharge all wastes into the river, for a short period each summer. Industrial wastes are largely cooling water, but they do contain some organic material, and the sewage of more than 200 employees is also discharged. Part of the drainage from one factory, across the railroad track, comes through a ditch or very small stream not shown on a U.S.G.S. map.

Private sewers are numerous along the river, especially in the area below the head of tide.

That portion of the river, between the junction of the two river branches and the sawmill and tributaries to that section, seems to be unpolluted.

Except for Narraguagus River there seem to be no streams entering tidewater, within this town, which will have a flow at all times.

Steuben: Tunk Stream is the principal stream in this town. It has already been classified by legislative act as Class "A" above the Smithville bridge, which is not located at Unionville, as stated in the statute. A sawmill is located directly across the stream which is the outlet of Round Pond and Long Pond and water flow is rigidly controlled in this stream outlet. Although a blower takes waste to a pile, some waste gets away occasionally and enters the water. This is a big improvement over a few years ago when all waste went into the stream.

Tributaries below Smithville and all other streams entering tidewater of this town, show no evidence of pollution, and no source of human pollution of Tunk Stream is evident in the town. Even in the village, no sewage seems to be discharged to the stream.

There are two streams entering tidewater, which seem likely to have a flow of water throughout the year.

Tremont: Duck Cove Brook flows by the foot of a fill of poultry litter and manure, in an alder growth just above the highway. It must be somewhat polluted by coliform organisms.

There seems to be no further evidence of pollution of the streams within this town.

Southwest Harbor: There are only very few small streams in this town, and they appear to be unpolluted.

Mount Desert: There is no evidence of pollution of any of the streams of this town.

Bar Harbor: This town has no evidence of pollution of any of its streams.

T7SD: This township has only one stream entering tidewater and this one flows partly through Washington County. It is unpolluted.

Winter Harbor: There is no evident pollution of streams, above the head of tidewater, in this town.

Gouldsboro: There is no pollution of streams by human wastes in this town. A very small stream flows through the barnyard of a dairy farm, near Prospect Harbor. This enters Sand Cove, and it must be polluted by coliform bacteria.

Sorrento: There is no pollution of any of the very few streams to be found within this town.

Sullivan: There appears to be no pollution of surface waters within this town.

Franklin: A small stream, near the railroad station, is polluted by the overflow of the cesspools of three houses and a filling station. This also receives cooling water from a blueberry packing plant, but other wastes of this factory are pumped to a point a considerable distance back in the woods. There is no other pollution on streams within this town.

Hancock: There is no pollution of streams evident within this town, unless the small run just west of the Sullivan Bridge can qualify as a stream. A messy condition exists, near tidewater, just above the railroad track. It has become a private dump in addition to receiving sewage.

Lamoine: Spring Brook is badly polluted by silt from a gravel pit, near U. S. Route 1. This seems to cause excessive growths of slime in the section of the stream, well below where turbidity normally shows up.

Except for Spring Brook there is no pollution of surface waters in this town.

Trenton: There is no pollution of streams within this town, with the exception of Stony Brook which flows very near a manure pile and through a farmyard stock pen, just downstream, from Route 5.

MACHIAS RIVER BASIN & ADJ. COASTAL AREA

Tabulated Results of Miscellaneous Test Data Compiled on Streams in Hancock & Washington Counties

Sta. No.	Town	Stream	No. Samples	Test Period		B. Coli M.P.N.
M 1	Perry	Boyden Stream	2	7/17/52 & 9/3/52	Min. Av. Max.	150 195 240
M 2	Perry	Boyden Stream	2	9/3/52 & 11/3/52	Min. Av. Max.	43 97 150
I	Pembroke	Willow Brook	3	8/4/52 to 9/28/52	Min. Av. Max.	43 691 >1,100
II	Pembroke	Willow Brook	1	9/28/52	Min. Av. Max.	150
F	Pembroke	Pennamaquan River	8	8/4/52 to 10/30/52	Min. Av. Max.	230 1,710 4,600
F_1	Pembroke	Pennamaquan River	2	9/25/52 & 9/28/52	Min. Av. Max.	430 430 430
F_2	Pembroke	Pennamaquan River	1	9/28/52	Min. Av. Max.	23
C	Dennysville	Dennys River	3	8/22/52 to 10/4/52	Min. Av. Max.	93 234 460
C_1	Dennysville	Dennys River	1	8/25/52	Min. Av. Max.	150
C_1	Roque Bluffs	Englishman River	1	12/4/52	Min. Av. Max.	93
C_1	Jonesboro	Chandler River	2	12/4/52 & 12/9/52	Min. Av. Max.	150 305 460
A_1	Columbia Falls	Pleasant River	2	12/5/52 & 12/10/52	Min. Av. Max.	1,100 1,100 1,100
A_2	Columbia	Pleasant River	1	12/10/52	Min. Av. Max.	210
D	Milbridge	Beaver Meadow Brook	1	12/7/52	Min. Av. Max.	93
G	Steuben	Tunk Stream	2	12/12/52 & 1/7/53	Min. Av. Max.	> 7 124 240

ST. CROIX RIVER

BASIN 19

The St. Croix Basin although it actually has two major branches within the State of Maine (St. Croix R., East Branch and the West Branch), there is sufficient topographical and cultural similarity to warrant their being discussed as one. The division in consideration, in this report, being:

The St. Croix River, formed by the junction of the East and West branches at Kellyland, has a drainage area of approximately 1500 square miles of which about 65% is in the United States. For about seventy-five miles this river, the main river and the East Branch, form the boundary with Canada. The topography is irregular and of low relief, the maximum elevation being in the range of 1000 foot hills, which rise away from major valleys. There are many lakes, some large, in the valley, which are for the most part fairly old in development, as evidenced by the many bogs. The bedrock formation is granite and sandstone. The granite and other igneous rock existing mostly as intrusions into the sedimentary rock, but both are comparatively dense in this case. The overburden is glacial till and meltwater drift (stratified) with topsoil. The drainage area of the St. Croix is almost wholly forested, leading to an industrial economy almost wholly concerned with wood or forest products. Agricultural activity in this basin is practically limited to dairying, to supply local demand only. Market gardening and heavy food crops are of very little importance.

Bedrock conditions largely preclude good ground water yields, so it can be expected for a long time to come, that public supplies will be from surface waters which are generally suitable for common uses, being soft and at the same time low in mineral content and solids.

Industrial developments along the river have, for the benefit of their hydro-electric facilities, firmed the stream up by the addition of 25 B.C.F. of storage, to make the average minimum throughout the low water periods somewhat higher than without storage, although previous to the building of regulating dams, a tremendous surcharge storage which tended to level out extremes of flow and this tendency has been further accentuated by the dams.

Records indicate a minimum flow of .075 c.f.s. per square mile and a fifteen year average low for warm months, of 0.44 c.f.s. per square mile and a corresponding cold weather flow, of 0.42 c.f.s. per square mile. It must be remembered in this case, flows are not corrected for storage, and in the minimums may be reflected some Sunday flows, extremely low because of local ponding.

There is considerable use of water in the St. Croix basin, despite its sparse population. The use which has most affected the economy of the region, is that for hydro-electric power. It is also adapted for domestic and industrial supplies, and other minor uses. There is little, if any, irrigation use at the present time.

Three significant sources of pollution degrade the St. Croix throughout its lower reaches. The lone significant source of industrial waste is from a paper mill in Woodland, with a number of sawmills contributing a relatively unimportant quantity. Sanitary wastes pollute the waters from private sewers, serving about two hundred people, in the town of Princeton, and from twelve hundred persons through public sewers at the village of Woodland. There are also small quantities of sewage entering at Vanceboro, Baring, and possibly other points, while at Calais there are at least 4000 persons tributary to sewers entering the river, although some enter below head of tide.

Some work has been done on determination of population equivalent, or in other words, determination of the number of pounds of oxygen required over a given period, to satisfy the demand of the paper mill wastes. However, these do not appear to correlate closely with what is ordinarily expected of this process, so should be more thoroughly checked and carefully determined than has been possible to date. (Tabulated Results: See sheet included as Fig. 1 and Fig. 2 with this report subsection.)

For a stream, the pollution problem of which presents the complications and the amount of waste which is always encountered under such conditions, far too little data is represented above, and in the

previous report, to draw any definite conclusions. However, at several stations where the dissolved oxygen conditions, considered along with the B.O.D., indicate that during certain times of the day, when re-aeration is low, the dissolved oxygen might drop to a point embarrassing to fish life. It is also noteworthy that the pH shows variance, from station to station, and that phenol alkalinity at a particular station varied from 5 to 42, both these facts indicate a rather rough life for the fauna, which comprises the fish food of the stream.

In considering the effect on fish life of the conditions found in the St. Croix River, it should be remembered that much of the degredation is encountered over short periods of time due to activities at the mill such as the blowing of digesters. This can be illustrated by scanning the enclosed sample of a partial analysis over a daily period which is included as Fig. 2 of this report. In this case, digesters were blown at 8:15 A.M. and at 2:45 P.M. at the end of cooking periods. At other times, similar analyses at this station (3) showed a D.O. of 3.2 p.p.m. in one particular sample. The B.O.D. (oxygen demand) should also be noted.

There can be little doubt that the low point in dissolved oxygen occurs, all other things being equal, just before daylight in the morning due to absence of photosynthesis at this time, a fact which at least once a week, when ponding is taking place in the reservoir storages of the river, would account for a very low dissolved oxygen.

During these changes of conditions, the fish itself can endure the conditions or seek refuge in better quality water from tributaries since it can provide its own locomotion, but the immobile fauna of the stream upon which the fish is dependent, either directly or indirectly, for food, has no such choice. It should always be remembered that while dissolved oxygen tells a part of the story of fish life, it does not represent the entire consideration. Conditions which affect its food supply or its spawning grounds also figure in the picture as well as substances which are directly toxic such as formaldehyde or acid concentrations.

In review of this report on the St. Croix, it becomes evident that in view of the interests involved that at least a portion of the river will need more thorough sampling, and testing before conclusions are presented such as several instances of 24 hour sampling at various stations to determine the daily sag and in some cases channel wide sampling should be practiced due to the usual failure of introduced substances to mix thoroughly in a short time.

It is also probable that accumulations of bark above the mill and of bark and fibre below the mill have a very important effect on the stream quality. The benthal oxygen demand in pools is no doubt high due to these deposits and the natural stream bed is adversely affected.

In the report above the St. Croix River has been considered only as a problem of the State of Maine and to all practical purposes the study of the pollution of the fresh water portion of this stream is not altered when it is considered in its entirety, as it should be as an international stream. Canadian pollution is not a significant factor until the town of St. Stephen, N. B. and its vicinity are reached, then within a very short distance from tidewater the sewage from at least five thousand persons plus waste from a textile mill and other industries, while the effect of this waste is apparent in only a very short segment of the fresh water it has a profound effect on the tidewater portion of the estuary.

The following data pertains to small streams in the St. Croix Basin which are tributaries of the St. Croix River:

Calais: A small stream crossing North Street, in Calais, was apparently classified by legislative act. A correction should be made, since an outfall of a public sewer very seriously pollutes this stream at North Street, and in dry seasons the stream is primarily an open sewer, to its mouth. A new factory, not yet opened, will further pollute this stream. This is a Knitting industry, which now occupies a plant in the eastern end of the city.

There are three streams, which enter tidewater within the limits of this township, which seem likely to have some flow throughout the year.

Robbinston: Two small streams are known to have a high bacteria count at their mouths. One of these is often dry at the highway, but flows past a manure pile and through a poultry yard and into the north end of Brooks Cove. The other is a very small stream, but it seems to have some flow at all times. It is polluted by a sewer from the house on the north and possibly by drainage from privies at the school. This stream is just north of Schoolhouse Lane, at the village.

Other streams cross a strip of land bordering highway Route 1, which seem to be but little affected. There is no evidence of human pollution.

There are five streams which appear to have some flow throughout the year. Two of these are not shown on the U.S.G.S. map. The stream farthest north, Shattuck Lake outlet, has a dam at its mouth at the head of tide.

Water Samples Collected for NENYIAC Project

Analysis by Geological Survey

U. S. Department of the Interior

Sample taken May 7, 1953, St. Croix River, Baileyville, U.S.G.S. Gage House. All quantities in parts per million. (p.p.m.)

Silica (SiO_2)	1.8
Iron (Fe) dissolved	.03
Iron (Fe) total	.17
Manganese (Mn) dissolved	.00
Manganese (mn) dissolved	--
Aluminum (Al)	.0
Calcium (Ca)	3.0
Magnesium (Mg)	.4
Sodium (Na)	.9
Potassium (k)	.3
Copper (Cu)	.02
Bicarbonate (HCO_3)	9
Carbonate (CO_3)	0
Sulfate (SO_4)	1.6
Chloride (Cl)	1.6
Fluoride (F)	0
Nitrate (NO_3)	.3
Zinc (Zn)	.19

Dissolved Solids

Sun
Residue on Evaporation @ 180° C. 40

Hardness as $CaCO_3$ 9

Non-Carbonate 2

Specific Conductance

Micromhos at 25° C 26.6

pH	6.2
Color	38
Lithium (Ll)	.1
Phosphate (PO_4)	.1
Ignition Loss	26.

Fig. (3)

ST. CROIX RIVER BASIN

Tabulated Results of Test Data Compiled on the St. Croix River Basin

Sta. No.	Town	Location	No. of Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %	pH	Co_2 PPM	B.O.D. PPM	B. Coli MPN	Turb.
1	Baileyville	Boom shack above dam.	12	7/23/52	Min.	27.0	4.4	54	6.0		0.2	14	
				to	Ave.	19.2	6.7	71	6.3		1.0	104	
				10/21/52	Max.	9.0	8.9	77	6.7		4.7	460	
1A	Kellyland	Canal to power station above Grand Falls Dam.	11	7/23/52	Min.	24.0	6.2	73	6.3		0.2	4	
				to	Ave.	20.2	7.7	83	6.5		1.0	63	
				10/15/52	Max.	13.0	9.2	87	6.7		3.7	460	
2	Baileyville	West bank below town sewer outlet (opp. 2nd house on Elm St.)	2	7/23/52	Min.	24.0	4.3	52	5.8		1.8	430	
				&	Ave.	25.0	4.4	52	5.8		2.9	430	
				7/29/52	Max.	26.0	4.4	52	5.8		4.0	430	
2A	Baileyville	River bank about 100' upstream from Sta. 2 & about 25' upstream from the Palm St. sewer.	16	7/23/52	Min.	24.0	0.3	4	5.4		1.3	150	
				to	Ave.	20.0	6.0	64	5.8		14.0	1,421	
				10/21/52	Max.	10.0	9.2	80	6.3		54.4	4,600	
3	Baileyville	West bank behind farm just north of Stony Brook (difficult to reach most of the year)	35	7/23/52	Min.	23.0	4.2	48	5.8		1.9	430	
				to	Ave.	19.6	6.1	65	5.9		7.3	4,660	
				10/21/52	Max.	12.0	8.2	76	6.0		23.1	9,300	
4	Baring	International Bridge	11	7/23/52	Min.	22.0	4.8	54	5.8		1.7	150	
				to	Ave.	20.0	6.6	70	6.0		4.8	1,753	
				10/21/52	Max.	9.0	9.0	78	6.3		9.9	7,500	
5	Calais	International Bridge at Milltown.	12	7/23/52	Min.	26.0	4.0	49	5.8		1.1	230	
				to	Ave.	19.0	5.6	58	6.0		3.4	1,735	
				10/21/52	Max.	12.0	8.3	77	6.2		8.4	4,300	
6	Calais	International Bridge at Todd Street.	11	7/23/52	Min.	27.0	7.0	87	5.8		1.7	150	
				to	Ave.	18.8	8.4	88	6.2		3.2	6,324	
				10/21/52	Max.	8.0	11.1	93	6.5		5.9	46,000	

(Office Record)

SURVEY OF St. Croix River Station #3 DATE September 24, 1952

WEATHER Fair

TEMPERATURE °C 12-19

INSPECTOR Hinckley & Morrison

Time E.D.T.	Station Number	TEMP. °C WATER	DISSOLVED OXYGEN PPM	DISSOLVED OXYGEN % SAT.	CO_2 PPM	B.O.D. PPM	PH	ALKALINITY PHEN.	ALKALINITY M.O.	TURBIDITY PPM	GALLON BOTTLE NUMBER
A.M.											
9:15		17	4.8			3.6					373
9:45		17	5.1								
10:15		17	5.4			2.1					20
10:45		18	5.8								
11:15		18	6.0			1.8					346
11:45		19	6.3								
P.M.											
12:15		19	6.2			1.9					13
12:45		20	6.3								
1:15		20	5.2			2.0					347
1:45		20	5.2			> 12					88
2:15		20	4.7			3.3					125
2:45		20	4.3			> 11					79

All tests by Sodium Azide Modification for comparison of results of the two methods for dissolved oxygen determination.

All B.O.D. tests of 100% sample except 50% dilution of samples taken at 1:45 and 2:45 P.M.

(Fig. 2)

ST. CROIX RIVER BASIN

Tabulated Results of Test Data Compiled on the St. Croix River

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Turb.
1	Baileyville	Boom shack above dam	12	7/23/52	Min.	27.0	4.4	54	6.0		0.2	14	
				to	Av.	19.2	6.7	71	6.3		1.0	104	
				10/21/52	Max.	9.0	8.9	77	6.7		4.7	460	
1A	Kellyland	Canal to power station above Grand Falls Dam	11	7/23/52	Min.	24.0	6.2	73	6.3		0.2	<4	
				to	Av.	20.2	7.7	83	6.5		1.0	63	
				10/15/52	Max.	13.0	9.2	87	6.7		3.7	460	
2	Baileyville	West bank below town sewer outlet (opp. 2nd house on Elm St.)	2	7/23/52	Min.	24.0	4.3	52	5.8		1.8	430	
				&	Av.	25.0	4.4	52	5.8		2.9	430	
				7/29/52	Max.	26.0	4.4	52	5.8		4.0	430	
2A	Baileyville	River bank about 100' upstr. from Sta. 2 & about 25' from Palm St. sewer	16	7/23/52	Min.	24.0	0.3	4	5.4		1.3	150	
				to	Av.	20.0	6.0	64	5.8		14.0	1,421	
				10/21/52	Max.	10.0	9.2	80	6.3		54.4	4,600	
3	Baileyville	West bank behind farm just north of Stony Brook	35	7/23/52	Min.	23.0	4.2	48	5.8		1.9	430	
				to	Av.	19.6	6.1	65	5.9		7.3	4,660	
				10/21/52	Max.	12.0	8.2	76	6.0		23.1	9,300	
4	Baring	International Bridge	11	7/23/52	Min.	22.0	4.8	54	5.8		1.7	150	
				to	Av.	20.0	6.6	70	6.0		4.8	1,753	
				10/21/52	Max.	9.0	9.0	78	6.3		9.9	7,500	
5	Calais	International Bridge at Milltown	12	7/23/52	Min.	26.0	4.0	49	5.8		1.1	230	
				to	Av.	19.0	5.6	58	6.0		3.4	1,735	
				10/21/52	Max.	12.0	8.3	77	6.2		8.4	4,300	
6	Calais	International Bridge at Todd Street	11	7/23/52	Min.	27.0	7.0	87	5.8		1.7	150	
				to	Av.	18.8	8.4	88	6.2		3.2	6,324	
				10/21/52	Max.	8.0	11.1	93	6.5		5.9	46,000	

Tabulated Results of Miscellaneous Test Data Compiled on Streams

Sta. No.	Town	Stream	No. Samples	Test Period		B. Coli M.P.N.
AA*	Robbinston	Keenes' Lake Outlet	1	11/3/52	Min. Av. Max.	28
T_1^*	Robbinston	Unnamed stream entering Mill Cove	1	10/25/52	Min. Av. Max.	43
TT_1^*	Robbinston	Western Stream	1	11/3/52	Min. Av. Max.	43
TT_2^*	Robbinston	Eastern Stream	1	11/3/52	Min. Av. Max.	<4

* Note: These tests have also been included in the results tabulated for the tidal flats of this basin and the stations may be located on the map incorporated in the section of this report covering tidal flats.

ST. JOHN RIVER

BASIN 20

(See Map No. 10)

Since some of the constituent basins which comprise the St. John watershed are to be discussed separately, material under this heading will be considered to apply only to that portion of the watershed exclusive of the Meduxnekeag, Aroostook, and Fish River basins.

The "Report on Water Pollution in the State of Maine" published in 1950 contains considerable general information which will not be repeated in these discussions, more than is necessary, for continuity of thought in bringing forward additional information either in the discussion of the St. John Basin or in the discussion of its tributary basins, the Meduxnekeag, Aroostook, and Fish Rivers in later paragraphs.

Of the portion of the St. John Basin above Grand Falls, N. B. exclusive of these tributaries, about 40 percent of the area is in Maine and is predominately wooded, but receives directly the drainage from approximately 800 square miles of agricultural land and from several population centers along its banks, from which the load in population and in industrial waste sources has been described in the 1950 report. The Fish River, sub-basin No. 20C is also directly tributary to the St. John, in such a location that some sampling stations on the St. John will reflect the addition of this source. All other sub-basins of the St. John, unite with that stream after it is entirely within the Province of New Brunswick. In its entirety, the drainage area of the St. John is the largest Atlantic Coastal stream between the St. Lawrence and the Susquehanna, the latter exceeding it by only a few square miles.

However, to return for a minute to review the character of the drainage area, from which the St. John receives drainage from Canada, it becomes apparent that the river drains a sizable portion of the so called "range road country" of Quebec Province, of which a good percentage is thoroughly developed agriculturally. Below the St. Francis River to Grand Falls, the Canadian portion of the basin adjacent to the stream is developed similarly to the American side, and on the various tributaries there are scattered farming and lumbering communities. The region, as a whole, is of low relief, being ground well by the ice sheet, as its valleys and ridges were more or less normal to the course of the glacier, resulting in some rather large boggy areas, which have produced certain streams with high organic coloring, such as the Big Black River.

The basin in general, has a somewhat lower rainfall than the general average for Maine, the mean annual being in the neighborhood of thirty-one inches, against forty inches for the State as a whole. Net annual runoff over the 1926-52 period averages 23 inches, corresponding to a flow of 1.71 c.f.s. per square mile based on data from the Ft. Kent gage of the U.S.G.S. The maximum recorded discharge of the St. John River was 21.3 c.f.s. per square mile on May 5, 1933, the minimum flow was 0.03 c.f.s. per square mile on March 15, 1949 and on several occasions during warm months, the flow has not been materially higher. More pertinent, however, to pollution consideration and effects, are the average and minimum flows during the summer months (low flow and warm weather), and for comparison, the low flows during the winter season. The mean flow during August, September, and October for the period of record (Ft. Kent Gage 1927-1952) was 0.77 c.f.s., 0.69 c.f.s. and 0.97 c.f.s. per square mile, respectively, corresponding to runoffs of 0.9 inches, 0.8 inches, and 1.1 inches. The minimum flows were, for the same three months over the same period, 0.34 c.f.s. (1949), 0.21 c.f.s. (1942), and 0.28 c.f.s. (1948) per square mile, respectively, corresponding to 0.4, 0.2, and 0.3 inches of runoff. Generally speaking, during the spring months until the end of May, stream temperature runs about 5° cooler than air temperature, until late October water temperature is about equal to air temperature and beyond that time the water is slightly warmer. The winter season provides the extremities for minimum flow however, due to severe cold stopping the flow of surface water and ground water near the surface. Average flow

over period of record for Ft. Kent gage for January, February, and March has been 0.53 c.f.s., 0.34 c.f.s., and 0.53 c.f.s. per square mile, and of course water temperature is steady at 0°C (32°F).

Water quality of the St. John River does not differ appreciably from that of the basin as a whole, and the information on quality of the basin waters could be quoted, except the color of the St. John, due to contributions from streams such as the Big Black, Little Black, and Allagash Rivers, make its use for certain senditive industrial uses questionable.

There is little, if any, storage, as such, on the St. John above Hamlin plantation. With the exception of possible small storages on the Madawaska and Green Rivers, there is no storage to benefit stream flow in Maine. Dams at lake outlets and on streams in the wilderness section, were never used beyond log and pulpwood driving seasons, and today few of them remain.

In past generations, the St. John has been a primary feature in the economic life of Northern Maine, and is still important, although improvement of other means of transportation and cutting of the cream of the forest resources have somewhat reduced its stature. After bringing the first refugee settlers to the valley, the St. John wrote some of the most absorbing chapters of lumbering history through the "ton timber" era, the Aroostook War period, and in the years that followed the Webster Ashburton Treaty, with its timber and driving water intrigues, down to the rise of the potato kingdom and the agricultural era.

Tributaries of the St. John provide the water supply sources for Ft. Kent, Madawaska, and Van Buren, on the American side, but the only use of waters of the main stem, for domestic or industrial supply, is as an auxiliary domestic for the town of Madawaska. Recreational uses are limited to sport fishing, camping, and canoeing. Navigation is not a factor on the St. John, insofar as we are considering that portion of it within and adjoining the United States, but transportation of pulpwood, now shares, with the generation of electric power, the more important economic aspects of the stream. Pulpwood operations are carried on by both American and Canadian paper companies, along the upper reaches, the pulp destined for American mills being transferred to rail at St. John, Maine, and that bound for the St. John Sulphite Company mill, near St. John, N. B., going all the way, or practically all the way, by water. The only existing hydro-electric power development on the river is in New Brunswick, at Grand Falls, although another development at Beechwood is contemplated in the immediate future, by the New Brunswick Electric Power Commission, and two more in the more distant future above and below Beechwood. Over a period of years, some hydro-power site investigation has been done by interested parties, at a point on the river between St. Francis and Allagash Plantation. Agricultural use of the streams, of the valley, is limited to mix water for crop spraying, as no irrigation is practiced.

Sewage and industrial wastes, finding their way to the St. John, have been enumerated in the 1950 report. However, it should be pointed out that, not included, since they are located in New Brunswick, are certain pulp-paper processes estimated, from their product capacity, to have a population equivalent of about one million, plus a municipal population of 10,000 in the town where the mill is located.

Future use of the St. John River, and all waters of the valley, will be entirely dependent on the economic twists of the region, the use of forest resources, the development of mineral resources, etc. It seems entirely likely that the power of the region will be developed, and, as a result, at least some increase in population and local industry will take place, and in view of recent mineral exploration, it would appear a sizable upswing in population and industry is possible. An upswing, of any magnitude whatever, would cause a corresponding increase in demand for domestic water supply, a possible increase in demand for industrial process water, and an increase of pollution load from domestic sources and possibly from industrial sources. There would also be an increase in recreational activities and demand for recreational areas, of which Aroostook County is short at present, having principally only the Fish River Lakes and Madawaska Lake available, within reach of population centers.

CHEMICAL & PHYSICAL CHARACTERISTICS OF
SURFACE WATER SUPPLIES - ST. JOHN BASIN

	Median P.P.M.	Minimum P.P.M.	Maximun P.P.M.
Color	15	5	30
pH	7.0	6.6	7.6
Turbidity	0	0	20
Iron & Manganese	0.100	0.0500	0.2000
Calcium	18.81	10.20	29.80
Magnesium	1.480	0.960	16.100
Sodium	1.7	0.7	7.2
Potassium	1.2	0.4	2.7
Sulfate	9.54	4.17	35.12
Chloride	4	1	17
Fluoride	Tr.	0	0.09
Nitrate	0.1	0.05	2.5
Total Solids	86	56	152
Hardness	43	26	156
Alkalinity	36	5	113

Note: Data above is from tests of nine public water supplies, from surface sources.

MEDUXNEKEAG RIVER

BASIN 20 A

The Meduxnekeag River and Prestile Stream are actually one drainage basin, but junction is outside the international boundary, so for convenience, these watersheds will be described separately.

The Meduxnekeag River is a stream consisting of three branches; the South Branch which rises in the boggy area in the town of Linneus and T 7 R 3, to the east of U. S. Route 2, and flows generally northward through Cary and Hodgdon, where there is a small dam and artificial pond, to its junction with the Meduxnekeag at Cary's Mills; the Meduxnekeag River which rises at Meduxnekeag Lake in Oakfield, Linneus, and New Limerick, and flows generally eastward through New Limerick to Houlton, then northeastward through Littleton to the international boundary; the North Branch which rises in T 8 R 3, and flows through T D R 2 and T C R 2 to Monticello and the international boundary, eventually joining the main stream in New Brunswick Province. Approximately the upper two-thirds of the drainage is in wilderness areas, and the remainder in the intensely farmed areas of Monticello, Houlton, and Linneus.

The drainage area, at the junction of the North Branch with the main stem, is approximately 450 square miles, virtually all of which is in Maine. The total rainfall for the area averages 31 inches per year, of which 75% becomes runoff, producing an average annual flow of record of approximately 23 c.f.s. per square mile, at the U.S.G.S. gaging station at Houlton (D.A. 175 sq. mi.). Maximum flow of record was 31.1 c.f.s. per square mile and minimum flow was 0.022 c.f.s. per square mile. Average low warm weather flow (August and September), over the period of record, amounts to 0.068 c.f.s. per square mile and minimum for the period was 0.22 c.f.s. per square mile. There is no storage, on this stream, to materially upgrade the summer minimum flow.

There is a total population of approximately 14,000 in the area, with the only appreciable concentrations at Houlton (7,000) and at Monticello (1,000). With these exceptions, the population is fairly evenly distributed throughout the lower portion of the basin. Economic activity is mostly agricultural, or of agricultural derivation, although lumbering features to a slight extent.

No major use of these waters is made for domestic or industrial supply, and the waters are only moderately used for recreational purposes. There is a small power development at Houlton. Agricultural use is virtually limited to spraying.

Facts concerning the sources and amount of domestic sewage pollution, are given in the 1950 Report, as well as facts concerning the origin of industrial wastes.

PRESTILE STREAM SEGMENT

BASIN 20 A

Prestile Stream has its headwaters in a swampy area bordering farmland, in the southwest corner of Ft. Fairfield township and in Easton township, and flows generally southward through an agriculturally well developed portion of Aroostook County, passing the villages of Easton, Westfield, Mars Hill, Blaine, Robinson, and Boundary, entering the Province of New Brunswick from Bridgewater, near the last named village. The stream has several fair sized tributaries, of which Whitney Brook is the most important. Above the international boundary, Prestile Stream, exclusive of Whitney Brook, drains a major portion of six townships, with a total population of 6,500 persons generally well distributed, except for the concentrations in the villages mentioned above.

Whitney Brook, entering Prestile Stream at Bridgewater, is drainage for a large portion of that township and a small portion of TD R2, the greater part of its basin lying in farming country.

No significant storage reservoirs exist in this basin and no stream flow data is available, on gaging station basis. However, by a study of runoff in nearby areas, a sufficiently close approximation could be arrived at for most pollution studies.

Activities in the basin are limited to agriculture and related industries.

The towns of Mars Hill and Blaine are supplied with water from Young's Lake, in a remote portion of the watershed, which is the only important water supply function, either domestic or industrial. The use of these waters for recreational purposes is limited, for transportation and power development, non-existent, and for agriculture, the usual use found for Aroostook Streams — spraying.

Sources and quantities of domestic sewage pollution are approximated in the 1950 Report, and sources of industrial pollution given.

AROOSTOOK RIVER

BASIN 20 B

Like the St. John Basin, this watershed has been discussed in the 1950 Pollution Report, and general data concerning domestic and industrial pollutional load, is listed therein, hence such information will not be repeated in this report.

Geologically the region is similar to the St. John valley, appearing as a shallow relief and a rolling countryside. Of the entire drainage area of the Aroostook River, in the State of Maine, given as 2,290 square miles in the 1950 report, approximately 75 percent is wooded and the remainder subject to an intensive agricultural development. Precipitation averages in the neighborhood of thirty-three inches per year, against a statewide average of forty inches. Average annual runoff has amounted to about twenty-one inches. Runoff data has been supplied since 1930 by a U.S.G.S. gaging station at Washburn, and more recently a similar gaging station has been established on the Machias River, near its mouth. Average runoff per square mile for the 1930-1947 period of record, amounted to 1.56 c.f.s., with a time of record maximum of 23.2 c.f.s. per square mile (Mar. 22, 1936), and a minimum of 0.046 c.f.s. per square mile, occurring February 13, 1948. The flow for the warm months of August and September averaged 0.4 and 0.5 c.f.s. per square mile, respectively, for the years of record, and a low average over these months of 0.12 and 0.09 c.f.s. per square mile for the same two months, respectively, the August low occurring in 1935 and the September low occurring in 1952. Water temperatures during this period are slightly less than air temperatures, averaging from 60° F. to 65° F. (16-18° O.)

The corresponding runoff in inches, for the years of record, has averaged 0.47 for August, 0.72 for September, with an August low of 0.13, in 1935, and a September low of 0.10, in 1952.

There is little storage on this stream, or its tributaries, to benefit the low flow in summer. At Squapan Lake, a small amount of storage is operated for the benefit of hydro-electric generation during the low flow months, and the same is true at Millinocket Lake, the source of the Aroostook River. At Big Machias Lake, on the Machias River, a small amount of storage is operated after the pulp drives, only.

Probably the total storage does not amount to more than 4 B.C.F., which is not too significant an addition to flow, since, if used over a four months interval it would add only 95 c.f.s. to the flow, and over a period of six months it would provide a flow of 63 c.f.s. The flood problem on this river has been studied, but no recommendations for storage were ever made. Considerable interest has been shown and preliminary work done on a hydro-electric site at Castle Hill, which might provide some storage, and another site above Masardis, which would influence low water flow to considerable extent, has been surveyed and investigated.

For the upper six hundred square miles of its basin, the Aroostook River flows through wilderness, unbroken except for the Oxbow opening, as far as Masardis, then through mixed areas, with most of its larger tributaries coming from wooded terrain, to Washburn, at which point its drainage area

is sixteen hundred square miles. The river then continues through an intensely cultivated area, until it leaves the United States near Ft. Fairfield. Activities of the region include pulpwood cutting, some lumbering, and agriculture.

The economic life of the Aroostook is parallel to that of most sizable rivers. In its primeral and early settlement days, it was an avenue of approach, later carrying out the products of its valley in the second phase of development, and as Aroostook County became the potato kingdom, and population centers sprang up, it gradually assumed the role it plays today.

The Aroostook River, proper, is the source of Caribou's domestic water supply and its tributaries supply domestic water to Ashland, Ft. Fairfield, Limestone, and Presque Isle, while Washburn is supplied by ground water. Some of these public systems supply industrial users, while at Caribou, Ft. Fairfield, Limestone, Mapleton, Presque Isle and Washburn, industrial owners have private supplies. Approximately 19 M.G.D. are used in the basin, of which 92% is from surface sources. Public supplies provide 13.5% of the total, 97% of these municipal supplies being from surface sources, as are 95% of the total of private industrial supplies.

Water quality in the Aroostook Watershed is, in general, the same as that described for the St. John Basin, except considerable hardness occurs in its lower reaches (vicinity of Presque Isle, Limestone, and Fort Fairfield) and there appears to be a tendency toward harder waters in the more densely populated areas. Possible uses, except as noted above, are the same as for the St. John Basin.

Some of the lakes of the basin are used for bathing and boating, and a great many of the lakes and streams furnish sport fishing, and there are several hatcheries and rearing stations in the area.

Transportation of pulpwood, and power generation, are fairly important uses of the stream and some of its larger branches. Pulpwood is driven down the Aroostook and its tributaries, as far as Sheridan, where there is a holding ground from which wood is transferred to rail transportation. There is a small hydro-electric generating station at the outlet at Squapan Lake, another on the Main stem at Caribou, and another much larger one is located just beyond the international boundary, at Tinker Falls.

There is but little use of basin waters for irrigation, and other comparatively small quantities are used for spray mixing.

A tabulation of domestic sewage load, and enumeration of industrial waste sources, is contained in the 1950 Report.

Considering the Aroostook Valley by itself, it seems unlikely any growth will take place, in the foreseeable future, that will seriously tax supplies of water for domestic use, but it does seem likely that a good share of the tributaries of the Aroostook, in course of normal growth, will be called upon to furnish domestic water. The pollution load, if it continues, unabated by treatment facilities, will cause further proportional deterioration of the water quality. In view of the increase in pollutional load during the past two decades, it would seem that future increases in load will inevitably be fairly rapid. However, it should be remembered that the actual condition of the Aroostook also varies from year to year, fluctuating with the activity of the starch factories. The existing, and probable future shortage of recreational waters, available to the general public in Aroostook County, should not be forgotten.

FISH RIVER

BASIN 20 C

The Fish River drainage basin consists of two main branches: the branch through St. Froid Lake, Portage, and Fish River Lakes, and the other comprising the series of thoroughfares through Square, Cross, Mud, and Long Lakes, drainage an area of eight hundred ninety square miles, entirely within the State of Maine. Basically, the geology of the valley is similar to the St. John Valley, in general, but several extrusions of volcanic origin give it an appearance of deeper relief.

The Portage Lake branch of the river has its upstream 225 square miles of basin, down to Portage Lake, in wilderness, and its next two hundred miles contain only scattered agricultural areas.

However, bordering Portage Lake there is a small village, probably less than two hundred residents, but with a large cottage colony scattered around the shore line, and on St. Froid Lake, at Quimby, there are about ten year-round houses, with thirty or so cottages scattered along the shore line. The Long Lake branch drains agriculturally developed areas around Long Lake, and largely wooded areas elsewhere. The villages of St. Agatha and Sinclair, plus numerous summer cottages and a starch factory, border Long Lake; about twenty to thirty cottages border Mud Lake, over one hundred cottages border Cross Lake, and two sporting camps border Square Lake. Beyond the junction of the two branches, at Eagle Lake, there are numerous farms and cottages directly on the lake, or on tributaries. There are villages along the lake shore, at Eagle Lake and at Plaisted.

Along the Fish River, below the outlet of Eagle Lake, numerous tributaries enter, carrying drainage from farming areas. There is one village, Soldier Pond, astride the stream, and one sawmill borders it. At Fort Kent Mills, and at Fort Kent, considerable portions of the built-up area border the Fish River, and a starch factory is located here. There is no current information on sawmills in this valley. No direct pollution is believed likely from any at the present time, but some sawdust is deposited on the shore of Eagle Lake, at Plaisted, from the old LaLibertie Mill, and other similar situations may exist. Leachings from sawdust piles may also be present.

The U.S.G.S. has, since 1929, maintained stream flow data at Ft. Kent Mills. These records show that the approximately thirty-one inches of rainfall has produced an average flow, over the period 1929-1947, of 1.56 c.f.s. square mile, with a maximum of 12/6 c.f.s., occurring on May 26, 1934, and a minimum of 0.06. Mid-summer minimum flow was 65 c.f.s., for August and September of 1942, and the average flow for these months, over the period of record, was 200 c.f.s.

The Fish River has never had storage development, the only dam of recent years, on the stream, being the driving dam at Fish River Lake, which was washed away in 1943. Flood control on this river has never been contemplated, probably because surcharge storage effect of the several large lakes in the basin, have blunted flood crests enough, so the stream has never been particularly destructive.

Wood industries and agriculture are scattered throughout the lower three-fourths of the basin. The bulk of the permanent population is concentrated at St. Agatha, Eagle Lake, Soldier Pond, and Ft. Kent. There is a starch factory at Ft. Kent and one at St. Agatha. None of the wood-working industries contribute waste directly to the stream, and in recent years there has not been much driving of the river. Several streams, particularly those coming from the Red and Birch River areas, carry high organic coloring.

A large percentage of the more desirable recreational lakes, available to the people of Aroostook County, are encompassed in the Fish River Chain; particularly as regards seasonal cottages, and the sport fishing load is heavier here than in most Aroostook Lakes, because of reputation and accessibility. For this reason, if for no other, the quality of these waters is important.

No public water supply is furnished by the Fish River. It is, however, extremely important to the people of Aroostook County as a recreational area, being by far the most popular in that portion of Maine. It still provides fairly good trout and landlocked salmon sport, in spite of heavy fishing, and female salmon, caught in the Cross Lake - Mud Lake thoroughfare, stripped of eggs and released, supply a great deal of spawn to replenish other salmon waters of the state. Most water transportation on these lakes is incidental to recreation.

The stream is known to receive domestic sewage from St. Agatha and Ft. Kent. Probably other towns, such as Sinclair and Eagle Lake, as well as the numerous cottages, contribute their share also.

The St. Agatha starch factory has caused considerable pollution at that end of Long Lake, and another, at Ft. Kent, has dumped waste into the river there. It is not believed that any wood-working mills are now dumping waste to the stream and its tributaries, although pollution from leaching and from old deposits of this nature, may exist.

It would appear, in the future, that these waters of the Fish River Basin would be most important from a recreational standpoint. It is somewhat doubtful if the power site at Big Fish Falls will be attractive, at any time in the foreseeable future, for it is not a large enough block of power to attract any industry, so any importance the waters in the basin will assume, are most likely to be from a recreational standpoint, or as a domestic supply for concentrations along the St. John River.

ST. JOHN RIVER BASIN

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Turb.
St. John River													
1	Hamlin	South bank behind gravel pit near U.S. Customs	7	7/11/51 to 3/4/52	Min.	18.0	6.5	68	6.6	5.0	1.9	430	low
					Av.	10.0	8.9	76	6.8	9.1	5.2	2,473	low
					Max.	5.0	11.6	90	7.1	13.0	9.5	7,500	low
2	Van Buren	International Bridge	7	7/11/51 to 3/4/52	Min.	17.0	6.4	66	6.5	4.0	1.1	460	low
					Av.	9.3	9.0	76	6.8	10.2	5.4	5,080	low
					Max.	4.0	11.5	88	7.0	17.0	9.7	15,000	low
3	Madawaska	International Bridge	7	7/11/51 to 3/4/52	Min.	21.0	8.1	90	6.6	2.6	0.0	150	low
					Av.	10.0	10.5	91	7.0	6.9	0.7	960	low
					Max.	0.0	12.2	83	7.3	17.0	1.6	2,400	low
4	Fort Kent	International Bridge	7	7/11/51 to 3/4/52	Min.	20.0	7.9	86	6.5	2.6	0.0	14	low
					Av.	9.6	10.3	89	7.0	8.2	0.8	65	low
					Max.	4.0	12.4	94	7.3	25.0	1.7	93	low
5	Allagash	South bank at Dickey Ferry	2	7/11/51 & 10/4/51	Min.	21.0	7.6	85	6.7	5.3	0.7	33	low
					Av.	18.5	8.8	88	6.9	5.7	0.8	33	low
					Max.	16.0	9.9	100	7.1	6.0	1.0	43	low
Allagash River													
1	Allagash	Highway Bridge at Route 161	2	7/11/51 & 10/4/51	Min.	20.0	8.6	94	7.1		0.6	23	
					Av.	18.0	9.4	98	7.1	4.4	0.7	33	low
					Max.	16.0	10.1	101	7.2		0.9	43	
Bourgoin Brook													
1	Frenchville	Highway Bridge on Route 1	1	7/14/51	Min. Av. Max.	17.0	7.1	73	7.1	11.0	4.2	240,000	
2	Frenchville	Farm road bridge near potato dump about ¼ mile from Route 1	1	7/14/51	Min. Av. Max.	16.0	9.0	90	7.2	6.0	2.6	11,000	
3	Frenchville	In pasture above potato dump	1	7/14/51	Min. Av. Max.	16.0	8.9	89	7.3	7.0	7.0	1,100	

MEDUXNEKEAG RIVER BASIN

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen % Sat.	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Turb.
Meduxnekeag River													
1	Houlton	bridge near Smith Brook	8	7/9/51 to 4/5/52	Min.	21.0	8.3	92	6.9	0.0	0.6	9,300	low
					Av.	13.2	11.6	108	7.6	3.2	2.6	51,600	low
					Max.	12.0	14.7	136	8.3	11.0	7.2	150,000	low
2	Houlton	bridge at North St.	8	7/9/51 to 4/5/52	Min.	22.0	7.7	87	7.0	4.0	0.2	230	low
					Av.	13.2	9.9	93	7.3	5.5	1.9	2,740	low
					Max.	0.0	12.5	86	7.6	10.0	7.5	11,000	low
3	Houlton	bridge to gravel pit above town	8	7/9/51 to 4/5/52	Min.	20.0	8.1	88	7.0	2.6	0.4	30	low
					Av.	12.5	10.4	94	7.4	5.0	1.4	565	low
					Max.	0.0	12.7	87	7.6	11.0	3.3	2,400	low
4	Houlton	bridge at Gary's Mills	6	7/9/51 to 10/23/51	Min.	20.0	7.9	86	7.2	2.6	0.3	43	low
					Av.	16.3	9.5	95	7.4	4.8	0.7	630	low
					Max.	10.0	11.2	99	7.6	11.0	1.1	2,400	low
Meduxnekeag River, North Branch													
1	Monticello	Fordon Farm road near Int. boundary	6	7/9/51 to 10/23/51	Min.	21.0	8.0	89	6.9	1.8	0.0	39	low
					Av.	17.3	9.5	97	7.2	4.1	0.9	324	low
					Max.	12.0	11.8	109	7.4	9.0	2.2	1,100	low
2	Monticello	bridge on Route 1 at village	6	7/9/51 to 10/23/51	Min.	19.0	8.7	93	7.0	1.8	0.6	23	low
					Av.	16.1	9.9	99	7.2	4.1	1.1	140	low
					Max.	10.0	11.8	104	7.4	8.0	2.4	390	low
Meduxnekeag River, South Branch													
1	Houlton	bridge at Garys' Mills	6	7/9/51 to 10/23/51	Min.	21.0	7.9	88	6.8	5.3	0.0	93	low
					Av.	16.7	9.2	93	7.2	6.8	1.1	700	low
					Max.	11.0	10.8	98	7.4	12.0	1.8	2,300	low
2	Hodgdon	bridge at village	6	7/9/51 to 10/23/51	Min.	21.0	7.1	79	6.4	7.0	0.3	23	low
					Av.	17.0	8.4	86	7.0	10.2	1.1	134	low
					Max.	12.0	10.0	93	7.6	17.0	2.0	430	low
Prestile Stream													
1	Bridgewater	highway bridge at Boundary	8	7/10/51 to 3/5/52	Min.	20.0	9.2	100	7.3	0.0	0.2	36	low
					Av.	8.0	12.8	107	7.8	3.6	1.6	1,022	low
					Max.	6.0	14.7	118	8.3	12.3	4.9	2,900	low
2	Blaine	highway bridge at Robinson	8	7/10/51 to 3/6/52	Min.	20.0	8.6	94	7.3	0.0	0.8	140	low
					Av.	8.4	11.6	96	7.9	6.1	1.8	6,663	low
					Max.	0.0	13.6	93	8.1	15.8	3.5	24,000	low
2A	Blaine	about half way between Mars Hill & Robinson at highway bridge	7	8/23/51 to 4/6/52	Min.	0.0	12.5	86	7.3	0.0	0.6	2,300	low
					Av.	6.6	13.5	110	7.7	4.8	1.7	7,575	low
					Max.	7.0	14.7	121	8.1	15.3	3.5	23,000	low
3	Mars Hill	foot bridge to Pleasant Street	8	7/10/51 to 4/6/52	Min.	20.0	8.7	95	7.4	0.0	0.9	460	low
					Av.	8.0	12.6	105	7.7	5.5	1.8	25,000	low
					Max.	7.0	13.7	113	8.2	15.0	4.0	93,000	low
3A	Mars Hill	face of dam in village	8	7/10/51 to 4/6/52	Min.	19.0	8.6	92	7.3	0.0	0.1	39	low
					Av.	7.1	12.1	102	7.7	5.3	0.9	1,493	low
					Max.	7.0	14.0	113	8.1	15.8	1.7	11,000	low
4	Westfield	east bank about 1 mile below village	7	7/10/51 to 4/6/52	Min.	20.0	9.1	99	7.5	0.0	0.3	43	low
					Av.	8.0	12.6	107	7.8	3.5	1.1	882	low
					Max.	0.0	14.3	98	8.1	8.8	2.4	2,400	low
4A	Westfield	highway bridge	1	4/6/52	Min. Av. Max.	0.0	14.3	98	7.5		1.0	2,400	low
5	Easton	bridge below old starch factory	6	7/10/51 to 11/30/51	Min.	18.0	8.7	91	7.6	0.9	0.4	23	low
					Av.	10.7	10.9	96	7.8	6.2	0.8	256	low
					Max.	0.0	13.4	98	8.0	11.4	1.2	930	low
6	Easton	about 1 mile up stream on road east from R.R.	6	7/10/51 to 11/10/51	Min.	20.0	6.9	75	7.4	3.5	0.0	14	low
					Av.	10.0	10.3	88	7.6	9.3	0.8	182	low
					Max.	0.0	13.0	89	7.7	16.7	1.7	460	low
Prestile Stream, Tributary													
1	Easton	near Westfield-Easton T.L. on Westfield-Easton road - culvert below vining sta.	5	7/10/51 to 9/26/51	Min.	15.0	4.7	46	7.4	3.0	0.3	93	low
					Av.	15.4	7.0	68	7.5	6.2	19.4	493	low
					Max.	15.0	8.5	84	7.6	8.0	91.0	930	low
2	Westfield	above vining station near Westfield-Easton T.L.	4	7/27/51 to 9/26/51	Min.	13.0	9.3	88	7.6	0.0	0.7	43	low
					Av.	18.2	10.5	112	7.8	2.6	1.5	81	low
					Max.	21.0	11.9	133	8.0	5.3	2.5	93	low
3	Westfield	on branch stream coming from S.E. entering stream above viner	2	8/23/51 to 9/26/51	Min.	15.0	9.9	97	7.6	2.6		43	low
					Av.	12.0	10.3	95	7.7	2.8	1.1	68	low
					Max.	9.0	10.7	92	7.8	3.0		93	low

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen % Sat.	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Turb.
Whitney Brook													
1	Bridgewater	bridge below sawmill at village	2	8/7/51 to 9/17/51	Min.	18.0	9.2	96	7.6	3.5	0.0	43	low
					Av.	17.0	9.6	98	7.8	5.8	0.5	142	low
					Max.	16.0	10.0	100	7.9	8.0	1.0	240	low
1A	Bridgewater	highway bridge at Boundary	2	8/7/51 to 9/17/51	Min.	18.0	9.4	98	7.5	8.0	0.3	240	low
					Av.	16.5	9.5	96	7.6	8.5	0.7	670	low
					Max.	15.0	9.5	94	7.6	9.0	1.0	1,100	low
3	Bridgewater	bridge above Village just west of Route 1	2	8/7/51 to 9/17/51	Min.	16.0	9.4	95	7.5	6.2	0.3	93	low
					Av.	17.0	9.4	97	7.5	8.1	0.7	597	low
					Max.	18.0	9.4	98	7.5	10.0	1.0	1,100	low

AROOSTOOK RIVER BASIN

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Turb.
Aroostook River													
1	Ft.Fairfield	South bank at R.R. crossing near int. boundary	8	6/24/51	Min.	19.0	5.3	57	6.7	0.9	0.7	2,300	Slight
				to	Av.	9.5	9.7	82	7.3	5.6	1.4	16,129	Low
				2/20/52	Max.	4.0	12.7	97	8.0	16.0	2.3	43,000	Low
2	Ft.Fairfield	Bridge across river	8	6/24/51	Min.	19.0	6.6	71	6.7	2.6	0.0	1,500	Slight
				to	Av.	9.9	9.9	86	7.2	6.9	2.0	9,038	Low
				2/20/52	Max.	6.0	12.6	101	7.6	23.0	3.2	46,000	10
3	Ft.Fairfield	North bank back of gravel pit west of Murphy Rd. and Haley Island	6	6/24/51	Min.	18.0	6.4	67	7.0	1.8	1.0	2,300	Slight
				to	Av.	13.0	10.1	94	7.4	4.6	1.8	20,917	Low
				11/14/51	Max.	6.0	12.4	99	7.7	7.0	2.5	125,500	30
3A	Caribou	North bank about 1 mi. below Grimes Mills	5	9/19/51	Min.	15.0	10.6	105	6.7	2.6	0.5	230	Slight
				to	Av.	7.6	11.4	95	7.3	8.0	0.8	1,265	Low
				1/22/52	Max.	5.0	12.3	96	7.8	25.0	1.2	2,300	60
4	Caribou	Bridge across river	8	6/24/51	Min.	20.0	7.5	82	6.5	0.9	0.4	750	Slight
				to	Av.	9.9	10.3	89	7.2	6.6	1.8	18,593	Low
				2/20/52	Max.	5.0	12.8	100	8.0	25.0	3.5	110,000	Low
5	Caribou	Face of dam of power company	8	6/24/51	Min.	19.0	7.4	79	6.4	0.0	0.2	390	Low
				to	Av.	9.9	9.9	86	7.1	6.1	0.9	2,446	Low
				2/20/52	Max.	4.0	12.8	98	8.1	24.0	1.8	4,600	Low
6	Presque Isle	Bridge across river on Route 1	8	6/24/51	Min.	19.0	8.3	89	6.4	2.6	0.0	93	Low
				to	Av.	10.4	10.6	93	7.0	5.0	0.9	1,453	Low
				2/21/52	Max.	0.0	13.2	90	7.4	15.0	3.3	4,300	Low
7	Washburn	Highway bridge across river	7	6/24/51	Min.	19.0	8.5	91	6.4	2.6	0.5	21	Low
				to	Av.	11.1	10.2	92	7.1	5.8	1.0	3,879	Low
				2/21/52	Max.	6.0	11.6	93	7.4	14.0	1.8	24,000	Low
8	Washburn	Aroostook Valley R. R. bridge near Crouseville	8	6/24/51	Min.	19.0	8.4	90	6.4	1.8	0.0	4	Low
				to	Av.	9.5	10.4	89	7.0	6.6	1.1	648	Low
				1/23/52	Max.	5.0	11.7	92	7.5	17.6	2.8	4,300	Low
9	Ashland	Bridge across river on Route 11	6	6/22/51	Min.	23.0	7.5	87	6.8	2.6	0.1	9	Low
				to	Av.	13.0	9.6	89	7.0	5.6	1.2	187	Low
				10/15/51	Max.	5.0	11.5	90	7.2	18.3	2.7	930	Low
10	Masardis	Bridge across river on back road to Garfield	6	6/22/51	Min.	19.0	7.9	85	6.6	2.6	0.0	43	Low
				to	Av.	13.7	9.8	92	7.0	5.0	0.7	147	Low
				10/15/51	Max.	5.0	11.4	89	7.3	8.8	1.0	460	Low
Amsden Brook													
1	Ft.Fairfield	Highway bridge on river road below starch factory	3	9/27/51	Min.	8.0	11.7	99	7.8	1.8	0.0	1,500	Low
				to	Av.	7.0	12.0	99	7.9	5.9	0.7	2,900	Low
				11/9/51	Max.	9.0	12.2	105	8.0	11.4	1.2	4,300	Low
2	Ft.Fairfield	Highway bridge on road just above starch factory	3	9/27/51	Min.	4.0	11.9	91	7.8	1.8	0.0	43	Low
				to	Av.	7.0	12.7	104	7.9	5.9	0.8	43	Low
				11/9/51	Max.	8.0	13.1	110	7.9	11.4	1.6	43	Low
Caribou Stream													
1	Caribou	R.R. bridge near Aroostook River	7	7/13/51	Min.	19.0	8.7	93	7.2	2.6	0.7	2,300	Low
				to	Av.	9.1	11.7	96	7.5	6.3	2.0	17,200	Low
				3/7/51	Max.	0.0	14.3	98	7.8	9.7	3.6	43,000	50
2	Caribou	Face of dam at Collins' Sawmill	7	7/13/51	Min.	15.0	7.3	72	7.2	2.6	0.1	43	Low
				to	Av.	9.0	10.3	85	7.4	5.8	1.2	1,523	Low
				3/7/52	Max.	0.0	12.3	84	7.8	11.4	1.8	4,600	Low
3	Caribou	Highway bridge on Route 164	7	7/13/51	Min.	18.0	6.9	72	7.1	3.5	0.0	<4	Low
				to	Av.	7.9	10.4	84	7.3	8.9	1.6	2,494	Low
				3/7/52	Max.	0.0	12.7	80	7.6	12.3	4.3	15,000	75
4	Woodland	Highway bridge on Route 228	5	7/13/51	Min.	17.0	5.2	53	7.0	4.4	0.2	43	Low
				to	Av.	11.4	8.9	79	7.2	9.2	1.8	11,387	Low
				11/5/51	Max.	7.0	11.8	97	7.4	12.3	3.6	46,000	50
5	Woodland	Highway bridge below starch factory near Colby	5	7/13/51	Min.	15.0	7.4	73	7.1	4.0	0.0	230	Low
				to	Av.	10.4	9.9	87	7.4	7.7	0.7	5,066	Low
				11/5/51	Max.	7.0	12.0	99	7.6	12.3	1.1	24,000	Low
6	Woodland	Highway bridge above starch factory near Colby	5	7/13/51	Min.	15.0	7.4	73	7.1	3.5	0.2	230	Low
				to	Av.	10.2	10.0	89	7.4	7.0	2.7	1,720	Low
				11/5/51	Max.	7.0	12.5	103	7.6	10.6	9.0	4,600	Low
Caribou Stream, South Branch													
1	Woodland	Stream behind recreational area near Route 164 at Jacobs	5	7/13/51	Min.	16.0	7.5	75	7.2	1.8	0.1	39	Low
				to	Av.	10.6	9.8	86	7.4	7.5	1.8	1,620	Low
				11/5/51	Max.	6.0	12.0	96	7.6	10.6	5.2	4,600	50

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Turb.
Caribou Stream, Tributary													
1	Caribou	Below pea viner, Washburn Road	5	7/13/51 to 9/15/51	Min.	16.0	0.0	0	5.6	10.0	1.0	1,500	Low
					Av.	16.4	4.4	44	7.0	12.0	103.0	36,760	Low
					Max.	15.0	7.4	73	7.3	14.0	2700	110,000	100
Clayton Brook													
1	Washburn	Highway bridge below vining station	6	6/25/51 to 10/3/51	Min.	16.0	8.4	84	7.6	2.0	0.2	91	Low
					Av.	14.2	9.3	90	7.6	5.3	0.9	426	Low
					Max.	10.0	10.7	94	7.7	11.0	1.4	750	Low
2	Washburn	Highway bridge above vining station	6	6/25/51 to 10/3/51	Min.	16.0	8.3	83	7.6	3.0	0.2	75	Low
					Av.	13.7	9.1	87	7.6	5.5	0.7	315	Low
					Max.	8.0	10.7	91	7.6	11.0	1.2	430	Low
Hockenhull Brook													
1	Ft.Fairfield	Below starch factory	3	9/27/51 to 11/9/51	Min.	10.0	11.4	100	7.8	1.8	0.6	75	Low
					Av.	7.7	12.0	100	7.9	6.2	1.0	253	Low
					Max.	4.0	12.5	95	8.1	15.0	1.6	430	Low
Limestone Stream													
1	Limestone	Highway bridge near boundary on California Road	6	7/26/51 to 2/5/52	Min.	16.0	9.4	94	7.2	2.6	1.0	7,500	Low
					Av.	9.7	10.7	93	7.5	4.9	2.4	18,350	Low
					Max.	0.0	11.8	81	7.7	7.0	6.0	46,000	10
2	Limestone	Bridge on road heading east by potato houses	7	7/26/51 to 3/31/52	Min.	16.0	8.5	85	7.2	3.5	1.6	23,000	Low
					Av.	8.1	10.4	86	7.4	5.5	29.9	200,000	Vari.
					Max.	0.0	12.2	83	7.6	10.0	144.0	1,100,000	High
3	Limestone	Face of dam near Route 165	7	7/26/51 to 3/3/52	Min.	18.0	7.8	82	7.2	3.5	0.2	91	Low
					Ave.	8.3	10.7	88	7.4	5.3	0.7	280	Low
					Max.	0.0	13.4	92	7.6	8.0	1.1	930	Low
Four Corners Brook													
1	Limestone	Bridge on farm road close to Ft.Fairfield town line	5	7/26/51 to 10/29/51	Min.	19.0	8.9	99	7.6	2.6	0.0	93	Low
					Av.	11.6	10.7	99	7.7	6.0	0.8	551	Low
					Max.	3.0	12.4	92	7.8	9.0	1.5	1,500	Low
Colony Brook													
1	Ft.Fairfield	Highway bridge on Route 165 near East Road	5	7/26/51 to 10/29/51	Min.	15.0	8.4	83	7.6	3.5	0.0	4,300	Low
					Av.	10.6	10.3	92	7.8	5.8	0.8	20,060	Low
					Max.	3.0	12.1	90	7.9	8.0	1.7	46,000	Low
Little Madawaska River													
1	Caribou	Highway bridge at Grimes Mill	3	8/8/51 to 9/30/51	Min.	18.0	9.5	100	7.7	1.0	0.6	150	20
					Av.	15.0	10.6	104	7.8	2.4	1.0	2,783	High
					Max.	8.0	12.1	102	8.0	3.5	1.3	4,300	High
2	Caribou	Highway bridge Route 223, near Madawaska School	3	8/8/51 to 9/30/51	Min.	17.0	9.6	99	7.8	2.0	0.0	430	30
					Av.	14.3	10.5	102	7.8	2.4	0.7	6,343	High
					Max.	7.0	11.9	98	7.9	2.6	1.3	9,300	High
3	Caribou	Highway bridge about 2.5 mi. above Sta. 2	3	8/8/51 to 9/30/51	Min.	17.0	9.2	95	7.4	2.6	0.2	91	Low
					Av.	14.7	10.0	97	7.5	3.0	0.6	92	Low
					Max.	8.0	11.5	97	7.6	3.5	0.9	93	Low
4	Connor	Highway bridge on Route 1	3	8/8/51 to 9/30/51	Min.	21.0	8.8	98	7.2	2.0	0.6	43	Low
					Av.	16.7	9.7	98	7.3	2.4	0.6	73	Low
					Max.	10.0	11.2	99	7.4	2.6	0.7	140	Low
5	Stockholm	Bridge in village	3	8/8/51 to 9/30/51	Min.	20.0	8.0	87	7.0	1.8	0.4	43	Low
					Av.	15.7	9.1	89	7.1	2.5	0.7	111	Low
					Max.	8.0	11.1	93	7.2	3.0	1.1	150	Low
6	Stockholm	Highway bridge on Route 161	3	8/8/51 to 9/30/51	Min.	19.0	8.5	91	7.0	1.8	0.2	23	Low
					Av.	15.7	9.4	93	7.1	2.5	0.5	51	Low
					Max.	8.0	11.2	94	7.2	3.0	0.9	93	Low
Greenlaw Brook													
1	Caribou	Highway Bridge near junction with Little Madawaska River	3	8/8/51 to 9/30/51	Min.	16.0	9.5	95	7.6	6.2	0.3	1,400	210
					Av.	13.3	10.3	97	7.7	7.6	0.8	37,933	High
					Max.	8.0	11.8	99	7.8	9.0	1.2	110,000	High
Machias River													
1	Ashland	Bridge on road to Garfield	6	6/22/51 to 11/15/51	Min.	24.0	7.8	92	7.0	2.6	0.0	14	Low
					Av.	13.3	10.4	97	7.1	4.2	0.9	107	Low
					Max.	5.0	11.8	92	7.3	9.7	1.8	430	Low
2	Ashland	North bank above old sawmill dam near town	6	6/22/51 to 11/15/51	Min.	24.0	7.9	93	6.9	1.8	0.0	23	Low
					Av.	13.7	10.3	97	7.2	3.6	1.0	63	Low
					Max.	8.0	11.8	99	7.4	8.8	3.8	150	Low

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Turb.
Otter Brook													
1	Caribou	Face of dam at State fish hatchery	1	7/14/51	Min. Av. Max.	18.0	8.7	91	7.5	6.0	0.6	2,400	
2	Caribou	Highway bridge first road east from Route 1 north of Barretts	1	7/14/51	Min. Av. Max.	20.0	7.6	76	7.6	12.0	0.7	460	
Pattee Brook													
1	Ft.Fairfield	Face of dam near South Street	3	9/26/51 to 11/9/51	Min. Av. Max.	18.0 10.5 4.0	8.5 10.7 12.2	89 92 93	7.6 7.6 7.6	5.0 6.4 8.8	0.9 1.0 1.2	930 2,765 4,600	Low Low Low
1A	Ft.Fairfield	Highway bridge on Route 167 below factory	3	9/27/51 to 11/9/51	Min. Av. Max.	10.0 8.3 4.0	10.3 11.2 12.6	91 94 95	7.5 7.6 7.6	2.6 9.3 10.6	1.0 1.1 1.3	1,500 2,900 4,300	Low Low Low
2	Ft.Fairfield	Monson Mill Stream bridge near border	3	7/26/51 to 10/17/51	Min. Av. Max.	20.0 15.3 12.0	8.3 9.4 10.9	91 93 101	7.4 7.6 7.7	2.6 4.3 6.2	1.8 1.9 2.0	43 60 93	Low Low Low
Presque Isle Stream													
1	Presque Isle	Railroad bridge near Aroostook River	11	6/21/51 to 3/7/52	Min. Av. Max.	23.0 8.7 0.0	3.8 9.7 13.6	44 80 93	6.8 7.1 7.6	3.0 9.2 15.0	1.4 16.2 75.0	9,300 251,755 930,000	Low Low 10
2	Presque Isle	Park Street bridge	8	6/21/51 to 12/12/51	Min. Av. Max.	23.0 11.9 3.0	7.0 10.3 13.3	81 88 99	6.7 7.2 7.6	2.0 5.8 11.5	1.2 8.3 41.0	4,300 73,950 240,000	Low Low Low
3	Presque Isle	State Street bridge Route 163	11	6/21/51 to 3/7/52	Min. Av. Max.	23.0 8.7 0.0	4.6 9.7 12.6	53 80 86	6.7 7.0 7.4	3.5 8.6 16.0	0.0 1.0 2.6	93 7,462 46,000	Low Low Low
4	Presque Isle	South bank near water district intake	11	6/21/52 to 3/7/52	Min. Av. Max.	24.0 11.0 0.0	5.5 10.1 13.2	64 84 90	6.7 7.1 7.4	3.5 7.5 18.0	0.0 1.2 4.3	21 297 1,100	Low Low Low
5	Mapleton	West bank at end of farm road near Chapman town-line	6	6/21/51 to 11/13/51	Min. Av. Max.	25.0 14.3 3.0	7.5 10.1 13.2	90 95 98	6.7 7.2 7.4	2.0 5.0 10.0	0.0 0.9 1.3	> 9 135 460	
Presque Isle Stream, North Branch													
1	Mapleton	Route 163 bridge near Brennan Sta.	6	6/21/51 to 11/13/51	Min. Av. Max.	23.0 12.7 4.0	5.6 10.8 13.7	65 98 104	7.2 7.5 8.0	2.6 7.1 11.0	0.0 1.8 5.6	43 986 4,300	Low Low Low
2	Mapleton	Route 163 bridge at Mapleton village	6	6/21/51 to 11/13/51	Min. Av. Max.	24.0 13.0 2.0	8.3 10.0 12.9	97 92 93	6.8 7.2 7.4	4.0 8.1 14.0	0.3 3.0 6.4	2,000 10,000 46,000	Low Low Low
Salmon Brook													
1	Washburn	Near mouth by old mill site	7	7/27/51 to 2/5/52	Min. Av. Max.	18.0 10.7 0.0	8.2 10.4 12.2	86 92 83	7.1 7.4 7.7	3.5 6.3 10.6	1.3 10.7 35.0	2,300 24,100 43,000	Low Low Low
2	Washburn	Bridge below village	7	7/27/51 to 2/5/52	Min. Av. Max.	17.0 10.6 3.0	8.6 10.6 12.4	88 93 92	7.1 7.5 7.9	4.0 6.3 11.4	0.6 1.1 2.2	4,300 33,933 93,000	Low Low Low
3	Washburn	Face of dam	7	7/27/51 to 2/5/52	Min. Av. Max.	17.0 10.9 3.0	7.9 9.8 11.9	81 86 89	7.1 7.4 7.6	3.5 6.5 13.2	0.0 0.9 1.4	> 9 246 930	Low Low Low
Salmon Brook, West Branch													
1	Washburn	Bridge near village	6	7/27/51 to 11/8/51	Min. Av. Max.	18.0 12.2 3.0	8.8 9.9 12.1	92 91 90	7.1 7.0 7.3	4.0 7.2 13.2	0.5 0.9 1.6	93 639 2,400	Low Low Low
Tributary, Aroostook River near Ashland R.R. Station													
1	Ashland	R. R. Station coming from vicinity of potato dump	3	6/22/51 to 9/21/51	Min. Av. Max.	18.0 17.7 19.0	0.0 1.5 3.7	0 16 40	7.1 7.2 7.2	87	5.3 15.3 22.5	75 385 930	Low High 200

FISH RIVER BASIN

Tabulated Results of Test Data Compiled on the Fish River

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Turb.
1	Fort Kent	Highway bridge on Rte. 1 at Fort Kent	6	7/25/51 to 3/4/52	Min.	21.0	8.7	97	6.9	1.8	0.0	430	low
					Av.	11.0	10.9	97	7.1	4.5	0.6	1,494	low
					Max.	0.0	13.3	91	7.4	7.9	1.6	2,400	low
2	Fort Kent	Highway bridge at Fort Kent Mills between Rte. 11 & 161	6	7/25/51 to 3/4/52	Min.	20.0	8.7	95	6.9	1.8	0.0	4	low
					Av.	10.7	10.9	95	7.1	4.1	0.7	114	low
					Max.	0.0	13.2	90	7.3	5.3	2.2	430	low
3	Wallagrass	Highway bridge at Soldier Pond	3	7/25/51 to 10/9/51	Min.	19.0	8.2	91	6.9	2.6	0.0	91	low
					Av.	16.0	8.8	88	7.1	3.6	0.3	1,610	low
					Max.	9.0	9.8	84	7.2	5.3	0.5	4,600	low
4	Eagle Lake	Highway bridge at Rte. 11 just below St. Froid Lake	3	7/25/51 to 10/9/51	Min.	20.0	8.1	88	7.1	1.8	0.3	14	low
					Av.	16.3	8.9	90	7.2	3.4	0.5	15	low
					Max.	9.0	10.1	87	7.3	4.4	0.8	15	low
5	T 17, R 5	Highway bridge at Guerette, Rte. 161	3	7/25/51 to 10/9/51	Min.	21.0	8.6	96	7.1	1.8	0.9	23	low
					Av.	16.0	10.7	105	7.3	3.7	1.5	30	low
					Max.	9.0	14.6	126	7.4	6.2	1.8	43	low

AROOSTOOK RIVER BASIN (CONT.)

Tabulated Results of Test Data Compiled on Streams

Sta. No.	Town	Location	No. Samples	Test Period		Temp °C	Dissolved Oxygen PPM	Dissolved Oxygen %Sat	pH	CO_2 PPM	B.O.D. PPM	B. Coli M.P.N.	Turb.
Tributary, Aroostook R., Presque Isle near Washburn Viner													
1	Presque Isle	Washburn Rd. Trib. Aroostook R. below viner	5	6/6/51 to 9/15/51	Min.	14.0	8.6	83	6.6	2.6	4.5	910	Low
					Av.	14.6	9.4	89	7.3	5.2	36.8	66,830	Low
					Max.	15.0	9.9	97	7.7	9.0	160.0	240,000	Low
2	Presque Isle	Washburn Rd. Trib. Aroostook R. above viner	3	8/9/51 to 9/15/51	Min.	13.0	9.8	92	7.6	3.0	1.2	230	Low
					Av.	13.0	10.0	95	7.6	3.2	1.3	540	Low
					Max.	13.0	10.4	98	7.7	3.5	1.7	930	Low

PISCATAQUA & SALMON FALLS RIVERS WATERSHED

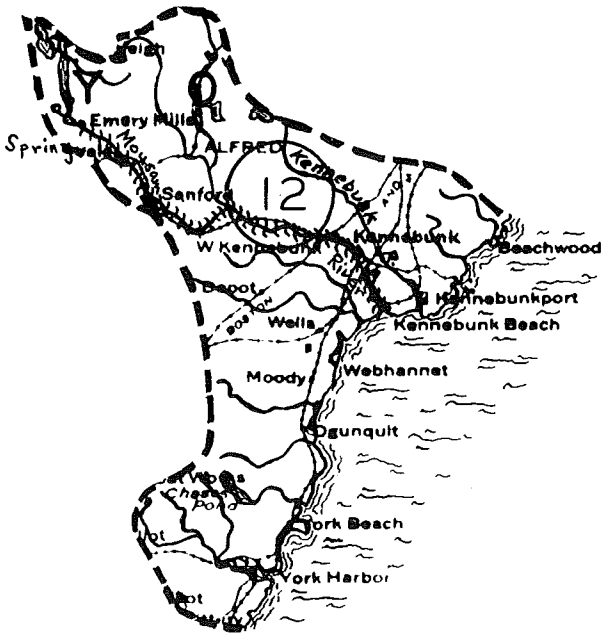
MILES

10 0 10 20 30

LEGEND

~~~~~ SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED

MAP NO. 1
~~~~~



MOUSAM RIVER WATERSHED
&
ADJACENT COASTAL AREA

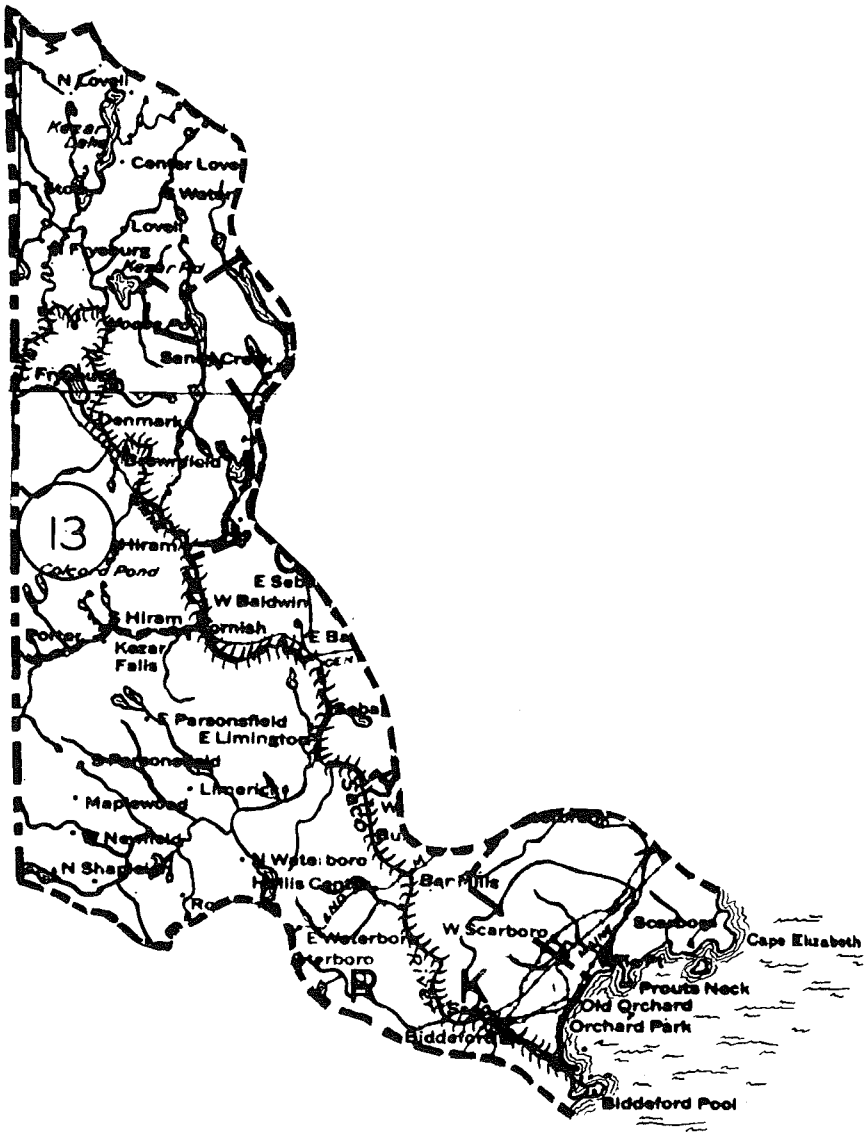
MILES

10 0 10 20 30

LEGEND

~~~~~~ SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED

MAP NO. 2
~~~~~~



SACO RIVER WATERSHED
&
ADJACENT COASTAL AREA

MILES

10 0 10 20 30

LEGEND

~~~~~~ SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED

MAP NO. 3
~~~~~~

PRESUMPSCOT RIVER WATERSHED
&
ADJACENT COASTAL AREA

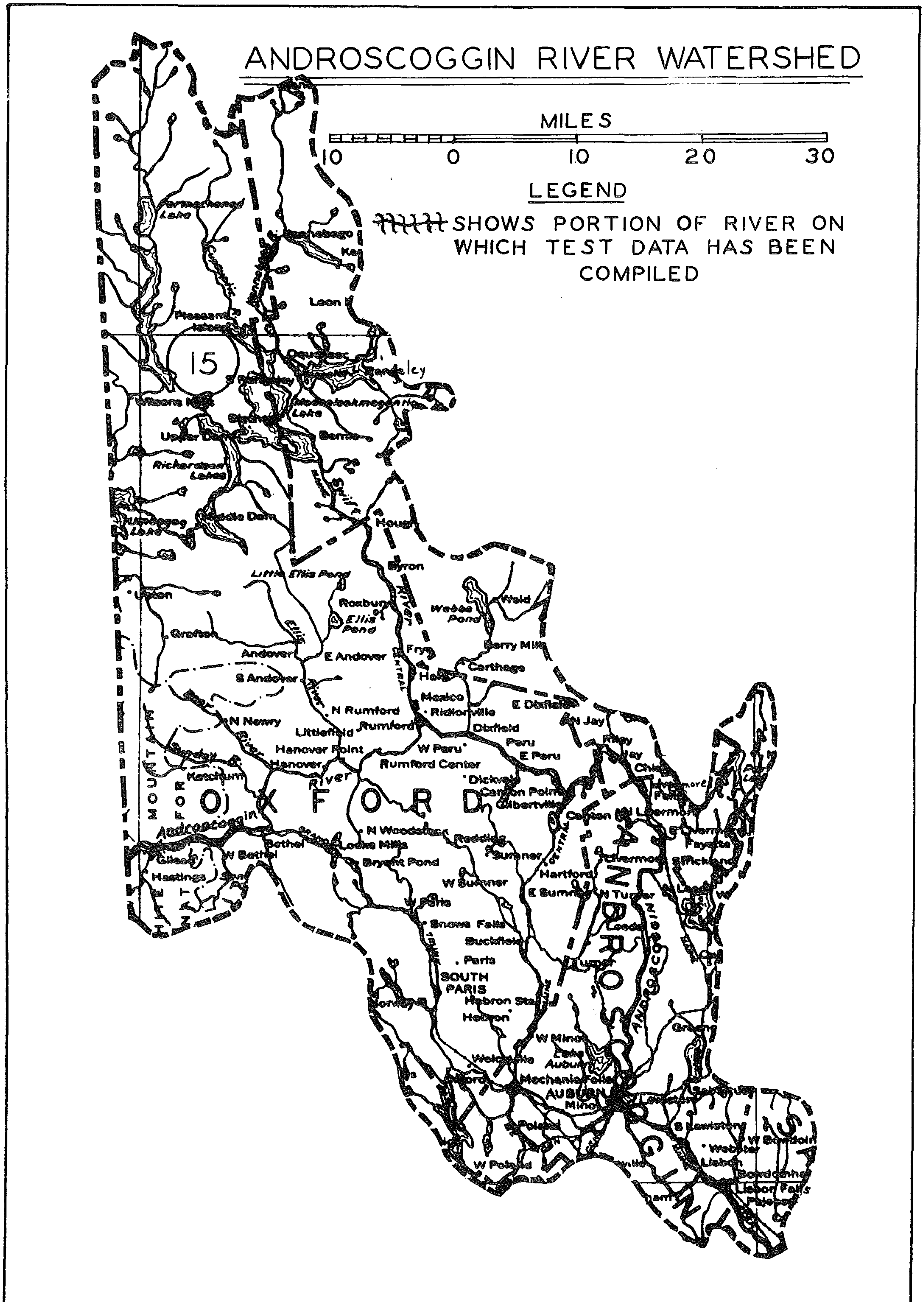
MILES

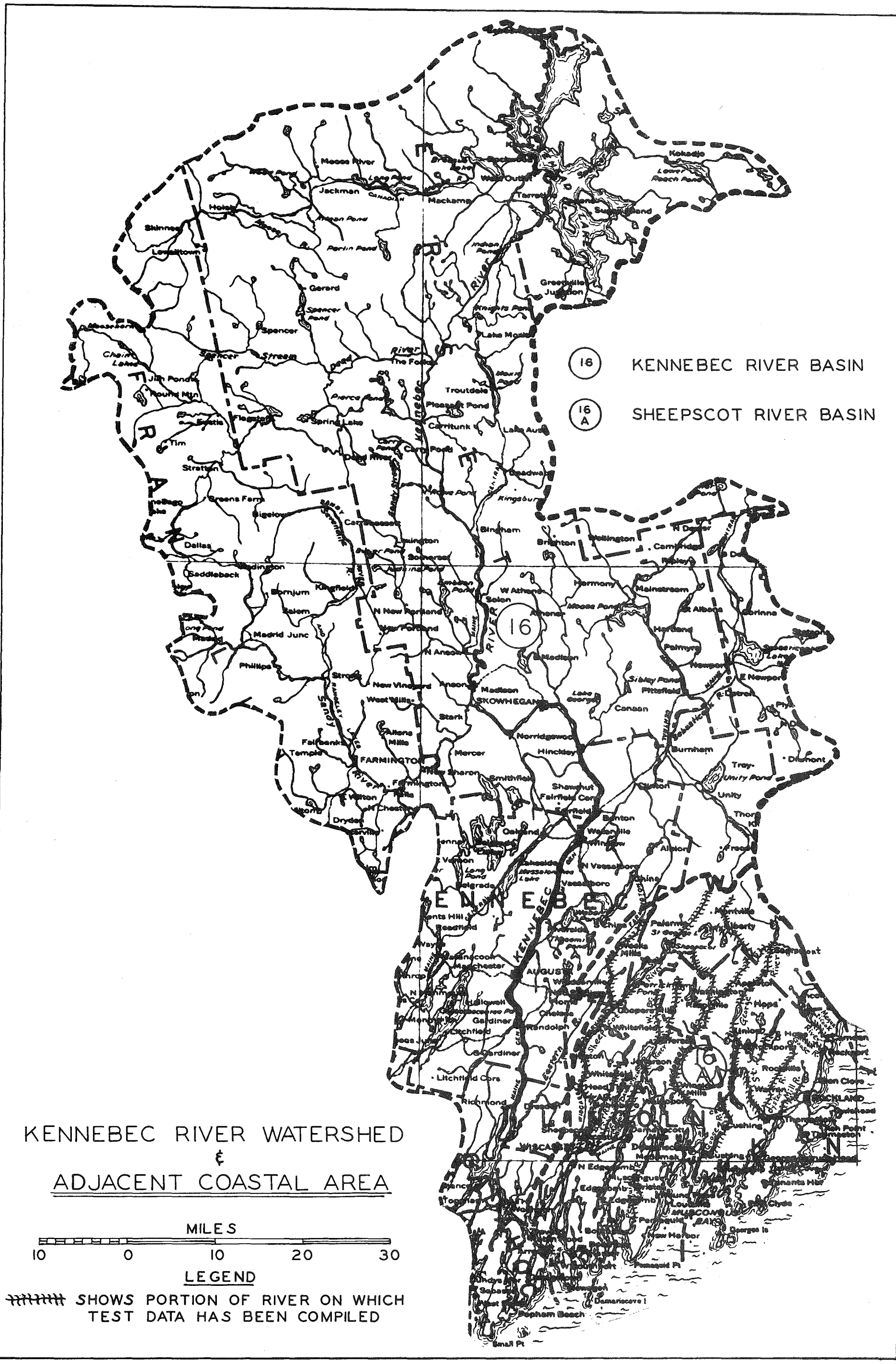
10 0 10 20 30

LEGEND

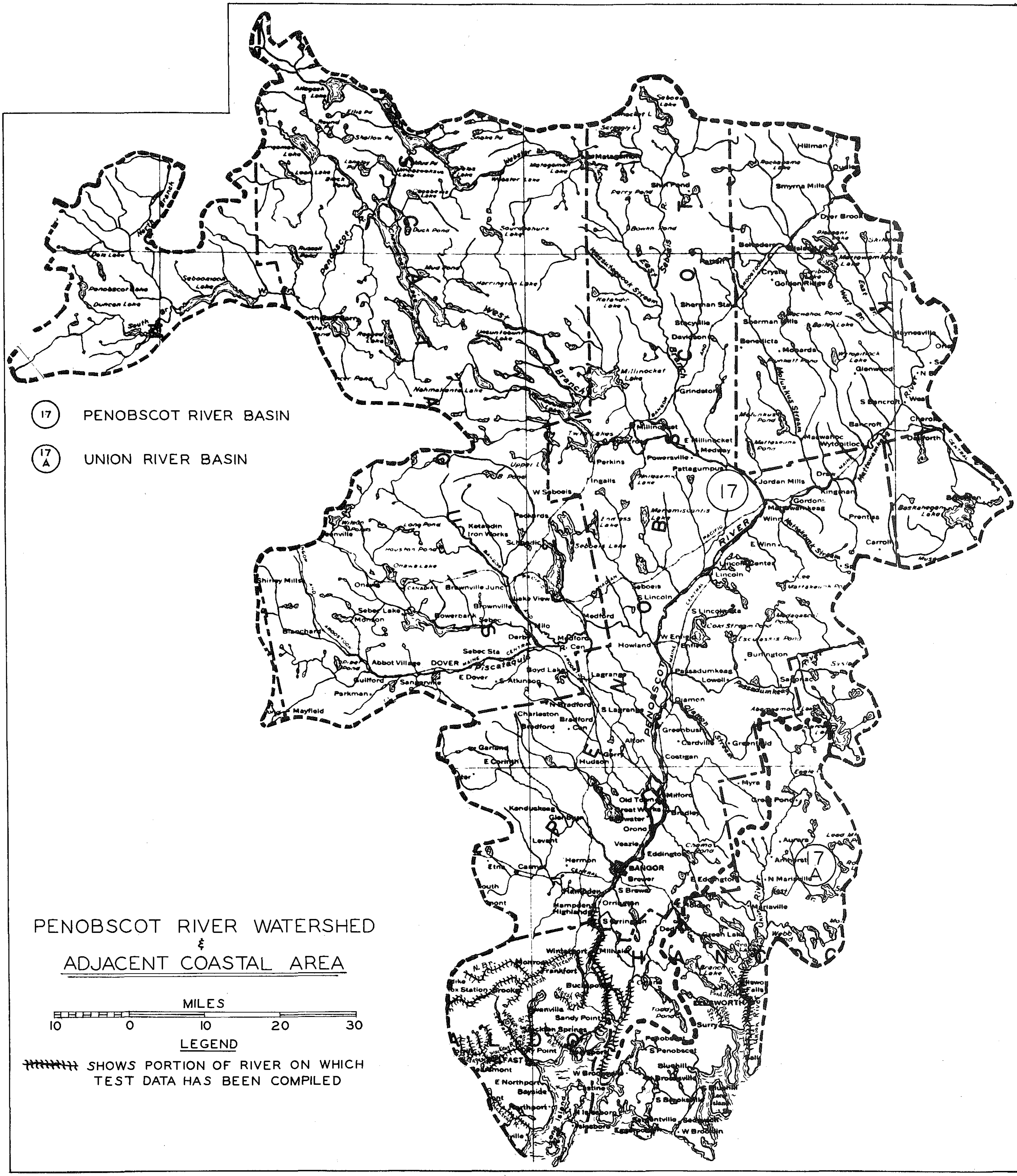
SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED

MAP NO. 4


ANDROSCOGGIN RIVER WATERSHED
MILES
10 0 10 20 30
LEGEND
SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED
15
OXFORD
ANDROSCOGGIN
Rumford
Mexico
Andover
Bethel
SOUTH PARIS
AUBURN
Mechanic Falls
Livermore Falls
Lisbon Falls

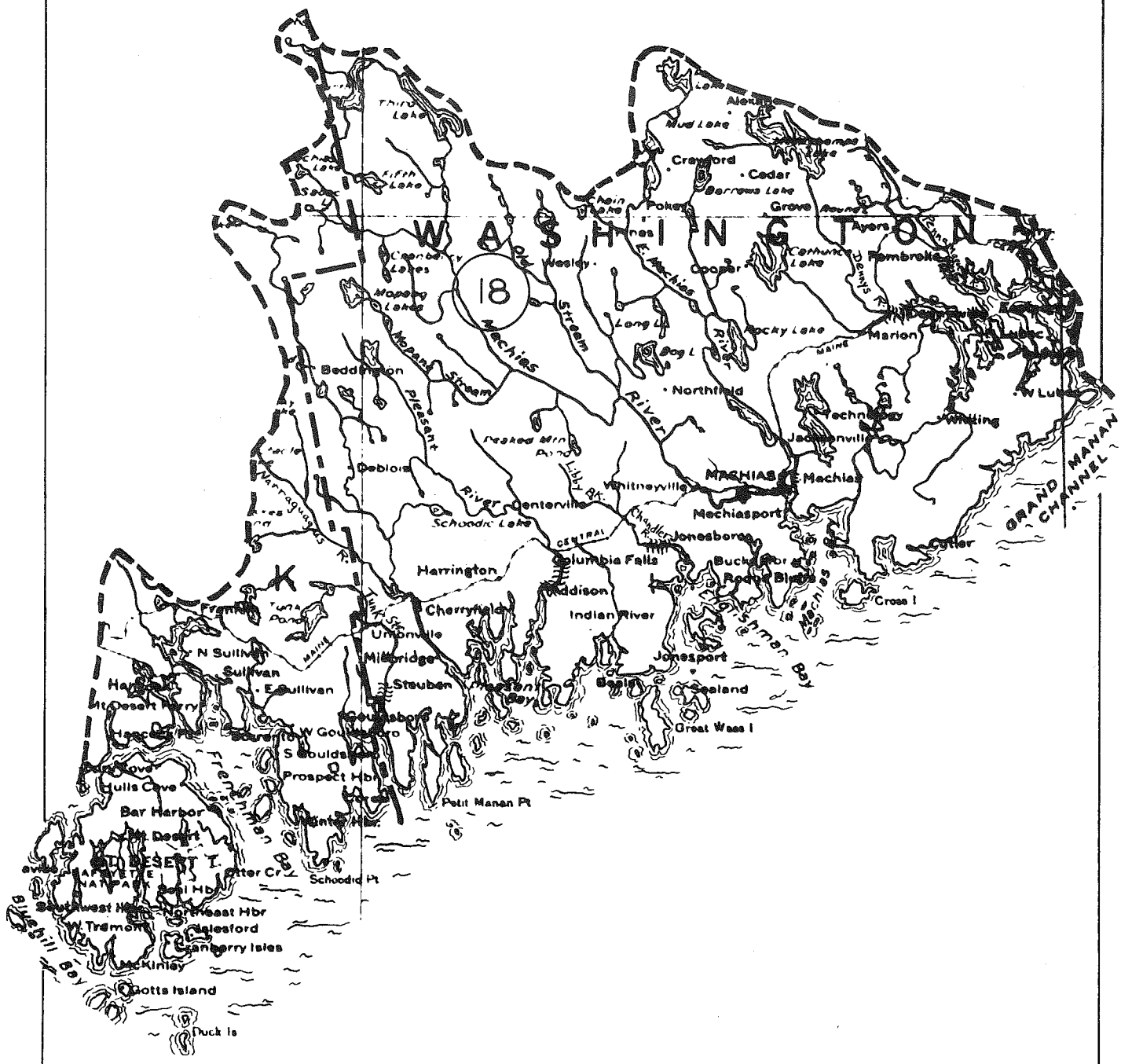

16
KENNEBEC RIVER BASIN
16 A
SHEEPSCOT RIVER BASIN
KENNEBEC RIVER WATERSHED
&
ADJACENT COASTAL AREA
MILES
10 0 10 20 30
LEGEND
SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED

MAP NO. 6



17 PENOBSCOT RIVER BASIN
17 A UNION RIVER BASIN
PENOBSCOT RIVER WATERSHED
&
ADJACENT COASTAL AREA
MILES
10 0 10 20 30
LEGEND
SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED
17
17 A
BANGOR

MAP NO. 7



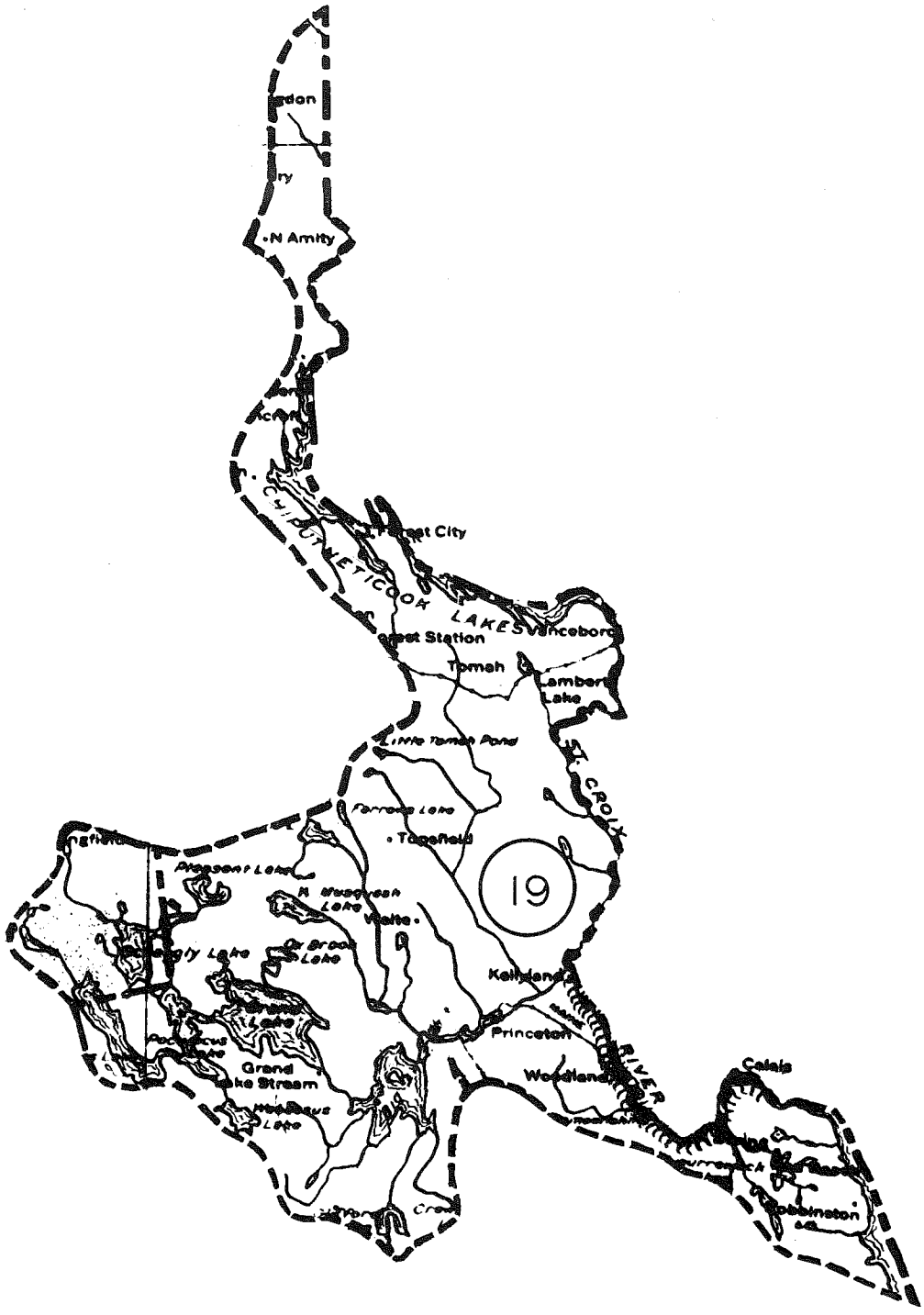
MACHIAS RIVER WATERSHED
&
ADJACENT COASTAL AREA

MILES

10 0 10 20 30

LEGEND

~~~~~~~ SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED
~~~~~~~



ST. CROIX RIVER WATERSHED

MILES

10 0 10 20 30

LEGEND

~~~~~ SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED

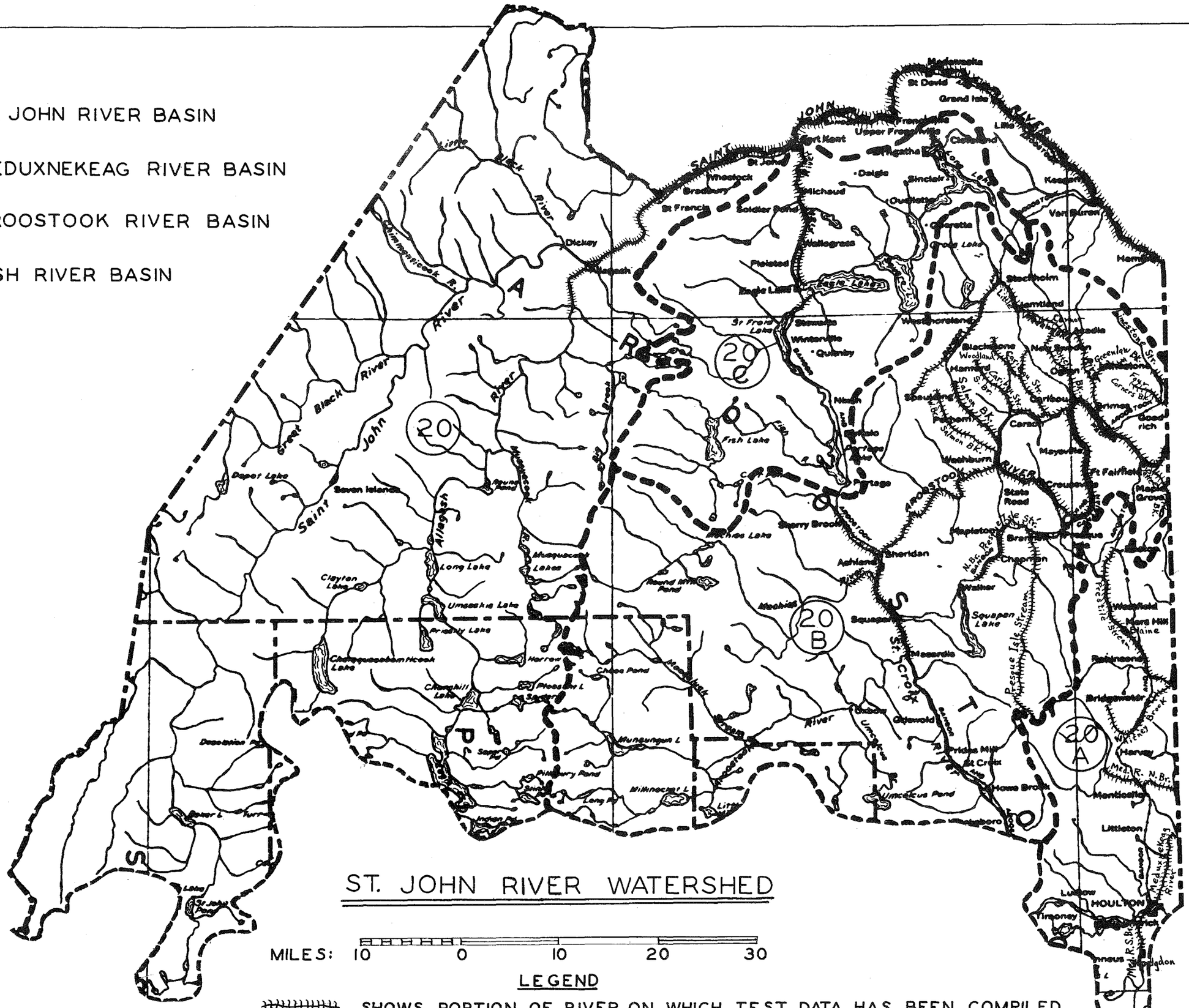
MAP NO. 9
~~~~~

(20) ST. JOHN RIVER BASIN

(20 A) MEDUXNEKEAG RIVER BASIN

(20 B) AROOSTOOK RIVER BASIN

(20 C) FISH RIVER BASIN



ST. JOHN RIVER WATERSHED

MILES: 10 0 10 20 30

LEGEND

SHOWS PORTION OF RIVER ON WHICH TEST DATA HAS BEEN COMPILED

MAP NO. 10