

SOURCES OF WATER-USE INFORMATION IN MAINE

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INTRODUCTION

The nation's water supplies are undergoing stress as a result of increasing demands for water from agricultural, industrial, domestic, and other uses accompanied by demands for greater protection of water quality. Although some detailed information is available on the quantity and quality of surface water and ground water, data are lacking on the amount of water used, where it is used, and how it is used. Water-use information is necessary for definition and efficient resolution of many critical water-related problems involving water quality, environmental impact, energy development, and resource allocations.

The National Water-Use Data System

In order to address the growing national concern about adequacy of water supplies, the U.S. Geological Survey began a cooperative State-Federal water-use information program in 1977. The objectives of this program are:

- .account for water use throughout the country
- .devise new techniques and methods to improve the collection, analysis, and dissemination of water-use information
- .organize data for storage and retrieval at the national, regional, and local levels
- .manage the program to ensure that the data collected will be easily updated and of uniform quality nationwide
- .provide the necessary information for estimation and management of future water-use requirements.

A comprehensive national data program, NWUDS (National Water-Use Data System), has been established for the systematic collection, storage, and dissemination of aggregated data supplied by each State on water withdrawal, return, and use. This computerized system of files and programs for processing water-use data has been added to WATSTORE (National Water Data Storage and Retrieval System). This information will be used to

complement existing data on availability and quality of the nation's water resources, to aid in regional and national planning efforts, and to provide a means for analyzing and making timely and accurate assessments of water-use throughout the nation.

The Maine Water-Use Data System

As an outgrowth of the national program, the MGS (Maine Geological Survey), in cooperation with the U.S. Geological Survey, has initiated the development of a comprehensive water-use data program called MWUDS (Maine Water-Use Data System). The MGS will be primarily responsible for the ongoing collection and storage of data. Management and standards development will be the responsibility of the U.S. Geological Survey.

Information collected for MWUDS will meet the specific needs of the data-user community in Maine as well as the requirements for the national system. Data will be available on the use, availability, and quality of Maine's water resources. Water-use information will be collected in the following categories, which are also needed for NWUDS: Agricultural, commercial, domestic, industrial, irrigation, mining, electrical power generation (fossil fuel, hydroelectric, nuclear), public water supply, and sewage treatment (see Chapter 1). Other uses which are not currently included in the national data base but which may be important in Maine are aquaculture, preservation, recreation, navigation and flood control, and treaties. Chapter 2 describes the following proposed additional categories for Maine: Aquaculture; navigation and flood control; and recreation.

Under the auspices of MWUDS, a number of planning, permitting, management, and inventory programs can be combined to efficiently address environmental issues. In order to manage water resources effectively, it is necessary to know where, how, and in what quantity water is used, what its

source is, and where it is discharged. Withdrawal limits have to be determined to meet instream-flow requirements for power production, recreation, and wildlife habitat maintenance. Water-use patterns within drainage basins must be understood in order to conduct studies of basin hydrology, establish water-use policies and priorities, and develop emergency plans for droughts.

A preliminary report on water-use data collected in Maine was compiled by Lanctot (1980). This report demonstrated the fragmentation, duplication, and general inaccessibility of data, and illustrated the need for a comprehensive data-collection and data-management system.

In order to introduce MWUDS and design it to meet the needs of potential users, a meeting of representatives from interested Federal, State, and industrial organizations was held in February 1981. Each participant gave a brief talk concerning his agency's present water use and data-collection practices, a summary of data appropriate for central filing, and anticipated future water-use information needs.

Information from the MGS report and the organizational meeting has been included in this source booklet. The sections are arranged by water-use categories. Each category is defined and the appropriate SIC (standard industrial classification) codes for the category are listed. Descriptions of data elements which will be stored in the national system and optional data to be included in the Maine system are presented. A tentative approach for MWUDS data collection is summarized, sources of information are listed, and where appropriate, a bibliography is given at the end of each section.

The Maine Water Use Data System is now in the planning stages. Program start-up will be contingent on availability of funds. If initi-

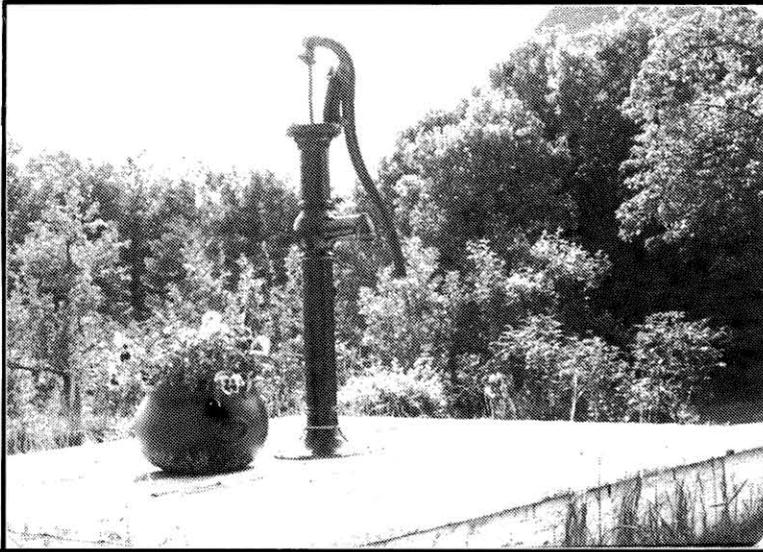
ated, the program will require 2 or 3 years to become fully operational. A management plan will be written to detail types of data needed, means for obtaining, storing, and accessing data, time tables for collecting and updating the data, and plans for recruiting and training personnel for computer operations and field acquisition of data. After the project management plan has been completed, the necessary hardware and software will be acquired.

The program will use data already collected by State and Federal agencies in order to avoid duplication of effort wherever possible. However, much additional data will have to be collected directly from the water users.

The entire system will be tested, reviewed, and modified as necessary. Computer programs and retrieval formats will be designed for responding to information requests. A user's manual for MWUDS will be compiled which will describe data-collection methods and data-access procedures. Data will be summarized and provided annually from MWUDS to the national system.

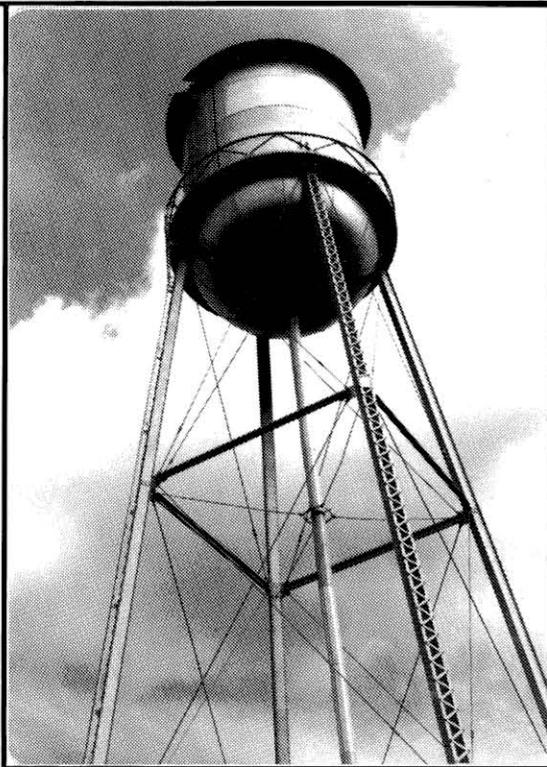
To ensure privacy of sources, water-use information will be made available to the public only after the data have been aggregated by user category, geographic location, hydrologic unit, or other pertinent grouping. If a water-user specifically requests that his data be kept confidential, additional precautions will be implemented.

Questions or comments concerning the development of the Maine Water Use Data System should be directed to the Maine Geological Survey at (207) 289-2801 or to the U.S. Geological Survey at (207) 622-8208.



CHAPTER 1.
WATER-USE CATEGORIES OF
THE NATIONAL WATER-USE
DATA SYSTEM

The categories discussed in this chapter are included in the National Water-Use Data System (NWUDS) computer files.



Data will be aggregated and stored in NWUDS by hydrologic unit, county, and State.

WATER USED FOR AGRICULTURAL (non-irrigation) PURPOSES

- I. Definition: Water used for agricultural purposes, stock watering, feed-lot, and dairy operations, etc.
- II. SIC codes classified under this category:
 - 0211-0241: livestock except poultry and animal specialties
 - 0251-0259: poultry and eggs
 - 0291-0299: general farms - primarily livestock
 - 0711-0729: soil preparation, crop planting, crop harvesting
 - 0741-0742: veterinary sciences
 - 0761-0783: farm labor and management, landscaping, horticultural services
 - 0811-0851: forestry
- III. Data needed (if not required for national system, noted as (NR)):
 - A. Facility data - name, address, hydrologic unit, congressional district (NR), type and SIC code
 - B. Withdrawal/return data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into
 1. Water-quality data
 - a. availability
 - b. agency with information - name, address
 - c. type of treatment
 2. Permitting
 - a. permitting agency - name, address
 - b. permit provisions
 - c. permit restrictions during last year
 3. Water usage
 - a. reporting year
 - b. annual amount used
 - c. monthly amount used
 - d. day and amount of maximum use (NR)
 - e. day and amount of minimum use (NR)
 - f. average daily use (NR)
 - g. flow-measurement method, measurer, accuracy
- IV. Tentative data-collection approach: An inventory of the largest potato, blueberry, and poultry processors will be conducted. A statistical sampling network will be used to obtain estimates of water use in other categories.

V. Information sources:

A. Agricultural Division
U.S. Bureau of the Census
U.S. Dept. of Commerce
Washington, D.C. 20233

The 1978 Census of Agriculture for Maine (U.S. Dept. of Commerce, 1981) is now available. The data are aggregated for the entire State in this report, but separate reports are available for each county. Relevant information includes the following: The number and size of farms; the amount of crops, livestock, and poultry sold; inventory of cattle and calves, hogs and pigs, sheep and lambs, horses and ponies, chickens, and turkeys; and summary of the number of acres and tons of crops harvested.

B. Maine Potato Council
PO Box 632
Presque Isle, ME 04769

This organization has information on the amount of water used for irrigation and processing by the potato industry.

C. Soil Conservation Service
USDA Office Building
UMO
Orono, ME 04469

D. Cooperative Extension Service (see list of extension agencies on following page)
Rogers Hall
UMO
Orono, ME 04469

E. Maine Dept. of Agriculture
Plant Industry Division
Poultry and Livestock Division
State Office Building - 6th floor
Augusta, ME 04333

F. Maine Poultry Federation
PO Box 228
Augusta, ME 04330

G. Maine Vegetable Growers Association
112 Spurwink Avenue
Cape Elizabeth, ME 04107

H. Maine Farm Bureau Association
PO Box 430
478 Western Avenue
Augusta, ME 04330

V. Information sources, cont:

I. Cooperative Extension Agencies:

ANDROSCOGGIN-SAGADAHOC COUNTY
Cooperative Extension Service
918 Sabattus St., Lewiston 04240

AROOSTOOK COUNTY
Cooperative Extension Service
1) 23 Pleasant St., Ft. Kent 04743
2) PO Box 8, Houlton 04730
3) PO Box 727, Presque Isle 04769

CUMBERLAND COUNTY
Cooperative Extension Service
96 Falmouth St., Portland 04104

FRANKLIN COUNTY
Cooperative Extension Service
PO Box 670, Farmington 04938

HANCOCK COUNTY
Cooperative Extension Service
Christian Ridge Rd, Ellsworth 04605

KENNEBEC COUNTY
Cooperative Extension Service
125 State St., Augusta 04330

KNOX-LINCOLN COUNTY
Cooperative Extension Service
375 Main St., Rockland 04841

OXFORD COUNTY
Cooperative Extension Service
25 Market Square, South Paris 04281

PENOBSCOT COUNTY
Cooperative Extension Service
Court House Annex, Bangor 04401

PISCATAQUIS COUNTY
Cooperative Extension Service
Court House, Dover-Foxcroft 04426

SOMERSET COUNTY
Cooperative Extension Service
PO Box 98, Skowhegan 04976

WALDO COUNTY
Cooperative Extension Service
RFD #1, Belfast 04915

WASHINGTON COUNTY
Cooperative Extension Service
Federal Building, Machias 04254

YORK COUNTY
Cooperative Extension Service
Court House Annex, Alfred 04002

J. University of Maine at Orono
Orono, Maine 04469
related academic departments:
Agricultural and Research
Economics, Agricultural
Engineering, Animal and
Veterinary Sciences, Entomol-
ogy, Forest Resources, Human
Development, Plant and Soil
Sciences

VI. References:

U.S. Department of Commerce, Bureau of the Census, 1981, 1978 census of agriculture, v.1, part 19, state and county data for Maine, AC78-A-19, 137 p.

WATER USED FOR COMMERCIAL PURPOSES

- I. Definition: Water used by hotels, motels, restaurants, office buildings, etc.
- II. SIC codes classified under this category:
- 4011-4172: transportation - trains, taxicabs, aircraft
 - 4212-4231: motor freight transportation and warehousing
 - 4311: U.S. Postal Service
 - 4511-4583: transportation by air
 - 4612-4619: pipelines - except natural gas
 - 4712-4789: transportation service
 - 4811-4899: communications
 - 4922-4939: gas production and distribution; combination gas and electric service
 - 5012-5099: wholesale trade - durable goods
 - 5111-5199: wholesale trade - nondurable goods
 - 5211-5271: building materials, hardware, garden supply, and mobile home dealers
 - 5311-5399: general merchandise stores
 - 5411-5499: food stores
 - 5511-5599: automotive dealers and gasoline service stations, (boat, recreational, trailer, motorcycle and misc. automotive dealers)
 - 5611-5699: apparel and accessory stores
 - 5712-5733: furniture, home furnishings and equipment stores
 - 5812-5813: eating and drinking places
 - 5912-5999: misc. retail - drug, liquor, used merchandise, book, camera, and nonstore retailers
 - 6011-6059: banking
 - 6112-6163: credit agencies
 - 6212-6281: security and commodity brokers, dealers, exchanges, and services
 - 6311-6411: insurance
 - 6512-6612: real estate
 - 6711-6799: holding and other investment offices
 - 7011: hotels, motels, tourist courts
 - 7021: rooming and boarding houses
 - 7041: organization hotels and lodging houses, on membership basis
 - 7211-7219: laundry, cleaning, and garment services
 - 7221-7299: shops - photo, beauty, barber, shoe, funeral services, and misc. services
 - 7311-7319: advertising services
 - 7321: consumer credit and collection
 - 7331-7339: mailing, reproduction, commercial art and photography, and stenographic services
 - 7341-7349: service to dwellings and other buildings
 - 7351: news syndicates
 - 7361-7369: personnel supply services, employment, temporary help, personnel supply services
 - 7372-7379; computer and data processing

SIC codes-cont.

- 7391-7399: misc. business services - research and development labs, management consulting, and public relations services
- 7512-7519: automotive, truck, utility rental leasing - without drivers
- 7523: automobile parking
- 7531-7539: automotive repair shops
- 7542: car washes
- 7549: automotive services - except repair
- 7622-7699: misc. repair services
- 7813-7883: motion picture - television services, theaters, except drive-ins
- 7911-7948: amusement and recreation services, except motion pictures and public golf courses
- 7993: coin-operated amusement devices
- 8011-8049: health services (offices)
- 8051-8059: nursing and personal care facilities
- 8062-8069: hospitals
- 8071-8072: medical and dental laboratories
- 8081: outpatient care facilities
- 8091: health and allied services, not elsewhere classified
- 8111: legal services
- 8211-8299: educational services, schools, universities, libraries, and information centers
- 8321-8399: social services - individual, family, job rehabilitation, etc.
- 8411-8421: museums, art galleries, botanical and zoological gardens
- 8611-8699: membership organizations
- 8911-8999: misc. services - engineering, educational, scientific, research, accounting, etc.
- 9111-9311: government, executive, legislative, justice, public order and safety, misc.
- 9411-9451: administration of human resources programs
- 9531-9721: administration of housing programs, urban planning, economic programs, national security and international

affairs

III. Data needed (if not required for national system, noted as (NR)):

- A. Facility data - name, address, hydrologic unit, congressional district (NR), parent company, type of facility, SIC code
- B. Withdrawal/return data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into
 - 1. Water-quality data
 - a. availability
 - b. agency with information - name, address
 - c. type of treatment
 - 2. Permitting
 - a. permitting agency - name, address
 - b. permit provisions
 - c. permit restrictions during last year

III. Data needed-cont.

B. Withdrawal/return data, cont.

3. Water usage

- a. reporting year
- b. annual amount used
- c. monthly amount used
- d. day and amount of maximum use (NR)
- e. day and amount of minimum use (NR)
- f. average daily use (NR)
- g. flow measurement method, measurer, accuracy

- IV. Tentative data-collection approach: Monthly discharge data will be obtained from the DEP (Department of Environmental Protection) for the few commercial establishments for which these data are available. For the remainder, the licensed volume based on the design of the facility will be taken as the volume discharged until more accurate estimates can be obtained directly from the establishments themselves,

V. Information sources:

A. Maine Dept. of Environmental
Protection
State House Station 17
Augusta, ME 04333

The DEP has lists of all establishments that discharge directly into surface waters. These establishments are self-monitored and send monthly effluent data to DEP. Computerized monthly water-quality data are available on discharges exceeding 2000 gallons per day from the Licensing and Permit Division of DEP (207) 289-3355.

WATER USED FOR DOMESTIC PURPOSES

- I. Definition: Water used by residences, subdivisions, condominiums, or municipalities.
- II. SIC codes classified under this category:
8811: private households, residences, subdivisions, condominiums, municipalities, residential trailer parks
- III. Data needed (if not required for national system, noted as (NR)):
 - A. Facility Data - name, address, hydrologic unit, congressional district (NR), parent company, type of facility, SIC code
 - B. Withdrawal/Return Data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into
 1. Water-quality data
 - a. availability
 - b. agency with information - name, address
 - c. type of treatment
 2. Permitting
 - a. permitting agency - name, address
 - b. permit provisions
 - c. permit restrictions during last year
 3. Water usage
 - a. reporting year
 - b. annual amount used
 - c. monthly amount used
 - d. day and amount of maximum use (NR)
 - e. day and amount of minimum use (NR)
 - f. average daily use (NR)
 - g. flow-measurement method, measurer, accuracy
- IV. Tentative data-collection approach: Actual domestic water-use data are not available and would have to be estimated using census and demographic data. A statistically random sampling network may be initiated in which flow meters are placed on pumps in individual residences.
- V. Information sources:
 - A. Maine Dept. of Environmental Protection
State House Station 17
Augusta, ME 04333
DEP has water-quality information on 1500 residences which discharge into surface water.
 - B. Maine Dept. of Human Services
Health Engineering
157 State Street
Augusta, ME 04333
Water tests are done on request at the Public Health Laboratory and stored on microfilm. The DHS also published a pamphlet "Drought and the Individual Well Owner" which provides estimates of amounts of water used for household appliances such as showers, etc.

V. Information sources, cont.

C. Maine Geological Survey
State House Station 22
Augusta, ME 04333

Computerized data are available on private domestic ground-water supplies for the coastal counties plus Androscoggin, southern Kennebec, southern Piscataquis, and Penobscot counties. Data on the inhabited portions of Oxford, Somerset, Franklin, and northern Kennebec counties have been collected. Information includes static water level, well depth and yield, and geologic data.

D. U.S. Geological Survey
Water Resources Division
26 Ganneston Drive
Augusta, ME 04330

Well inventory information, including static water level, well depth and yield, water chemistry, and geology has been compiled in a series of basic-data reports. These reports have been completed for the populated areas of the State and are available from the Augusta office.

E. U.S. Dept. of Commerce
Bureau of the Census
Washington, DC 20233

The 1980 Census of Population and Housing (U.S. Dept. of Commerce, 1980) presents preliminary 1980 census population and housing unit counts for the state, counties, county subdivisions, incorporated places, standard metropolitan statistical areas, and congressional districts.

F. Maine Water Utilities Association
236 Foreside Road
Falmouth, Maine 04605

Water utilities are additional sources of information for domestic water use.

VI. References:

- U.S. Department of Commerce, Bureau of the Census, 1980, 1980 Census of population and housing - Maine: PHC80-P-21, 8p.
U.S. Geological Survey, 1981, Water resources data for Maine, water year 1980: Augusta, Maine, 228 p.
_____, 1982, Water resources data for Maine, water year 1981: Augusta, Maine, 212 p.

WATER USED FOR INDUSTRIAL PURPOSES

I. Definition: Water used by a manufacturing or processing facility.

II. SIC codes classified under this category:

1011-1099: metal mining
1111-1112: anthracite mining
1211-1213: bituminous and lignite mining
1311-1389: oil and gas extraction
1411-1499: mining and quarrying of non-metallic materials except fuels
1521-1542: building construction
1611-1629: construction other than building
1711-1799: special trades - plumbing, heating, air conditioning, painting, electrical, masonry, carpentry, etc.
2011-2013: manufacturing - meat products
2016-2017: poultry and egg plants
2021-2026: dairy products
2032-2038: canned and preserved fruits and vegetables
2041-2048: grain mill products
2051-2052: bakery products
2061-2067: sugar and confectionary products
2074-2079: fats and oils
2082-2087: beverages - malt, wines, distilled, liquors, soft drinks, extracts, syrups
2091-2099: misc. food preparations
2111-2141: tobacco manufacturers
2211-2299: textile mill products
2311-2399: apparel - products from fabrics
2411-2499: lumber and wood products except furniture
2511-2599: furniture and fixtures
2611-2661: paper and allied products
2711-2795: printing, publishing, and allied industries
2812-2899: chemicals and allied products
2911-2999: petroleum refining and related products
3011-3079: rubber and misc. plastic products
3111-3199: leather and leather products
3211-3275: stone, clay, glass, and concrete products
3281: cut stone and stone products
3291-3299: abrasive, asbestos, and misc. non-metallic products
3312-3399: blast furnaces, steel works, and rolling and finishing mills
3411-3499: fabricated metal products, except machinery and transportation equipment
3511-3599: machinery except electrical
3612-3699: electrical and electronic machinery, equipment and supplies
3711-3799: transportation equipment - motor vehicles, trucks, buses, truck trailers, aircraft and parts, ships and ship repairing, boat building, repairing, railroad equipment, guided missiles and space vehicles, etc.
3811-3873: measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks
3911-3999: misc. manufacturing industries: jewelry, silverware, musical instruments, toys, amusements, sport and athletic goods

- III. Data needed (if not required for national system, noted as (NR)):
 - A. Facility data - name, address, hydrologic unit, congressional district (NR), parent company, type of facility, SIC code
 - B. Withdrawal/return data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into
 - 1. Water-quality data
 - a. availability
 - b. agency with information - name, address
 - c. type of treatment
 - 2. Permitting
 - a. permitting agency - name, address
 - b. permit provisions
 - c. permit restrictions during last year
 - 3. Water usage
 - a. reporting year
 - b. annual amount used
 - c. monthly amount used
 - d. day and amount of maximum use (NR)
 - e. day and amount of minimum use (NR)
 - f. average daily use (NR)
 - g. flow-measurement method, measurer, accuracy
 - C. Products produced - year, type, annual production (NR)

IV. Tentative data-collection approach: Computerized data covering a 5-year period are available from the Operation and Maintenance Division of DEP on industrial discharges of 20,000 gallons or more per day. Flows for industries discharging less than this amount are not metered, although water-quality data are available. Data would have to be obtained directly from industries which discharge into municipal waste-treatment plants. Withdrawal data would have to be acquired directly from the industries, probably through a stratified random statistical sample or by using production figures and industrial water-use averages.

- V. Information sources:
 - A. Maine Dept. of Environmental Protection (see above)
 State House Station 17
 Augusta, ME 04333
 - B. Paper Industry Information Office
 133 State Street
 Augusta, ME 04330

V. Information sources, cont.

the C. Industrial Division
Bureau of the Census
Washington, DC 20233

The Industrial Division of the Bureau of the Census has published

1977 Census of Manufacturers-Water Use in Manufacturing (U.S. Dept. of Commerce, 1981). This report presents statistics on the use of water by manufacturing establishments and includes data on the State level.

D. Maine State Development Office
193 State Street
Augusta, ME 04330

The State Development Office has published Facts about Industrial Maine (Maine State Development Office, 1980) which contains demographic data and information on manufacturing and resource industries.

E. Maine Office of Energy Resources
55 Capitol Street
Augusta, ME 04330

In 1979, the Maine Office of Energy Resources did a study of energy utilization in the pulp and paper industry. Information was collected on the number of kilowatt hours that were self-generated or purchased.

F. Industrial Development Council
of Maine
283 State Street
Augusta, ME 04330

G. Associated Industries of Maine
126 Sewall Street
Augusta, ME 04330

VI. References:

Maine State Development Office, 1980, Facts about industrial Maine, 45 p.
U.S. Department of Commerce, Bureau of the Census, 1981, Water use in manufacturing, MC77-SR-8, 150 p.

WATER USED FOR IRRIGATION

- I. Definition: Water distributed on lands for the purpose of growing crops and pastures or maintaining recreational lands such as parks and golf courses.

- II. SIC codes classified under this category:
 - 0111-0119: cash grains
 - 0131-0139: field crops except cash grains
 - 0161: vegetables and melons
 - 0171-0179: fruits and tree nuts
 - 0181-0189: horticultural specialties
 - 0191: general farm crops
 - 4971: irrigation systems
 - 7992: public golf courses

- III. Data needed (if not required for national system, noted as (NR)):
 - A. Facility data - name, address, hydrologic unit, congressional district (NR), parent company, type of facility, SIC code
 - B. Withdrawal/return data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into
 1. Water-quality data
 - a. availability
 - b. agency with information - name, address
 - c. type of treatment
 2. Water usage
 - a. reporting year
 - b. annual amount applied
 - c. monthly amount applied
 - d. flow-measurement method, measurer, accuracy
 3. Irrigation information
 - a. year of report
 - b. type of irrigation (NR)
 - c. frequency of irrigation (NR)
 - d. crop irrigated (NR)
 - e. acres irrigated

- IV. Tentative data-collection approach: Because the number of farmers using irrigation is relatively small, an inventory of individual farms will be made.

V. Information sources:

A. Soil Conservation Service
USDA Building - UMO
Orono, ME 04469

The SCS has put out some relevant publications which are listed in the references section. In addition, a county-level survey of acres and types of crops irrigated was done in 1978.

B. Division of Agriculture
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

The 1978 Census of Agriculture - Maine (U.S. Dept. of Commerce, 1981) contains data on the number of farms using irrigation and total number of irrigated acres. This information has also been compiled for individual counties. Volume 4 of the Census of Agriculture contains data on quantities of water used in irrigation.

C. Maine Potato Council
PO Box 632
Presque Isle, ME 04769

This organization has information on the amount of water used for irrigation of potato crops.

D. Maine Department of Agriculture
State Office Bldg, 6th Floor
Augusta, ME 04333

V. References:

U.S. Department of Agriculture, Soil Conservation Service, 1977, A profile of Maine's soil and water resources from the National Resource Inventories, 1977: Phase 1, land use and stream and hill erosion.
1981, Maine water management guide, part 2 - irrigation, 33 p.

U.S. Department of Commerce, Bureau of the Census, 1981, 1978 census of agriculture, v.1, part 19, state and county data for Maine, AC78-A-19, 137 p.

WATER USED FOR MINING

- I. Definition: Water used in connection with mining processes for producing fuels, metals, non-metals, etc.
- II. SIC codes classified under this category:
 - 1011-1099: metal mining
 - 1111-1112: anthracite mining
 - 1211-1213: bituminous coal and lignite mining
 - 1311-1389: crude petroleum and natural gas
 - 1411-1499: mining and quarrying of nonmetallic minerals except fuels
- III. Data needed (if not required for national system, noted as (NR)):
 - A. Facility data - name, address, hydrologic unit, congressional district (NR), parent company, type of facility, SIC code
 - B. Withdrawal/return data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into
 1. Water-quality data
 - a. availability
 - b. agency with information - name, address
 - c. type of treatment
 2. Permitting
 - a. permitting agency - name, address
 - b. permit provisions
 - c. permit restrictions during last year
 3. Water usage
 - a. reporting year
 - b. annual amount used
 - c. monthly amount used
 - d. day and amount of maximum use (NR)
 - e. day and amount of minimum use (NR)
 - f. average daily use (NR)
 - g. flow-measurement method, measurer, accuracy
 - C. Products produced - year, type, annual production (NR)
- IV. Tentative data-collection approach: Because water use in the mining industry is presently insignificant, this category will not be initially included in MWUDS.
- V. Information sources:
 - A. Maine Mineral Resources Association
 - PO Box 672
 - Bangor, ME 04401

WATER USED FOR ELECTRICAL POWER GENERATION

- I. Definition: Water used in the generation of electric power by fossil fuel plants, hydroelectric plants, and nuclear power plants.

Note: This category as described here actually is a combination of 3 NWUDS categories: Power-fossil fuel; Power-hydroelectric; and Power-nuclear. A fourth category, Power-geothermal, has been omitted because there are no commercial geothermal power plants in Maine.

- II. SIC codes classified under this category:

4911: establishments engaged in the generation, transmission and/or distribution of electric energy for sale

- III. Data needed (if not required for national system, noted as (NR)):

A. Facility data - DUNS number (NR), name, address, hydrologic unit, congressional district (NR), parent company, type of facility, SIC code

B. Withdrawal/return data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into

1. Water-quality data

- a. availability
- b. agency with information - name, address
- c. type of treatment
- d. NAWDEX identification

2. Permitting

- a. permitting agency - name, address
- b. permit reference number
- c. permit provisions
- d. permit restrictions during last year

3. Water usage

- a. reporting year
- b. annual amount used
- c. monthly amount used
- d. day and amount of maximum use (NR)
- e. day and amount of minimum use (NR)
- f. average daily use (NR)
- g. flow-measurement method, measurer, accuracy

C. Power generation data

1. power year
2. generating capacity
3. annual power produced
4. monthly power produced

IV. Tentative data-collection approach: According to "Facts about Industrial Maine" (Maine State Development Office, 1980), in 1978 Central Maine Power Company generated 74.9 percent of all electric power sold to Maine customers. The Bangor Hydroelectric Company generated 15.6 percent and Maine Public Service Company generated 5.5 percent. The remaining 4 percent was generated by 14 small independent companies serving local areas. Because only 17 companies are involved, an inventory of each will be done. To eliminate duplication of data-collection efforts, information available from monthly reports submitted to the Electric Division of the Maine Public Utilities Commission will not be requested on the inventory forms.

V. Information sources:

A. Electric Division
Maine Public Utilities Comm.
242 State Street
Augusta, ME 04333

Monthly and annual reports are submitted by power generators to PUC. These data will eventually be computerized. Data include number of kilowatt hours sold, information on water used for generation of steam power, hydraulic power, and internal combustion engine power. A list of generating stations, their locations, and rated capacities (KVA) is given.

B. Central Maine Power Company
Edison Drive
Augusta, ME 04336

C. Bangor Hydroelectric Company
33 State Street
Bangor, ME 04401

D. Maine Public Service Company
209 State Street
Presque Isle, ME 04769

E. Federal Energy Regulatory Comm.
825 North Capitol Street, NE
Washington, DC 20426

A recent study entitled "Potential for hydropower development at existing dams in New England" (New England River Basins Commission, 1980) includes an inventory of all existing dams in Maine. Information includes potential capacity and annual energy, gross head, site location, drainage area, and the economic feasibility of redevelopment. A second report, "Water, watts, and wilds: hydropower and competing uses in New England," analyzes the role of hydropower and contains information on the location of significant com-

V. Information sources, cont.

- peting uses and the most viable hydro sites. This information is displayed on Survey 1:500,000 maps. Both reports are available from the NTIS (National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161). NERBC's River Basin Overview Series contains information including installed capacity on existing generating stations of all types.
- F. Bureau of Agriculture and Rural Resources
Maine Dept. of Agriculture
State Office Bldg, 6th Floor
Augusta, ME 04333
- Registration has been required since 1976 for all dams. Information available includes dam location, ownership, description of dam, and inspection and permits.
- G. Div. of Licensing and Enforcement, Maine Dept. of Environmental Protection
State House Station 17
Augusta, ME 04333
- Hydroelectric power generation requires some cooling water. Discharge of cooling water is licensed by DEP and the amount discharged is reported to DEP. These data have been collected since 1976.
- H. Maine Office of Energy Resources
State House Station #53
Augusta, ME 04333
- The information compiled by this agency on 1415 dams in the State has been used as the data base for the New England River Basin Commission study (1980). The OER has current information on hydro-activities and projects in the State as well as records on water power as far back as 1906.
- I. U.S. Geological Survey
Water Resources Division
26 Ganneston Drive
Augusta, ME 04330
- The Survey collects discharge data at gaging stations throughout the State. This information is summarized in an annual report which is available through NTIS (National Technical Information Service).

V. Information sources, cont.

J. Maine Electric Utilities

- M - municipality
- D - district
- R - R.E.A. coop
- G - generating utility
- GW - wholesale only
- IOU - investor-owned utility

	<u>Number of meters in 1979</u>
Carrabassett Light & Power Company (IOU) North Anson, ME 04958 tel: (207) 635-2562	505
Bangor Hydroelectric Company (G, IOU) 33 State Street Bangor, ME 04401 tel: (207) 945-5621	91,225
Central Maine Power Company (G, IOU) Edison Drive Augusta, ME 04336 tel: (207) 623-3521	375,300
Eastern Maine Electric Cooperative, Inc. (R) PO Box 425 Calais, ME 04619 tel: (207) 454-7555	9,998
Fox Islands Electric Cooperative, Inc. (R) Vinalhaven, ME 04863 tel: (207) 863-4636	1,267
Houlton Water Company (Electric Dept) (M) Houlton, ME 04730 tel: (207) 532-2259	4,456
Isle au Haut Electric Power Co. (Coop, G) Isle au Haut, ME 04645 tel: (207) 367-2468 (relay message, Leona Aldrich)	72
Kennebunk Light & Power District (D) 36 Water Street Kennebunk, ME 04043 tel: (207) 985-3311, 3321	2,959
Lubec Water & Electric District (D) Lubec, ME 04652 tel: (207) 733-5583	1,180
Madison Electric Works Department (M) 26 Weston Avenue Madison, ME 04959 tel: (207) 696-4401	1,964
Maine Electric Power Company (GW, IOU) Edison Drive Augusta, ME 04336 tel: (207) 623-3521	Unknown
Maine Public Service Company (G, IOU) Presque Isle, ME 04769 tel: (207) 768-5811	32,024

V. Information sources, cont.

	<u>Number of meters in 1979</u>
Maine Yankee Atomic Power Company (GW, IOU) Edison Drive Augusta, ME 04336 tel: (207) 623-3521	Unknown
Matinicus Plantation Electric Company (M, G) Matinicus, ME 04851 tel: (207) 366-3443	91
Public Service Company of NH (G, IOU) PO Box 330 Manchester, NH 03105 tel: (603) 436-5660	6,478
Stonington & Deer Isle Power Company (IOU) Sunset, ME 04683 tel: (207) 348-6032	1,873
Swans Island Electric Cooperative, Inc. (R) PO Box 8 Minturn, ME 04659 tel: (207) 526-2658	347
Union River Electric Cooperative, Inc. (R) Aurora, ME 04408 tel: (207) 584-3200	1,339
Van Buren Light & Power District (M) Van Buren, ME 04785 tel: (207) 868-3321	1,486
Total	532,264

VI. References:

- Maine State Development Office, 1980, Facts about industrial Maine, 45 p.
- New England River Basins Commission, 1980, Potential for hydropower development at existing dams in New England, v.4: State of Maine, 212 p.
- U.S. Geological Survey, 1982, Water resources data for Maine, water year 1981: Augusta, Maine, 212 p.

WATER USED FOR PUBLIC WASTEWATER TREATMENT

- I. Definition: This category includes waste-water treatment plant use where sewage is collected from 25 or more sources and then processed and treated to improve its quality subsequent to its use in other categories.
- II. SIC codes classified under this category:
4952: sewage systems
- III. Data needed (if not required for national system, noted as (NR)):
 - A. Facility data - DUNS number (NR), name, address, hydrologic unit, congressional district (NR), parent company, type of facility, SIC code
 - B. Withdrawal/return data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into
 1. Water-quality data
 - a. availability
 - b. agency with information - name, address
 - c. type of treatment
 2. Permitting
 - a. permitting agency - name, address
 - b. permit reference number
 - c. permit provisions
 - d. permit restrictions during last year
 3. Water usage
 - a. reporting year
 - b. annual amount used
 - c. monthly amount used
 - d. day and amount of maximum use (NR)
 - e. day and amount of minimum use (NR)
 - f. average daily use (NR)
 - g. flow-measurement method, measurer, accuracy
- IV. Tentative data-collection approach: The DEP maintains a master list of the 95 public sewage-treatment facilities in Maine. Available information from DEP will be supplemented with inventories of the largest treatment plants. The remaining plants will be sampled using statistical techniques.

- V. Information sources:
A. Maine Dept. of Environmental
Protection
State House Station 17
Augusta, ME 04333

A master list of operating wastewater treatment facilities is maintained by the Division of Operation and Maintenance. Information is computerized and includes: Discharge, designed flow capacity of the facility, type of sewer supplying the system, population served, and name and quality classification of the receiving water. Licensing permits for spray irrigation and seepage lagoons are required by DEP. The available data include name and location of the facility, approximate annual discharge based on the system design, and type of discharge.

WATER USED FOR PUBLIC WATER SUPPLIES

- I. Definition: Water used by a public supplier for the purpose of supplying 25 or more water users.
- II. SIC codes classified under this category:
 - 4941: water supply
 - 4961: public stream supply
- III. Data needed (if not required for national system, noted as (NR)):
 - A. Facility data - name, address, hydrologic unit, congressional district (NR), parent company, type of facility, SIC code
 - B. Withdrawal/return data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into
 1. Water-quality data
 - a. availability
 - b. agency with information - name, address
 - c. type of treatment
 2. Permitting
 - a. permitting agency - name, address
 - b. permit reference number
 - c. permit provisions
 - d. permit restrictions during last year
 3. Water usage
 - a. reporting year
 - b. annual amount used
 - c. monthly amount used
 - d. day and amount of maximum use (NR)
 - e. day and amount of minimum use (NR)
 - f. average daily use (NR)
 - g. flow-measurement method, measurer, accuracy
 - C. Services - types and numbers of users, total number of metered connections served
- IV. Tentative data-collection approach: Maine water utilities with annual revenues greater than \$3000 are required to submit annual reports to the Public Utilities Commission. Information in these reports includes water sources; gallons of water produced, purchased, and pumped; system water losses; and a financial statement. The PUC plans to computerize some of these data. Annual reports are retained indefinitely and go back to the formation of the particular utility or the inception of the PUC (1915), whichever is later. Much of the data required by NWUDS is provided in these annual reports and in annual summaries of public water supply submitted to the Department of Human Services. The remaining information that is required will be obtained using questionnaires mailed to each utility.

V. Information sources:

A. Maine Public Utilities Comm.
242 State Street
Augusta, ME 04333

The PUC receives annual reports from municipal water suppliers, as described above.

B. Div. of Health Engineering
Maine Dept. of Human Services
221 State Street
Augusta, ME 04333

Annual summaries of public water supply are submitted by each utility. They include average daily flows, daily flow, number of services, chemical treatment, and storage facilities. Water-quality data are available for all utilities. Testing includes radiological, bacteriological, organic, and inorganic parameters. Bacteriological tests are made monthly. Concentrations of inorganic parameters are measured annually. Pesticides and organics levels are tested every 4 years.

C. Maine Water Utilities Assn.
236 Foreside Road
Falmouth, ME 04605

D. Maine Rural Water Assn.
327 Water Street
Gardiner, ME 04345

E. Greater Portland Council of Governments
331 Veranda Street
Portland, ME 04103

This agency published a report (Edwards, 1977) entitled "Water Supply in the Greater Portland Area." The report describes public and private water-supply systems in the Cumberland planning district. Estimates of current and future water demand and a discussion of existing and potential problems are included.

F. Androscoggin Valley Regional Planning Commission
70 Court Street
Auburn, ME 04210

This agency conducted water-supply inventories in Oxford and Franklin counties in 1980 and 1981.

G. Maine Geological Survey
Division of Hydrogeology
State House Station 22
Augusta, ME 04333

As part of the Coastal Zone Management Program, a report by Caswell and Ludwig (1978) was compiled which included information on 133 coastal towns, some of which were using municipal supply systems.

VI. References:

Caswell, W. B., and Ludwig, Schuyler, 1978, Maine coastal area water supply and demand: a qualitative analysis of municipal and rural water supply conditions for the period 1976-1986 in Maine's coastal area: State Planning Office, Augusta, Maine, 244 p.

Edwards, John, 1977, Water supply in the greater Portland area: Greater Portland Council of Governments, Portland, Maine, 60 p.

CHAPTER 2.

ADDITIONAL WATER-USE CATEGORIES OF THE MAINE WATER-USE DATA SYSTEM



The categories discussed in this chapter are not currently included in the National Water Use Data System (NWUDS) computer files.

Because these categories represent significant water use in the State of Maine, they will probably be included in the State data base (MWUDS).

WATER USED FOR AQUACULTURE

- I. Definition: The use of water in governmental, commercial, and industrial controlled growth of aquatic species.
- II. SIC codes classified under this category:
 - 0279: animal specialties not elsewhere classified
 - 0912-0971: commercial fishing, fish hatcheries, preserves, game propagation
 - 4423-4469: use of bays, lakes, rivers, and canals to farm fish, shellfish, etc.
- III. Data needed:
 - A. Facility data - name, address, hydrologic unit, congressional district, parent company, type of facility, SIC code
 - B. Withdrawal/return data - location of withdrawal point, location of discharge point, annual and monthly amount of water delivered to and released from facility, source of water withdrawn, body of water discharged into
 1. Water-quality data
 - a. availability
 - b. agency with information - name, address
 - c. type of treatment
 2. Permitting
 - a. permitting agency - name, address
 - b. permit provisions
 - c. permit restrictions during last year
 3. Water usage
 - a. reporting year
 - b. annual amount used
 - c. monthly amount used
 - d. day and amount of maximum use
 - e. day and amount of minimum use
 - f. average daily use
 - g. flow-measurement method, measurer, accuracy
 - C. Products Produced - year, type, annual production
- IV. Tentative data-collection approach: Data will be collected from the organizations listed below. Statistical sampling techniques will be used as necessary.

V. Information sources:

A. Maine Dept. of Inland Fisheries and Wildlife
284 State Street
Augusta, ME 04333

The Hatchery Division has monthly fish hatchery production reports that include species of fish raised, daily water temperatures, and average monthly water flows through various rearing units. Water-use data have been collected at these facilities for many years as part of fish-production data.

B. The Fisheries Consulting Group
23 Brendon Street
So. Portland, ME 04106

C. Coastal Enterprises, Inc.
141 Front Street
Bath, ME 04530

Names and addresses of aquaculture companies are available from this company, a nonprofit community development corporation serving mid-coastal Maine.

D. Maine Dept. of Marine Resources
Hallowell Annex
Hallowell, ME 04333

A list of lobster pounds is available from this agency.

E. Maine Lobsterman's Assn., Inc.
Stonington, ME 04681

F. Maine Aquaculture Assn.
West Southport, ME 04576

WATER USED IN NAVIGATION AND FLOOD CONTROL

- I. Definition: Use of surface bodies of water as an avenue of commercial transportation.
- II. SIC codes classified under this category:
 - 4441: establishments primarily engaged in transporting freight or passengers on all inland waterways
 - 4459: establishments primarily engaged in furnishing local water transportation such as excursion boats, sightseeing boats, and water taxis
- III. Data needed:
 - A. Facility Data - name, address, hydrologic unit, congressional district, type of facility, SIC code
 - B. Navigation - navigable minimum flow, navigable minimum depth, maximum size ships
 1. Management agency - name, address
 2. Point of entry
 3. Point of departure
 4. Shipping
 - a. annual tonnage
 - b. principal products
 - c. annual number of ships
 - d. average size of ships
- IV. Tentative Data Collection Approach: The U.S. Army Corps of Engineers may be able to provide most of the required data. The rest will probably be obtained using statistical sampling methods.
- V. Information Sources:
 - A. New England River Basins Comm.
141 Milk Street
Boston, MA 02109
(office terminated 9/30/81 due to federal budget cuts)

NERBC has published a series of river-basin studies for Maine. Information on navigation and flood control is included. NERBC completed its Ports and Harbors Program designed to improve the overall effectiveness of the region's harbors. Regional economic and technological trends, cargo flows, port facilities, and port and harbor institutions have been analyzed and strategies have been identified to improve the regional situation.
 - B. Bureau of Waterways
Maine Dept. of Transportation
MDOT Bldg - Child Street
Augusta, ME 04333

V. Information sources-cont.

C. Division Engineer, New England
Division, U.S. Army Corps of
Engineers.
424 Trapelo Road

The New England Division, COE, is concerned with water resources development in Maine. Project areas related to water use include basinwide and regional planning, navigation, flood control, hydroelectric power, water supply, and recreation and conservation.

Basinwide and regional planning studies can encompass navigation, flood control, shore and bank protection, domestic and industrial water supply, flood plain management, watershed management, hydroelectric power generation, low-flow augmentation, water-quality improvement, recreation, and fish and wildlife conservation and enhancement. In addition to individual river basin studies, regional investigations are also undertaken.

Navigation works include deepening of harbors and inland waterways and channel development. These river and harbor improvements are intended to develop commerce, increase utilization of waterways, and reduce navigation difficulties and hazards.

Flood control measures sometimes involve dikes, floodwalls, conduits and channel improvements. Dams, reservoirs, and flood plain management sometimes form the most practical and economical means of protecting long stretches of river valley.

For details on projects in specific river basins, a copy of the publication listed below can be requested from the Division Engineer.

VI. References:

U.S. Army Corps of Engineers, 1981, Water resources development in Maine 1981: New England Division, Waltham, MA, 125 p.

WATER USED FOR RECREATION

- I. Definition: Use of bodies of water in the pursuit of leisure and enjoyment.
- II. SIC codes classified under this category:
 - 4423-4469: water recreation on bays, lakes, rivers, and canals
 - 7032-7033: camps, trailer parks, and camp sites
 - 7996-7999: amusement parks, sports and recreation clubs, etc.
- III. Data needed:
 - A. Facility Data - name, address, hydrologic unit, longitude/latitude
 - B. Water Body - name, required minimum flow, surface area, ownership
 - C. Usage - number of monthly visits, number of annual visits, income
 - D. Water Quality Data - availability, agency with information
- IV. Tentative data collection approach: Data will be collected from State and Federal agencies. Computerized data from the Bureau of Parks and Recreation and Maine Department of Inland Fisheries and Wildlife will be accessed directly.
- V. Information sources:
 - A. Bureau of Parks and Recreation
Maine Dept. of Conservation
State House Station 19
Augusta, ME 04333

BPR is working with the U.S. Dept. of Interior in a study of Maine's rivers. Information valuable to MWUDS would include recreational uses of segments of major rivers, water quality, manmade hydrologic features, shoreland use, and visual and scenic characteristics. This information will be computerized. BPR also keeps records of annual and monthly visits to State parks as well as a list of State-sponsored and State-assisted boat launching sites.
 - B. Maine Dept. Inland Fisheries and Wildlife
284 State Street
Augusta, ME 04333

IF&W has data in several programs that would be applicable to MWUDS including: Lake and Stream Creel Census, an automated system which contains raw angler use and harvest data (began 1977); Fisheries Questionnaire, an automated system of use and harvest data (last done 1980); Minimum Flow and Impoundment Drawdown Agreements, nonautomated; and Hatchery Water Supplies, a non-automated file which includes the temperatures, flows, and discharges of water used in hatching operations.

V. Information Sources-cont.

C. U.S. Fish and Wildlife Service
New England Area Office
Div. of Ecological Services
PO Box 1518
Concord, NH 03301

USF&W provides federal leadership to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the people. This agency uses water data to formulate recommendations to federal project planners or permitting agencies for protecting fish and wildlife habitats.

D. U.S. Geological Survey
Water Resources Division
26 Ganneston Drive
Augusta, ME 04330

The Survey collects streamflow data at 52 gaging stations and observes lake levels at 17 lakes and reservoirs. The Survey publishes an annual report which summarizes these data. This information is of interest to boating enthusiasts.

VI. References:

U.S. Geological Survey, 1982, Water resources data for Maine, water year 1981: Augusta, Maine, 212 p.

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- Executive Office of the President, Office of Management and Budget, 1972, Standard industrial classification manual: U.S. Government Printing Office, Washington, DC, 649 p.
- Lanctot, E. M., 1980, Availability of data required by NWUDS from Maine government agencies: Maine Geological Survey, Augusta, Maine, unpublished report, 28 p.
- Library of Congress, 1980, State and national water-use trends to the year 2000: A report prepared by the Congressional Research Service of the Library of Congress for the Committee on Environment and Public Works - U.S. Senate: U.S. Government Printing Office, Washington, D.C., serial no. 96-12, 297 p.
- Maine State Planning Office and New England River Basins Commission, 1975, Management of water and related resources in the state of Maine: summary report: Augusta, Maine, 202 p.
- Solley, W.B., Chase, E.B., and Mann, W.B., IV, 1983, Estimated Water Use in the United States in 1980, U.W. Geological Survey Circular 1001, 115 p. (in press).
- Ten Broeck, Craig, 1980, Assessment of ground water quantity in Maine: Ground Water Protection Commission, Ground Water Quantity Subcommittee, 30 p.
- Tower Publishing Co., 1980, Maine Register: 1980-81: Portland, Maine, 1310 p.
- _____ 1980, 1980 Maine marketing directory: Portland, Maine, 511 p.