STATE OF VERMONT

1984 WATER QUALITY ASSESSMENT

305(b) REPORT

Brewster River near Jeffersonville - Photo credit: Vermont Travel Division

AGENCY OF ENVIRONMENTAL CONSERVATION

DEPARTMENT OF WATER RESOURCES
AND ENVIRONMENTAL ENGINEERING

WATER QUALITY DIVISION

MONTPELIER, VERMONT

State of Vermont

AGENCY OF ENVIRONMENTAL CONSERVATION

Department of Fish and Game
Department of Forests, Parks, and Recreation
Department of Water Resources & Environmental Engineering
Natural Resources Conservation Council

Montpelier, Vermont 05602
Department of Water Resources
and
Environmental Engineering

June 22, 1984

To Persons Interested in Vermont's Water Resources:

We are pleased to present to you Vermont's "1984 Water Quality Assessment". Section 305(b) of the Clean Water Act requires each state to submit a biennial report to the Federal Environmental Protection Agency (EPA) describing the quality of its navigable waters and the progress made in improving the State's water quality in the last two years.

The assessment points out that Vermont has continued to take positive steps towards achieving the desirable goal of total fishable/swimmable waters. We are proud to report that, on the basis of our current water quality assessment, eight-five percent of Vermont's 1126 segmented river miles are presently in compliance with all applicable water quality standards.

The report suggests that serious potential problems still remain, however, and must be addressed if Vermont's high water quality is to be maintained for future generations. We would appreciate your helping us to obtain our goal of total fishable/swimmable waters by becoming involved with water quality issues. The first thing you can do is to familiarize yourself with what the Department of Water Resources and Environmental Engineering is doing by reading this report. We would be interested in hearing your comments about the report by writing to us. Thank you for your support and interest in protecting Vermont's water resources.

Sincerely,

John R. Ponsetto
Commissioner

JRP/JJM/rh

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INTRODUCTION

Section 305(b) of the Clean Water Act requires each state to submit a biennial report to the Environmental Protection Agency (EPA) describing the quality of its navigable waters. EPA in turn, is required to transmit the State reports to Congress, along with a summary of these reports describing the quality of the nation's waters.

This 305(b) report will be useful as a tool in the water quality management program, and in the development of the continuing planning process and annual work programs. By analyzing information to identify data quality and confidence, program successes or failures, site specific problem areas, emerging problems, information gaps and the reoccurrence of old problems, the nature of water quality-based program decisions will be improved.

This "1984 Water Quality Assessment" contains a collection of facts dealing with what is happening to the State's surface and ground waters. After assimilating these facts, one should have a fairly good idea of Vermont's overall water quality. To assist the reader, an executive summary may be found on page vi. Also, an assessment of the State's water quality from the point of view of the Department of Water Resources and Environmental Engineering has been prepared and is located beginning on page 74.

The report also provides the reader with an update of the progress made and problems encountered in carrying out the goal of improving the quality of the State's waters since the last (1982) assessment. Articulated within the report are the activities of the various Water Resources and Environmental Engineering programs including: Facilities Planning, the Permit Program, Planning and Management, Monitoring and Laboratory Services, Lakes and Ponds Management, Groundwater, Hydropower, Assimilative Capacity/Wasteload Allocation, Wetlands, Hazardous Materials and Nonpoint Sources.

The report includes an analysis of the extent to which the State's waters provide for healthy fish and wildlife populations and recreation, an analysis of the extent to which pollution control actions have achieved this level of water quality (see Summary of Water Quality for Segmented River Miles, Table 19). Also included are recommendations for needed additional actions (see "Water Resources Planning Need", page 14) and a description of the nature and extent of nonpoint sources of pollution and recommendations for their control.

EXECUTIVE SUMMARY

Vermont has now achieved Class B standards (fishable/swimmable) or better in 85% of its segmented stream miles. It should be noted that Vermont has 1199 miles of non-segmented streams with drainage area greater than 10 square miles and that all the non-segmented stream miles are meeting Class B standards. Progress toward a higher percentage of Class B or better has slowed in the last two years or so because it is becoming more expensive to achieve high water quality. Recent efforts have been concentrated toward upgrading the larger community treatment plants, which frequently cost upwards of $10 million or more which is the total amount of Federal and State appropriations for one year. Complicating the issue in the future will be the reductions in State and Federal grants, which will increase the local share.

Three smaller municipalities currently discharging untreated wastes have received construction funding and will have treatment plants under construction during the summer of 1984. Only 2 municipalities remain with collection systems which discharge untreated sewage, and 12 communities with untreated discharges from scattered individual sources.

Increased operations and maintenance emphasis will be needed to provide technical assistance to municipal facility operators and local officials to operate treatment plants at optimum efficiency in light of increasing operation and energy costs. Also, technical assistance is needed by municipal plant operators to maintain effluent limits under the stress of increasing flows of plants constructed 10-15 years ago and approaching maximum design capacity with no Federal or State funds for expansion or upgrading likely to be available.

A necessary part of Vermont's clean water program is compliance monitoring to ensure that permitted dischargers are in compliance with their permits. Due to staff limitations, compliance enforcement actions are limited to one or two per year, and are being directed toward minor dischargers, as major dischargers are generally in compliance. This is so, due to their greater financial resources which are used to hire full-time plant operators. Of the total 153 NPDES permittees with monitoring requirements that were monitored during the period July 1, 1982, through June 30, 1983, 133 were found to be in compliance, or 87% of those monitored.

The Water Quality Standards are undergoing major revision and are presently being reviewed by the Water Resources Board and by this Department. It is a top priority of this Agency to review and revise the standards by June, 1984.

Under the 205(j) planning agenda, basin plans are being updated. One basin planning priority is to update the basin

plans where rapid ski area development is occurring. Many of the larger ski areas are developing housing facilities in order to create destination resorts. This development will have major impacts on Vermont's water resources. A draft of the first basin plan, the Upper Ottauquechee, has been completed, and now must be presented at public hearings before it can be finalized and adopted. A time schedule of five years has been preliminarily set to complete needed basin plan updates.

A proposed Disinfection Policy has been drafted which will limit and regulate the amounts of chlorine discharged from the State's wastewater treatment facilities. It has been found that very small amounts of chlorine have adverse effects on aquatic biota due to its high toxicity. Review of the proposed policy and final acceptance by the Secretary of the Agency of Environmental Conservation must take place before the policy may be implemented.

A new program, the Ambient Biomonitoring Program, has recently been established by the Department. This program was established to monitor the aquatic biota of rivers which are undergoing changes in water quality from runoff due to changes in land use. This is the first such monitoring program of its kind in Vermont. Historically, most all river monitoring has been directed toward impacts caused by point source discharges. Ultimately, the data collected by the Ambient Biomonitoring Program will assist in detecting incremental changes and use impairments on studied watercourses and in the establishment of effluent limits in water quality-based segments.

Presently, 36 of Vermont's lakes are being monitored to determine what damages are occurring in their aquatic ecosystems as a result of acid precipitation. A total of 6 lakes in the southern Green Mountains have been found to be critically acidified. Two of these lakes have no fish in them and several others have only one or two species surviving. Monitoring has determined that 82 lakes representing more than 18% of the surface water acreage show a high potential, as determined by alkalinity classification, to suffer acidification damage or are already damaged to some extent by acidic conditions.

As part of the Lakes and Ponds Management Program, phosphorus data are collected from approximately 70 lakes each spring, shortly after ice-out. Data from 220 lakes, collected since 1977 (but not necessarily every year), indicate that 25 lakes are eutrophic (phosphorus concentrations greater than 0.020 mg/l P); 79 lakes are mesotrophic (0.010 mg/l P to o.020 mg/l P); and 116 lakes are oligotrophic (less than 0.010 mg/l P).

Field work and data collection are complete for 222 community groundwater systems, in addition to the already completed mapping of municipal groundwater systems. Knowing

where the groundwater systems are located enables the Department to designate Aquifer Protection Areas (APAs), which help to protect water supplies through zoning and other legal devices. Protection of public water supplies is also being accomplished through public information and education means.

The rate of development of Vermont's rivers and streams for hydropower has begun to decrease as many of the sites have already been developed, are being developed, or are under Federal Energy Regulatory Commission license. Also, the new rate which public utilities have to pay the small developer is not as favorable as prospective developers had hoped it would be. Nevertheless, attractive sites continue to be developed, which may impact adversely on the water quality, aesthetics, fishery, and other forms of recreation.

Various efforts have been made by this Agency to protect environmentally significant sites, other than by reviewing development proposals for 401 permits (water quality) on a case-by-case basis. In an effort to protect important fisheries at existing and proposed hydroelectric projects, low flow requirements have been determined at eight sites. This relatively new method of determining low flow requirements of various fish species, utilizing stream cross sections to evaluate depths and flows, has successfully protected the fishery at these eight sites. Also, a study of Vermont's waterfalls and gorges has been completed by a private contractor. As a supplement to this study, a contract has recently been negotiated to identify Vermont's significant river rapids.

A statewide screening for assimilative capacity problem areas was conducted during 1983. The screening indicated that additional data needs to be collected on the Upper Ottauquechee River and modeling needs to be completed on the Waterbury and Hoosic Rivers and Stevens Brook. Assimilative capacity studies should be performed on the Castleton and Poultney River and actual instream reaeration rates should be obtained for the Randolph and St. Johnsbury treatment plant effluent receiving water bodies.

Lacking formal legislative authority to carry out the wetland program, the Department utilizes existing laws and programs at the State and local levels, purchase of development rights, or fee simple acquisition. The protection strategy also focuses on technical assistance and education. Vermont continues to gradually lose its wetland resources through road, housing, marina and other construction and filling projects. Over 350 acres of wetlands on farms have been filled in, due to the loss of incentive funds to farmers from the Department of Agriculture's Water Bank Program.

FACILITIES PLANNING

(A) Municipal

The discharge of domestic sanitary waste by municipalities continues to be a major pollution problem in Vermont. All facilities constructed since 1965 have been secondary or off-stream disposal. There remain 14 municipalities which are discharging without treatment and which require a central collection and treatment/disposal system and 20 municipalities which now operate primary or other treatment plants requiring upgrade to secondary or addition of phosphorus removal facilities. Facilities planning is under way or completed in all of these municipalities and facilities design is under way in five municipalities. Nine municipalities have projects under construction at this time. Table 1 is a summary of municipal wastewater treatment facilities in Vermont as of January, 1984. Appendix A is an inventory of all permitted discharges including those for municipal facilities. Location of the municipal facilities is shown in Figure 1.

TABLE 1

Summary of Municipal Waste Treatment Facilities as of January 1984

a)	Number of municipalities requiring central sewage collection and treatment	102
b)	Number of municipalities served by primary treatment	13
c)	Number of municipalities served by secondary treatment	66
d)	Number of municipalities served by off-stream disposal	6
e)	Number of municipalities served by no treatment	14
f)	Number of major treatment facilities	21
g)	Number of minor treatment facilities	69
h)	Number of facilities requiring phosphorus removal	14
i)	Number of facilities with phosphorus removal capability on line or under construction	5

Major municipal facilities are those with a rated capacity of 1 mgd or more.
Minor municipal facilities have a capacity rated at less than 1 mgd.

Considerable progress has been made during the past several years towards reducing the number of municipalities discharging raw sewage from municipal collection systems. Three municipalities currently discharging untreated waste have received construction funding and will be under construction during the summer of 1984. Only two municipalities remain with collection systems which discharge untreated sewage and 12 communities with untreated discharges from scattered individual sources.

The December 1981 amendments to the Federal Clean Water Act substantially reduce the federal grant funding available to municipalities by reductions in the grant percentage from 75 to 55 percent, and by elimination of eligible categories of work, which include reserve capacity and collection sewers. The reduced federal funding increases the already high user costs in small towns requiring both initial collection sewers and an original treatment plant. The funding gap created cannot be totally made up by the increased state grant funding without dedicating excessive portions of the State capital budget to grant funding. Increases in local funding will drive already high user costs higher. Vermont is attempting to adjust its pollution control grant program to provide some increased State grant funding, some increased local funding and a reexamination of high user cost projects leading to phased construction. This effort may be undertaken in conjunction with implementing the National Municipal Policy which anticipates all municipalities in conformance with requirements of the Act by 1988. Successful implementation will require amendment of EPA's current phased and segmenting grant funding regulation to permit grant funding of phased projects to reduce initially high user costs.

The Vermont Legislature mandated the removal of phosphorus from domestic laundry detergents in 1977. This action was expected to reduce the phosphorus content of domestic sewage by nearly one-half, an expectation which has been generally verified by sampling municipal wastewater pollution control facilities throughout the State. The Legislature simultaneously mandated phosphorus removal from municipal discharges to Lake Champlain and other waters designated by the Secretary in drainage basin management plans. Twenty plants have been so designated; five are now fully operational and one other is under construction; all others are actively engaged in Step I or Step II planning. This state objective is expected to be achieved by 1987.

The State amended its Water Pollution Control Priority System in 1981 to focus its funding efforts on defined water quality limited stream segments. This has resulted in several large primary treatment plant upgrades moving to the top of the priority list. Due to the size of these projects, it is only possible to fund approximately one project per year from Vermont's limited federal appropriation. Progress is being made on these projects with three now under construction and two more

anticipated to begin construction in FY84. Funding of these projects has delayed the phosphorus removal program.

Vermont's continued exercise of construction grants management delegation authority will require total commitment of the authorized 205(g) set aside and, in addition, a contribution of State general fund monies. Recent amendments to the Clean Water Act, and ongoing efforts by EPA to reduce the complexity of grants administration, will enable the construction grants management activity to be totally supported within the 205(g) set aside at least for the next two years.

Vermont, unlike most states, emphasizes the oversight of minor facilities rather than major ones. This is because major facilities in Vermont generally exhibit the most stable and dependable achievement of required effluent limits because major facilities serve a large enough population base to afford a full-time operator of competency levels generally above that found in small towns utilizing only part-time operators. The great majority of Vermont treatment plants are of the minor category and it is in this area where operations and maintenance surveillance will continue to be focused.

The future operations and maintenance emphasis must expand upon the scope and detail of technical assistance offered to municipal facility operators and local officials who are ultimately responsible for providing budget resources necessary to carry out a program of corrective measures. Operation costs continue to rise with energy costs and local officials will need assistance to operate treatment plants at optimum efficiency and minimum energy costs. Facilities constructed 10 and 15 years ago are or will shortly be reaching their design life expectancy with little likelihood of financial assistance for capacity enlargement. Assistance to local officials is needed here in terms of greater in-depth technical evaluations leading toward means of maintaining effluent limits under the stress of increasing flows. The assistance should also provide sewer system/connection/flow management advice in addition to in-plant technical changes, to assure compliance with effluent limits into the future. Vermont has created a section comprised of two engineers to provide engineering assistance to municipalities facing these problems.

Operator training is no longer centralized under the control of the Rutland Regional Vocational Training Center. Currently, Department-sponsored classroom training includes topical courses/seminars and at least one basic training course per year. This is supplemented by self-study courses and New England Regional Wastewater Institute courses. Individualized, on-site training in laboratory procedures is underway and will occur at all municipal facilities under a Section 104 grant. New England Regional Wastewater Institute has performed 18 low level diagnostic evaluations during 1983 and will perform follow-up

training at 10 facilities in 1984. The Engineering Division Operations and Maintenance Section will perform comprehensive on-site problem identification and training at 6 plants during 1984.

(B) Industrial

Substantial progress has been made by the State in cataloging industrial discharges and their impact on receiving water quality and on municipal treatment facilities where the industrial discharge is to a municipal facility. The majority of industrial discharges in Vermont presently employ Best Practicable Treatment Technology.

During the reporting period, most industrial discharges were surveyed in the field to verify actual processes and discharges in relationship to information on file with the Department of Water Resources and Environmental Engineering. The Department has attained a sound technical understanding of the manufacturing and treatment process of all but one industrial type in the State. Operations within the State are such industrial processes as metal working and finishing plants, cheese and dairy products manufacturer, specialty and paper product suppliers, electrical components, leather tanning and paper making. The latter industry type is presently being researched by the Department.

In fiscal year 1981, the specialty and paper product suppliers were brought into compliance. In Fiscal Year 1982, a major effort was made to bring the cheese and dairy product manufacturers into compliance. Actions have been initiated to correct two unsolved problems with two major cheese manufacturers discharging to two small municipal treatment facilities. One manufacturer has constructed pretreatment facilities but is not meeting the terms of the agreement. The other manufacturer remains in litigation regarding the necessity of pretreatment. Preliminary contacts have been made with a third manufacturer, also discharging to a small town municipal treatment plant, in an effort to cause construction of requisite pretreatment facilities. All of these actions are undertaken and regulated pursuant to the pretreatment permit authority inherent to Vermont's permit program.

The cheese whey drying plant in Georgia, Vermont became operational in the summer of 1980 and processes the cheese whey from most of the cheese manufacturing plants in Vermont. The Georgia plant has substantially reduced the land application of cheese whey with its attendant odors and nuisance. Plans are currently being developed to expand operations at the Georgia plant to service other dairy oriented industries to be located at the Georgia Industrial Park.

Figure 2 shows the location of the major industrial facilities presently discharging to waters of the State. A major industrial discharge, as defined by EPA, is one whose point total is 80 or greater*, or any other discharge the State finds significant. The total permit rating is the sum of the points as determined from the following parameters (1) Toxic Pollutant Group; (2) Wastewater Flow/Stream Flow Ratio; (3) Traditional Pollutants (BOD, COD, TSS, Ammonia and Temperature); (4) Potential Public Health Impact; and (5) Water Quality Factors. For a complete inventory of all discharges, please refer to Appendix A.

*If one is interested in further details of how the total rating points are determined, contact the Permits Division of the Department of Water Resources and Environmental Engineering. Ask for "NPDES INDUSTRIAL PERMIT RATING WORK SHEET."

PERMIT PROGRAM

Vermont executed a memorandum of agreement with the U.S. Environmental Protection Agency on March 11, 1974 in which the Vermont Permit Program was accepted as equivalent to the National Pollutant Discharge Elimination System (NPDES) program defined in Section 402 of Public Law 92-500. Under that program, permits were issued to all qualifying municipal and non-municipal dischargers, and during 1977, Enforcement Compliance Schedule Letters (ECSL) were issued to those qualifying permittees unable to achieve secondary treatment by the statutory objective of July 1, 1977. Passage of P.L. 95-217 authorized the selective extensions of permit schedules for qualifying permittees up to July 1, 1983 for achievement of secondary treatment under Section 301(i) and the issuance of administrative orders under Section 505 to those permittees unable to achieve secondary treatment by that date. Vermont completed action on all permittees in these categories in the spring of 1979.

Subsequent passage of P.L. 97-117 extended the compliance deadline for achievement of secondary treatment from July 1, 1983, to July 1, 1988. Reissuance and implementation of Section 301(i) permits is currently being incorporated into the National Municipal Strategy Plan for the State of Vermont, now in preparation.

Enactment of P.L. 95-217 required that the existing regulation and memorandum of agreement (MOA) be updated to reflect new requirements of the act, and that minor changes be made to Vermont statutes to gain conformity between State and Federal law. Those statutory changes, which specifically give Vermont permit issuing authority over Federal installations in the State, have received positive action from the Vermont Legislature. The regulation and MOA have been revised and are presently on "hold" by the Attorney General. All available emphasis and manpower in the Permits Section has shifted toward the enforcement of permit violations causing significant impacts on either the receiving waters or municipal treatment facilities.

Amendments to Vermont's permit enabling law 10 V.S.A., Chapter 47, enacted in April, 1973, provided for issuance of pretreatment permits to those discharges to publicly-owned treatment works (POTW's) whose waste would interfere with the treatment process, pass through without treatment, or otherwise be injurious to receiving water quality. The Clean Water Act of 1977 carried similar authority and provided that a State's pretreatment permit program consistent with P.L. 95-217 could be accepted in lieu of a federally-operated program. The pretreatment portion of the Water Pollution Control Program was adopted by the State of Vermont in March of 1982 through an MOA signed by the State and EPA.

Pretreatment permits under Vermont's law have been issued to all known industrial dischargers. The industrial permits were based upon an industrial waste survey of the State conducted by the Permits Section staff in 1969-1970. That survey was, in part, updated in 1979 by a survey of all 135 Vermont industries employing greater than 50 individuals. Continued assessment of the need for pretreatment permits is being handled on a case by case basis with the establishment of new industries or as new information is gathered via the State's NPDES compliance monitoring program.

The Department has recently expanded its laboratory capability in the area of toxic analysis which has given the Department an increased ability to monitor and control toxic discharges. In addition, cooperative arrangements between other State Laboratories and EPA Region I have increased the State's capability to implement toxic control measures now available through NPDES and the pretreatment permit program.

The major water pollution control problems in the State are caused by untreated municipal discharges and discharges from minor industries which, in discharging pollutants in excess of their pretreatment permit effluent limits to municipal treatment facilities, cause these municipalities to violate their permits.

Correcting the untreated municipal discharges is not a straight forward process, as it is complicated by limited Federal and State funding. These discharges will be addressed through the establishment and implementation of a National Municipal Strategy for the State of Vermont. The major emphasis of the Permits and Compliance Section at present is the enforcement of serious violations which occur in several areas of the State. At the current staffing level, enforcement actions are limited to one to two per year depending upon time commitment required and level of complexity. Methods to reduce the time consuming administrative portions of the program are being sought. Correcting the problems caused by pretreatment permits violations is direct, however. Primary assistance and enforcement emphasis is now being shifted toward these minor dischargers and away from the major industrial and municipal dischargers who are in compliance with their permits.

The litigation process has been found to be time consuming regarding indirect discharges from cheese manufacturing, but the repercussions have been very beneficial in other industries in terms of improved voluntary compliance.

Other future activities will include amendment of pretreatment permits to reflect categorical industrial treatment standards as they are reissued. Industrial permits issued to date have included a reopener clause allowing the State to amend

ongoing permits to incorporate newly issued categorical pretreatment standards and allow reasonable time for planning and construction to bring the permittee into compliance. This activity is expected to continue for the next one to three years.

The issue of permittees who, for reasons beyond their control, cannot comply with the statutory deadlines of July 1, 1977, July 1, 1983, or July 1, 1988, is being addressed in the National Municipal policy, currently under consideration by this Department. This is an effort toward identifying means of controlling permittees' compliance from now through attainment of secondary treatment even if that is to be attained after 1988 due to unavailability of supporting construction grant funding.

Permit issuing procedures are administratively cumbersome and time consuming, particularly for small permittees who have discharges of minor or negligible environmental impact, but which fall within the scope of the State permit program. Currently all applications are processed in the same manner and it takes about two months to issue a permit. Future efforts will be directed toward simplifying all permit issuing procedures and particularly those procedures for handling the small discharges. Vermont's permit program deals with all discharges to State waters which range from nonpolluting discharges from foundation drains and well overflows, urban ruoff and stormwater, through major and minor municipal and industrial permits. The Department intends to initiate a general permit program to handle the non-polluting types of discharges. This will not only simplify permitting procedures but also reduce administrative time spent on permit issuance.

Table 2 provides an overview of effluent limit violations for the period July 1, 1982 through June 30, 1983.

Table 3 depicts the reasons for the effluent violations.

TABLE 2

Effluent Limit Violations Overview

For the Period July 1, 1982 Through June 30, 1983

	#NPDES Permittees with Monitoring Requirements	#NPDES Permittees Significant Noncompliance (EPA Definition)
MAJOR MUNICIPAL	41*	8
% Violations		19%
MAJOR INDUSTRIAL	12	1
% Violations		8%
MINOR MUNICIPAL	43	6
% Violations		9%
MINOR INDUSTRIAL	57	5
% Violations		9%
TOTALS	153	20
% Violations		13%

*Presently, there are 21 major municipal permittees

TABLE 3

Causes of Municipal Noncompliance

	MAJOR		MINOR	
	Primary	Secondary	Primary	Secondary
Infiltration/Inflow or Overload from Industrial Discharges to the Municipal System[1]	1	5	1	2
Design Deficiencies, Upgrade Required	7	2	4	0
Operations & Maintenance Problems[2]	1	8	0	14
Equipment Deficiencies[3]	0	2	0	3
TOTAL	9	17	5	19

Notes:

[1] 2 of these are secondary lagoons which may be in violation due to a faster than normal warm-weather lagoon turnover.

[2] 8 of these are secondary lagoons which may be in violation due to a faster than normal warm-weather lagoon turnover.

[3] 2 of these are secondary lagoons which may be in violation due to a faster than normal warm-weather lagoon turnover.

The above violations due to rapid warm-weather turnover are atypical for a normal year in which the winter-to-spring transition is usually more gradual.

PLANNING AND MANAGEMENT ACTIVITIES

Water Quality Standards

The Vermont Water Quality Standards adopted by the Water Resources Board on March 1, 1978 have been in the process of review and revision since 1980. What started as a revision to assure the clarity and workability of the Standards has become a major review and revision.

A draft proposal for revisions to the Standards was prepared by the Department of Water Resources in August of 1980 after numerous meetings with the Department of Fish and Game, the Permits Section and other Agency personnel. This draft proposal was never forwarded to the Water Resources Board. Another review and revision of the Standards is being undertaken jointly by the Water Resources Board and the Department of Water Resources and Environmental Engineering after Water Resources Board public meetings were held to obtain public comments on the existing Standards. It is a top priority of the Board and Department to review and revise the Standards.

Two river reclassifications were made by the Water Resources Board in the last two years. The Class C zone in the Little River, which was created in 1963 to accommodate the Stowe municipal discharge, was modified during this report period. Effective September 30, 1983 the Class C zone was shortened from 4.5 miles to 1.4 miles. With an order dated December 28, 1982, the Water Resources Board modified the Class C zone on the Ottauquechee River for a planned Sherburne Fire District #1 discharge. The two mile seasonal (November 1 to May 31) Class C zone created in 1977 was changed to a 200 foot year-around Class C zone.

The summary list of all class A and class C waters in Vermont along with proposed changes in classification that was prepared by the Department of Water Resources and Environmental Engineering has still not been finalized. The State map showing this information is still in draft form. The list and map will be finalized after the Water Quality Standards are reviewed, revised and adopted and after a more formal review of all Class C zones is done using a new methodology for sizing class C zones.

Vermont Class C Zone Study

In June of 1983 a study was initiated at the request of the Vermont Department of Water Resources and Environmental Engineering by EPA to develop a scientific methodology to determine the length of Class C zones necessary to protect public health and uses below discharges of treated domestic wastes. The Contractor, Metcalf and Eddy, issued a report titled, Vermont

Class C Zone Study in December of 1983. This report reviewed the public health, wastewater treatment, and receiving water issues pertinent to setting the size of Class C zones. A Class C zone sizing procedure was then developed for use in Vermont. The procedure has been applied preliminarily in one case to determine the length of a Class C zone. It is envisioned that when the procedure is fully developed it will provide useful information and rationale to provide to the Water Resources Board in support of their reclassification proceedings.

Combined Sewer Assessment

There has been little progress on the combined sewer overflow problem. No combined sewer separation or further analysis has been done in the 14 Vermont communities with combined sewer problems.

Under contract to EPA, Metcalf and Eddy completed a case study of combined sewer overflow impacts in Burlington. The study was based mainly on review of existing information. Possible impacts, remedial actions and required future studies were outlined.

Discharge and Temporary Pollution Permit Review

The Water Pollution Control Permits Section of the Protection Division is developing a permit review flow chart. This flow chart is intended to help in the process of obtaining complete permit applications and in getting a timely review of the applications by other Sections and Divisions before effluent limits are set. Routine permit applications are handled by the Protection Division without review by other sections of the Department. Where there may be implications for water quality, the Water Quality Division reviews the permit application and draft permit. Examples of situations where reviews by the Water Quality Division are made are for existing or proposed discharges to water quality limited segments, to upland streams, to lakes and where the discharges involve toxic materials.

Vermont Water Resources Planning and Management Program

The State of Vermont Continuing Water Quality Management Planning Process needs to be revised to reflect program changes and new EPA requirements. A revision was drafted in August of 1983 and was the subject of a public hearing on October 11, 1983. Some comments were received at the hearing and some by mail. Substantial comments were received from EPA in a letter dated September 29, 1983. These comments are in the process of being resolved.

Stormwater

As the proposed stormwater management plan has not yet been adopted, the "Interim Stormwater Management Policy" remains in effect. Several changes have been proposed to the interim plan, mainly with regard to pre-discharge treatment requirements and the permitting structure. Due to their high cost and questionable value, sand filter systems, deep-sump catch basins and other devices will generally not be required for normal runoff from impervious areas. Instead, the State's proposed policy will be to encourage the utilization of natural drainage and infiltration whenever possible to minimize stormwater runoff to the State's waters. Also proposed is a stormwater discharge permit structure based on the ratio of impervious areas to the size of the watershed area. It is hoped that the Water Resources Board will adopt the proposed stormwater management plan before the end of 1984. For a detailed discussion of the steps leading up to the proposed plan, the reader is directed to the "Urban Runoff" section.

Stream Flow Regulation

The alteration of natural stream flows is a serious ecological, economic, and legal issue, which has grown in significance with the increasing interest in hydropower development. The Vermont Agency of Environmental Conservation, which is involved in the review and permitting of flow-altering projects, has endeavored to study the implications of stream flow alteration. The Vermont Agency has developed and selectively applied an approach for assessing flow needs of Vermont Streams. This approach or methodology[1] is based on determination of habitat availability in riffles and runs for macroinvertebrates and fish species in several life stages. It involves multiple transect depth-velocity analysis over a range of stream flows, and evlauation of the historical stream flow characteristics of the stream.

Eight sites have been successfully studied in Vermont in the past 3 years, to determine low flow requirements for existing and proposed hydroelectric projects. Several of the sites contained important fisheries, which have been subsequently protected. A list of depth-velocity criteria for fish species of various life stages applicable to Vermont is in preparation, and will eventually be available from this Agency.

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1. Vermont Department of Water Resources and Environmental Engineering. 1980. "The Vermont Agency of Environmental Conservation Fisheries Flow Needs Assessment Methodology: An Introduction".

205(j) Planning

The Agency is well into its first 205(j) program (FY 82), having been awarded $118,000 in April of 1982. This program, Section 205(j) of the Clean Water Act, is administered by EPA, and assists the States in water quality management planning.

Vermont's 205(j) planning agenda includes basin planning; assimilative capacity studies; the continuing planning process; public participation; nonpoint source planning; stormwater management policy and thermal pollution planning. Also, wetland protection planning; aquifer protection area planning/ designation; use attainability analyses and water quality studies for proposed hydroelectric projects.

River Basin Planning

The Vermont River Basin Water Quality Management Plans which were prepared in the mid 1970's need to be updated. This effort was started in October of 1983. The Black and Ottauquechee River Basin Water Quality Management Plan is presently being revised for the Upper Ottauquechee River (mainly the Town of Sherburne). The process to revise the basin plan will stress obtaining public preferences for uses of the waters, identifying the impacts of various activities on water uses, and resolution of water use conflicts. It is intended that this revision process be completed in five years.

Water Resources Planning Needs

The list of Water Resources Planning Needs given below is intended to be a shopping list to match potential sources of funds to specific and eligible planning and project needs. These planning needs are not listed in any priority order. Some of the items have been or are being addressed at least in part as noted in each item.

1. Stream Flow Maintenance - evaluate the impact of flow regulation on stream aquatic life; reintroduce legislation as necessary to assure protection of streams below both existing and new hydroelectric facilities. An assessment of the impact of regulation of stream flow in certain rivers has been done under the 208 Program. Follow-up work needs to be done to finalize the study.

2. Water Withdrawal - perform an assessment of impact of withdrawal on streams, particularly small upland streams. Develop criteria or limits to protect the stream resource.

3. Mettawee River Thermal Pollution Study - assess the impact of lack of vegetative cover and develop restorative measures (New

York Department of Environmental Conservation and Vermont are cooperating on this problem).

4. Definition of Discharge - the definition of what constitutes a discharge to surface waters from on-site wastewater disposal systems has been set forth in the Protection Division's Environmental Protection Rules and may be redefined and included in the Water Quality Standards. As experience is gained with the definition, an assessment will need to be made as to its effectiveness for administration as well as protection of surface waters.

5. Upland Stream Study - assess the impact on water quality of discharges to upland streams. A December 1982 report was issued on this subject. Further work needs to be done especially in rapidly developing ski areas.

6. Lake Champlain Program - coordinate data gathering, research, and modeling efforts on Lake Champlain.

7. Assimilative Capacity and Wasteload Allocation - continue efforts on rivers still not completed.

8. Phosphorus Wasteload Allocation - develop a phosphorus wasteload allocation method which would determine phosphorus limits at specific lakes and stream areas to prevent accelerated eutrophication.

9. Spring Phosphorus Runoff Study - compile data gathered into report form.

10. Combined Sewer Assessment - assess the water quality impact of combined sewer overflows with respect to other point and nonpoint source discharges and set priorities for problem resolution. A report by Metcalf and Eddy reviewing the Burlington combined sewer problem was issued in November, 1983. Further work needs to be done in Burlington and in the other thirteen Vermont communities with combined sewer problems.

11. Water Quality Division Publications - develop an annotated bibliography of publications for reference.

12. Water Resources Policies and Guidelines - very often, personnel struggling with a problem later find that the problem has been addressed before and a policy exists on the matter. A looseleaf notebook containing all issues and current policies would be of significant value in guiding actions and setting an overall emphasis and direction.

13. Water Resources Department-University of Vermont Coordination - continued and improved methods of coordination between the Department of Water Resources and the University of

Vermont need to be established to maintain an effective dialogue between management and research efforts.

14. Winter K Rates - determine the exent of nitrification at winter temperatures and changes in carbonaceous decay rates to determine impact of dissolved oxygen, particularly in small streams with large BOD loads. (Study done on the Otter Creek in February of 1984).

15. Phosphorus Attenuation and Transport - continue research efforts and apply results to policies and management actions concerning phosphorus removal from discharges.

16. Stormwater Sand Filters - determine effectiveness and apply the results in revising the Interim Stormwater Policy. A study was done under the 208 Program which led in part to a revised Stormwater Management Plan.

17. On-Site Wastewater Disposal - evaluate the short and long-term effectiveness and reliability of on-site wastewater disposal systems in protecting ground and surface water (A study was partially done under 208 Program, but has not yet been evaluated and translated into management actions).

18. Septic Tank Installation - develop a voluntary septic tank installers certification program to improve septic system installation.

19. Sludge and Septage Disposal - continue research and monitoring to determine effects on soils and capacity of the land for disposal.

20. Municipal Wastewater Treatment Facility Growth - monitor reserve capacity and planning for expansion to assure overloading does not occur and to prevent future water quality problems. Revise and update 1975 Connection Policy.

21. Phosphorus Recycling from Sediments - perform study on Malletts Bay to determine the exchange rate and eutrophication potential from sediments in a relatively closed embayment.

22. Operation and Maintenance of Wastewater Treatment Facilities - as more and more communities construct facilities, emphasis needs to change from construction to operation and maintenance to assure the greatest effectiveness of treatment facilities in protecting water quality. Evaluate the effectiveness of the monitoring of facilities and technical assistance to communities.

23. Non-point Source Control Strategy - review and revise the Non-Point Source Control Strategy. This has been started in response to the proposed amendment to the Clean Water Act called the "Nonpoint Source Pollution Control Management Act of 1983".

24. Shoreland Zoning - survey towns, cities and villages for the existence of and adequacy of their shoreland protection measures. Develop a program which would provide technical assistance to communities in bylaw development, protection criteria, and methods of protection. Part of this planning would be to develop a Lakeshore Planning Guide to present ideas and techniques for more economical and aesthetic lakeshore use.

25. Public Assistance and Information - evaluate how the Department can be more effective in informing individuals, the general public, and organizations on key water resources issues and concerns and to solicit support in resolving them.

26. Channel Enlargement - inventory and assess heavily developed and developing urban and upland watersheds to determine the cumulative impact of development on peak stormwater flows and to develop limits in peak runoff increases to protect stream channels.

27. Class C Zones - refine and implement the methodology for setting Class C zone length.

28. Pathogenic Organism Indicator - review the use of total coliform as an indicator organism for pathogenic organisms. Implement necessary changes to the Water Quality Standards.

29. Program Evaluations - part of any planning effort should be a systematic evaluation of both newly created and long standing management programs to see if they are effective in attaining their established objectives.

MONITORING AND LABORATORY SERVICES

Vermont's water quality monitoring programs continue to be an integral aspect of the State's water pollution control program.

Core Monitoring Network

The Department has continued with the Core Monitoring Network as required by the U.S. Environmental Protection Agency. The Vermont monitoring network consists of 10 stations - nine in Lake Champlain and one in the Winooski River. The station in Lake Memphremagog was eliminated due to resource limitations.

Station			
Lake Champlain	St. Albans Bay	Quarterly	Temp., Secchi, D.O., pH, Turb., Cond., Total P, NO_{2-3}, TKN, TSS, Fecal Coliform
	*Inner Malletts Bay	Quarterly	
	Outer Malletts Bay	Quarterly	
	*Shelburne Bay	Quarterly	
	Burlington Habor	Quarterly	
So. Lake Champlain	Chipmans Point	Quarterly	
	Ticonderoga	Quarterly	
	International Paper Company Outlet	Quarterly	
	Crown Point	Quarterly	
Winooski River	Colchester	Monthly	Same as above plus COD

*Paired Stations

The objectives of the Core Monitoring Program are incompatible with State water quality monitoring objectives. The sampling frequency and parameter coverage provides no data output that can be used in ongoing State programs. Quarterly sampling on major lakes provides no useful data for any purpose and monthly sampling on major rivers is equally unproductive. For the sake of more efficient and productive use of limited available manpower, the Core Monitoring Network should be suspended as has been recommended in the past.

Compliance Monitoring

The primary purpose of the compliance monitoring program is to determine compliance with discharge permit requirements for individual discharges and to base this determination on data which is both factual and scientifically valid. In addition to

this primary monitoring function, the program remains involved in the collection of data for enforcement actions, compatibility studies, and providing technical assistance to municipalities.

Compliance monitoring activities divide discharges into major and minor facilities in municipal and nonmunicipal categories. The following tables list major municipal and nonmunicipal facilities in Vermont.

TABLE 4
MAJOR MUNICIPAL FACILITIES

Barre City
Bellows Falls
Bennington
Brattleboro
Burlington (Main)
Burlington (North)
Burlington (East)
Essex Junction
Hartford (White River Jct.)
Middlebury
Montpelier
Newport
Northfield
Rutland City
St. Albans
St. Johnsbury
So. Burlington (Airport Pkwy)
Springfield
Swanton
Windsor
Winooski

TABLE 5
MAJOR NONMUNICIPAL FACILITIES

Georgia-Pacific, Gilman
IBM, Essex Junction
Pownal Tanning, Pownal
Standard Packaging, Sheldon Springs
Vermont Yankee, Guilford
Burlington Electric, Moran Plant
CVPSC, Milton
Mobil Oil, Burlington
Sprague Electric, Barre
Polymers, Inc., Middlebury
Tansitor Electronics, Bennington
Champlain Cable, Colchester

This listing is somewhat different from the list of major nonmunicipal facilities in the last 305(b) report. This is due to the new definition of what constitutes a major discharge and what is a minor one. (the reader is referred back to the "Facilities Planning" section for this new definition).

The number of compliance samplings undertaken during 1982 and 1983 at major and minor municipal and major and minor nonmunicipal facilities are reported in the following tables:

TABLE 6
1982 Compliance Sampling Summary

Category	Number Sampled
Major Municipal	11
Minor Municipal	31
Major Nonmunicipal	3
Minor Nonmunicipal	9

TABLE 7
1983 Compliance Sampling Summary

Category	Number Sampled
Major Municipal	13
Minor Municipal	30
Major Nonmunicipal	1
Minor Nonmunicipal	4

In 1982, 5 of the 11 major municipal plants were in compliance for all parameters. Three had BOD and coliform violations and an additional 3 violated coliform limits only. Sixteen of the 31 minor municipals sampled that same year were in compliance. Two had BOD, Total Suspended Solids (TSS) and coliform violations; one had BOD and TSS violations; one exceeded TSS and coliform limits; two exceeded BOD and coliform limits, and nine violated coliform limits only. Nine of the facilities (both major and minor) which did not meet permit limtis are primary treatment plants.

In 1983, there were 13 major municipals sampled; 6 in compliance, 2 with BOD and coliform violations, 4 exceeding coliform limits only and one with a Total Suspended Solids violation. Thirty minor municipals were sampled; 14 of these were in compliance; one exceeded BOD and coliform; 2 exceeded BOD only and 13 exceeded coliform only.

Three major industrial discharges were sampled in 1982 and one in 1983. One, Missisquoi Paper Division of Standard Packaging Company, exceeded BOD and TSS in 1982. The others sampled were within limits. Eight of the minor industrial discharges were sampled in 1982, and 7 were in compliance. The one dairy (Fairdale Farms) sampled exceeded BOD, TSS, and coliform limits. Four were sampled in 1983. The Putney Paper Company exceeded BOD and Fairdale Farms did not meet TSS and coliform.

It remains a vital concern to the Department that non-sanitary wastes (industrial) being discharged to publicly owned treatment facilities be compatible with the type of treatment being employed and with other wastes being received by a given facility. In our effort to monitor this situation, significant non-sanitary wastes discharging to a particular municipal facility are sampled at the same time that a given municipal facility is sampled. Pretreatment of significant non-sanitary wastes is required when it is determined that a given waste is not compatible or poses a potential threat to a treatment process. A total of 30 compliance samplings were undertaken during 1982 and 1983 at pretreatment facilities.

In 1982, 14 pretreatment facilities were sampled. Three dairies sampled exceeded BOD limits. Three metal platers/ finishers exceeded metals limits. The others either met all limits or have permits with monitoring requirements only.

The results of the 1983 sampling were much the same. Two exceeded BOD limits (both dairies) and three exceeded metals limits. Nineteen pretreatment facilities were sampled.

Pretreatment facilities presently operational in Vermont and the municipal facility to which they discharge are listed below.

PRETREATMENT FACILITIES

H.P. Hood, Middlebury
Kraft Foods, Middlebury
Catamount Dyers, Bennington
Johnson Controls, Bennington
Union Carbide, Bennington
Edlund Co., Burlington
General Electric, Burlington (2)
Union Carbide, St. Albans
St. Albans Coop., St. Albans
H.P. Hood, St. Albans
Fonda Container, St. Albans
Richmond Coop., Richmond
Lucille Farm Products, Swanton
Vermont Meatpackers, Swanton
Swanton Packing, Swanton
Franklin County Cheese, Enosburg Falls
General Electric, Rutland (2)
Vermont Plating, Rutland
Electro-Sonics, Brattleboro
Fellows Corp, Springfield (2)
General Battery, Barre
Idlenot Dairy, Springfield
Jones-Lamson, Springfield
Northeast Tool, Lyndonville
Shelburne Ind., Shelburne FD #2
T.A. Electronics, Ludlow
Vermont Research, Springfield
Vt. Tap & Die, Lyndonville
Vt. Tissue Paper, Bennington
Wilson Photo, Castleton
International Cheese, Hinesburg
Interstate Uniforms, Williamstown
Simmonds Precision, Vergennes
Mountain Paper Products, Bellows Falls
Billings Dairy, Wilder
Bryant Grinder, Springfield
Coca-Cola Bottling, Winooski

During the past two years, the compliance monitoring program has been involved in several activities which were directed towards improving the methods and techniques used by wastewater treatment facility operators in sample collection and analysis. First, in March of 1982, each wastewater treatment facility that was required by permit to report phosphorus data, was sent two check samples to be analyzed for total phosphorus. While the quantity of the reported data did not justify a broad generalization on laboratory analysis quality, it did indicate that there were no great insufficiencies in laboratory analysis among those participating. This effort was the first wherein the Department was attempting to gather information on the quality of the data which is routinely submitted to the Department for permit reporting purposes.

Secondly, in 1983, the Department began a wastewater treatment facility laboratory evaluation and individual technician training program. The general objectives of the programs were to evaluate the quality of municipal wastewater treatment plant laboratory analysis and to provide, direct, individual laboratory training to technicians, so that the overall reliability of laboratory analysis and self-monitoring data could be assessed and improved. The initial results from the program have been quite positive and an increasing request for laboratory assistance has been received by the Department as a direct result from this program. The ultimate benefits of better trained operators and valid reporting data will be an improved State water pollution control program.

Chlorine

The State of Vermont continues to be concerned with the adverse effects on aquatic biota through the introduction of toxic levels of chlorinated wastewater into its streams and rivers. Studies, conducted by the Department in recent years and extensive review of available scientific data have verified these concerns.

A Proposed Disinfection Policy has been drafted which will limit and regulate toxic amounts of chlorine discharged from the State's wastewater treatment facilities. A copy of the Proposed Policy is included as Appendix B.

Ambient Biomonitoring Program

Vermont's rivers and streams receive and are expected to absorb most effluent discharges and surface runoff from around the State. Unfortunately, sporadic effluent wasteloads can cause a river's biota to be impacted for several months after the wasteload has moved downstream. On the other hand, changes in land use within a drainage basin can slowly change a river's character and in turn change its aquatic biota. This change usually goes unnoticed. Historically, there has been no established monitoring program to evaluate the condition of the aquatic biota in Vermont's rivers and streams.

For these reasons, an Ambient Biomonitoring Program has been established by the Department. The primary program objective is the collection of data to detect and characterize changes in water quality through changes in the aquatic biota. Ultimately, these data will assist in detecting incremental changes and use impairments on studied watercourses and in the establishment of effluent limits in water quality limited and other segments as necessary.

All sites to be sampled, located in areas where there are known environmental impacts or where land use is expected to

drastically change, are sampled annually. These are designated as Level I sites. All other sites, once sampled, will be returned to after a fixed number of years (5-10). Specific sites presently included in the ambient biomonitoring program are listed in Table 8.

The following information will be available for each site:

1. richness
2. diversity #
3. bio-index #
4. relative abundance
5. ecological analysis
6. similarity coefficient only on rivers with 2 sites or after 2 years of data

Acid Precipitation Monitoring Program

During the late 1970's, it became increasingly apparent that acidic precipitation was occurring regularly in the northeastern areas of the United States. In order to determine what damages were occurring in Vermont's aquatic ecosystems, the Vermont Department of Water Resources and Environmental Engineering initiated a systematic sampling program of lakes and ponds lying in geologically sensitive areas of the State. An initial, limited lake sampling program was conducted in 1979. The results of this survey indicated that lakes with high acidity were a potential problem in Vermont. To better define areas of the State where potential problems existed, additional lake chemistry sampling was conducted during the winters of 1980-1982.

Results of this survey showed that there were areas of the State that are more susceptible to the acidification process than others and that within these susceptible areas, there are lakes and ponds which exhibit characteristic symptoms of acidification or which show an extremely high potential to suffer future acidification damage. Following is a brief summary of alkalinity data from 184 lakes in Vermont according to sensitivity classification:

I. Alkalinity less than 0 mg/l - Critically acidified. A total of six lakes, totalling 109 acres (0.2% of the total acreage of Vermont surface waters) were found to be critically acidified. These lakes are all located in the southern Green Mountains.

II. Alkalinity 0 to 2.5 mg/l - Extremely Sensitive. 25 lakes totalling 2,353 acres (4.4% of the total acreage of Vermont surface waters) were found to be extremely sensitive to acidification. Lakes in this sensitivity category are susceptible to seasonal acid shocks, particularly during spring snowmelt.

TABLE 8

Ambient Biomonitoring Network Stations

River Site	Town	Reason for Concern
3rd Branch White R.*-A & B	Randolph	Organic & siltation
Stevens Branch*-B	Williamstown	Organic & toxic input
Stevens Branch*-B	Berlin	Organic & siltation
Ompompanoosic R.-A & B	S. Strafford	Old mine drainage-metals
Mad River*-B	Waitsfield	Ski area development
Little River*-B	Stowe	Organic & siltation- ski area development
Winooski R.-B	Cabot	Organic
Winooski R.*-B	Essex Jct.	Organic, metals
Indian Br.-B	Essex Jct.	Residential development
Laplatte River*-B	Hinesburg	Organic & siltation
Moose River-B	St. Johnsbury	Metals
Passumpsic River*-A,B	St. Johnsbury	Organics, metals, toxins
Coburn Brook*-B	Troy	Organic & toxic
Mississquoi R.*-B	Troy	Organic & siltation
Lamoille R.-B	Wolcott	Organic & siltation
Roaring Brook*-B	Sherburne	Organic & siltation-ski area
Ottauquechee R.*-B	Sherburne	Organic & siltation-ski area
Stevens Brook*-B	St. Albans	Organic & toxic
Otter Cr.*-B	Rutland	Organic & toxic
Hubbardton R.-B	Benson	Organic
Poultney R.-B	Poultney	Organic & toxic
Paran Cr.-B	S. Shaftsbury	Metals
Walloomsac R.*-A & B	Bennington	Organic & toxic
Hoosic R.*-B	Pownal	Organic & toxic
Black R.*-B	Springfield	Organic & toxic
Williams R.-B	Chester	Organic

A - above impacted area
B - below impacted area
* - Level I sites

III. Alkalinity 2.5 to 5.0 mg/l - Sensitive. 19 lakes totalling 3,819 acres (7.2% of the total acreage of Vermont surface waters) were found to be sensitive to acidification. Lakes in this category will most probably suffer future acidification damage under current precipitation chemistry conditions.

IV. Alkalinity 5.0 to 12.5 mg/l - Moderately Sensitive. 32 lakes totalling 3,340 acres (6.3% of the total acreage of Vermont surface waters) were found to be moderately sensitive to acidification. Lakes in this category show a high potential to suffer future acidification damage under current precipitation chemistry conditions.

V. Alkalinity greater than 12.5 mg/l - Not Sensitive. The remaining 82% (43,510 acres) of Vermont's lake surface area falls into this category. These lakes are relatively insensitive to acidification processes and will probably not suffer acidification damages in the near future.

Thus, 82 lakes in Vermont, totalling 9,621 acres - more than 18% of the surface water acreage in Vermont - show a high potential, as determined by alkalinity classification, to suffer acidification damage or are already damaged to some extent by acidic conditions.

Thirty-six of the most sensitive lakes in Vermont, as determined by the large-scale survey, are presently being monitored 5 times per year in order to detect temporal trends occurring in the water chemistry of these lakes. Additionally, the biological communities of these thirty-six lakes are being studied. As of November 1983, the fish, phytoplankton, zooplankton, and benthic communities of twenty-nine of these lakes with existing or potential fisheries had been sampled. This data base will allow the evaluation of the current status of these populations as well as to compare present and future conditions.

The fishery surveys revealed two lakes in Vermont which have no fish. Haystack Pond in Wilmington, with an average pH of 4.6, and Little Pond in Woodford, with an average pH of 5.2 support no fish. It is highly probable that acidification and related chemical factors, such as high aluminum levels, are responsible for these lakes being unable to support fish populations. Other critically acidified lakes in Vermont do support fish; however, populations consist of only brown bullhead or a combination of brown bullhead and stocked brook trout. Most of the lakes studied are stocked annually with brook trout making it difficult to determine if natural reproduction is occurring. The cessation of stocking could result in the elimination of brook trout populations from extremely sensitive lakes. Populations of smallmouth bass (a species fairly sensitive to acidification) are

endangered in several of the study lakes. The pH levels in Grout Pond (Stratton), Sunset Lake (Marlboro), Hardwood Pond (Elmore), and Somerset Reservoir (Somerset) are near the critical level for smallmouth bass. While current conditions are adequate for smallmouth bass survival, alkalinities in these four lakes are very low. Future inputs of acidic precipitation could very well endanger the reproductive capacity of these populations.

It should be noted here that of the six "critically acidified" lakes found in Vermont, four are highly colored or "tannic" in nature. Tannic waters contain organic acids and are quite acidic by nature. This makes it difficult to evaluate the effects of acid deposition on these systems. It also appears that the presence of organic acids in water lessens the impact of low pH on biological communities associated with the system.

The Vermont Acid Precipitation Monitoring Network, initiated during the summer of 1980, continues to be an integral part of the Department's acid precipitation monitoring programs. Currently, eleven precipitation monitoring sites have been established and are staffed entirely by volunteers under the supervision of the state. Each site is supplied with a high-quality pH meter and a bulk precipitation collector. Operators record the pH of individual precipitation events as they occur. This data is compiled and analyzed by the Department. Information is also disseminated to the public through local television weather broadcasts.

The following is a summary of all data collected at the precipitation monitoring sites from 1980 through 1982.

1. The pH of precipitation in Vermont is highly variable. The lowest precipitation pH recorded is a pH of 2.75, occurring at West Dover on July 5, 1980. The highest precipitation pH was a pH of 7.13 which occurred at Woodford on May 14, 1981.

2. Precipitation events with a pH of 4 or less commonly occur throughout the State. Events with a pH of 4 or less have been recorded at all monitoring sites, with the exception of Canaan (minimum pH 4.03) and Townshend (minimum pH 4.06).

3. Precipitation events with a pH of 4 or less have been recorded during every month of the year although the frequency of low pH events is highest in the summer.

4. Precipitation events with a pH of 5.6 (the theoretical pH of unpolluted rain in equilibrium with atmospheric carbon dioxide) or greater also are common. Events with a pH of 5.6 or greater have been recorded at all sites with the exception of Mt. Mansfield (maximum pH 5.40).

These high pH's imply the introduction of buffering agents into the precipitation either during the event or deposited into the collector between events as dry deposition.

5. It appears that localized deposition of buffering agents may be responsible for raising the pH of precipitation events at certain sites. This possibility implies a very complex pattern of deposition for Vermont which consistently receives precipitation in the pH range of 4.0 - 4.6. The pH may be moderated by localized contamination with buffering agents such as dust or agricultural chemicals.

During 1984, further fisheries studies are planned in selected headwater streams located in regions sensitive to acidification. Data will be collected documenting stream chemistry, physical stream characteristics, fish population parameters, and invertebrate community composition.

In cooperation with New England Interstate Water Pollution Control Commission, Vermont is participating in a regional snowmelt/runoff study. Two headwater streams in Central Vermont will be monitored to determine the extent of chemical alteration during runoff events associated with snowmelt.

The following publications contain information regarding the state's acid precipitation monitoring and are available upon request:

1. Clarkson, B.; Vermont Acid Precipitation Monitoring Program - Winter Lake Surveys 1980-1982.

2. Burnham, D. and Clarkson B.; Vermont Acid Precipitation Monitoring Program - Long-Term Lake Monitoring 1981-1982.

3. Kellogg, J.; Vermont Acid Precipitation Monitoring Program 1980-1981.

4. Vermont Acid Precipitation Monitoring Program - 1983 Update.

5. Langdon, R.; Fisheries Status in Relation to Acidity in Selected Vermont Lakes.

Laboratory Services

The Laboratory facility of the Department of Water Resources and Environmental Engineering continues to serve its vital role by providing analytical services to the environmental programs of the Agency of Environmental Conservation. During 1982, more than

10,000 samples were submitted to the laboratory for processing with a total analytical request approaching 60,000 analyses. Though the sample numbers were not as great in 1983, there was a substantial increase in complex organic analyses. To meet this increased demand, the Department developed a Laboratory Management Plan in late 1982, which provides for equitable service to all potential users.

The Department has continued to resolve issues identified during discussions with EPA officials that would improve the overall efficiency and productivity of the laboratory operation. The issues identified were:

1. Analytical capabilities for organic analysis.
2. Data management system.
3. Improved analytical services for heavy metals analysis.
4. Improved analytical services for automated inorganic system.
5. Bioassay technique training.

The Department has steadily moved towards automating its analytical instrumentation, and by so doing has been able to improve both efficiency and productivity without increasing the size of its analytical staff. Additionally, a data management and sample tracking system have recently been completed and, once fully operational, will further provide increased efficiency and productivity to laboratory users.

Staff training in biomonitoring techniques has been completed. A program of toxicity screening of selected discharges will be initiated in 1984.

Remaining troublesome to the laboratory situation is the lack of money for equipment purchases. No immediate solution to this problem has been formulated and it is not anticipated that one will be in the near future.

Laboratory Quality Assurance Program

The Department has developed a Quality Assurance Program Plan that has received EPA approval. The Department is now in the process of completing the Quality Assurance Project Plan and associated standard operating procedures. This Project Plan will be completed by September, 1984 and will document the quality assurance activities to be carried out by the Department to insure that water-related data will be scientifically valid, defensible and of known accuracy.

LAKES AND PONDS MANAGEMENT PROGRAM

The Lakes and Ponds Management Program of the Vermont Department of Water Resources and Environmental Engineering is responsible for planning and managing in the best public interest certain activities dealing with Vermont's lakes. As water oriented recreation continues to be the most popular type of outdoor recreation in Vermont, the primary objective of this program is to assure the maximum sensible recreational potential of Vermont's lakes through sound water quality management practices. A sequence of program elements allows lakes experiencing water quality problems to be identified, assessed, and managed or restored. Lakes not experiencing water quality problems are monitored and protected. There are four basic elements within the program, each encompassing several smaller programs:

I. Monitoring and Surveillance
II. Studies
III. Management or Restoration Activities
IV. Protection

I. Monitoring and Surveillance

The Department keeps abreast of existing water quality conditions in Vermont's lakes and detects changes in lake water quality through several data collection programs. There are currently four Monitoring and Surveillance programs.

A. The Spring Phosphorus Program collects total phosphorus data from approximately 70 lakes each Spring shortly after ice-out. Springtime phosphorus concentrations are related to summertime lake productivity, and a trend in the total phosphorus concentration may indicate an impending water quality problem in a lake. Sampling once a year in the spring is an efficient way to monitor the water quality of a large number of lakes. Since the start of the program in 1977, the Department has collected spring phosphorus data on 220 lakes. A core of 36 lakes have six or more years of data (Table 9).

In general, triplicate water samples are collected at three stations in a lake. Smaller lakes have only two stations. Water samples are obtained with a hose sampler lowered to the lake bottom, and therefore represent a composite core of water from the entire lake depth. The six or nine samples collected on a lake are averaged for a "yearly" spring phosphorus concentration.

Spring phosphorus samples have been collected only one year on 99 lakes. On lakes where samples have been collected for more than one year (2 to 7 years), yearly concentrations are averaged for an "average" spring phosphorus concentration.

TABLE 9

SPRING PHOSPHORUS CONCENTRATIONS OF SELECTED LAKES*
mg/l as Total P

Lake	Town	Lake Code	1977	1978	1979	1980	1981	1982	1983
Beebe	Hubbardton	17	.011	.016	.015	.016	.013	.021	.012
Bomoseen	Castleton	27	.015	.013	.019	.012	.018	.019	.018
Burr	Sudbury	39	-	.007	.007	.008	.016	.006	.010
Carmi	Franklin	40	.018	.026	.018	.017	.023	.030	.030
Caspian	Greensboro	41	.005	.004	.004	.005	.005(K)	.007	.009
Cedar	Monkton	42	-	.011	.018	.014	.024	.019	.014
Curtis	Calais	60	.012	.017	.011	.008	.015	-	.020
Dunmore	Salisbury	71	.012	.004	.008	.004	.006	.010	.008
Echo	Charleston	74	.004	.004	.003(K)	.008	.007	.008	.006
Elmore	Elmore	80	.010	.012	-	.010	.015	.013	.014
Fairfield	Fairfield	83	-	.017	.017	.025	.022	.030	.034
Fairlee	Thetford	84	-	.008	.006	.008	.012	.015	.010
Great Averill	Averill	94	-	.005	.004	.003(K)	.004	.005	.008
Groton	Groton	99	-	.012	.004	.008	.007	.009	.010
Halls	Newbury	104	.010	.010	.005	.009	.022	.011	.017
Harvey's	Barnet	111	.010	.011	.014	.015	.020	.016	.013
Hortonia	Hubbardton	118	.009	.011	.013	.011	.012	.019	.015

*Lakes for which at least 6 years of data have been collected.
(k) = less than

TABLE 9 (Cont.)

Lake	Town	Lake Code	1977	1978	1979	1980	1981	1982	1983
Iroquois	Hinesburg	123	.041	.025	.026	.030	.029	.037	.027
Island Pond	Brighton	124	.005	.003(K)	.003(K)	.007	.006	.009	.009
Joe's	Cabot	128	.005	.008	.008	.007	.005(K)	.007	.017
Keiser	Peacham	130	.006	.016	.004	.007	.006	.008	.012
Maidstone	Maidstone	166	-	.006	.004	.004	.006(K)	.005	.008
Morey	Fairlee	185	.017	.029	.032	.020	.048	.046	.039
Parker	Glover	214	.014	.010	.016	.020	.021	.017	.015
Raponda	Wilmington	225	-	.005	.007	.011	.009	.006	.007
St. Catherine	Wells	241	.010	.010	.010	.012	.017	.019	.016
Salem	Derby	242	-	.004	.003(K)	.010	.010	.014	.013
Seymour	Morgan	246	.004	.005	.008	.008	.005	.010	.007
Shadow	Glover	248	.005	.009	.004	.006	.006	.008	.008
Shelburne	Shelburne	250	.147	.128	.135	.099	.063	.082	.065
Silver	Barnard	253	-	.023	.010	.015	.010	.016	.021
Star	Mt. Holly	268	-	.010	.007	.022	.023	.014	.017
Sunset	Benson	278	-	.004(K)	.010	.007	.008	.011	.004
Ticklenaked	Ryegate	284	.02	.023	.028	-	.049	.034	.053
Willoughby	Westmore	312	.003(K)	.004	-	.003(K)	.005(K)	.004(K)	.005
Winona	Bristol	313	.042	.026	.022	.028	.023	-	.014
Woodbury	Woodbury	315	.008	.009	.007	.006	.008	.008	.007

(K) = less than

For the purposes of lake classification for this report, all lakes with yearly or average spring phosphorus concentrations less than 0.010 mg/l P are called "oligotrophic". Lakes with spring phosphorus concentrations between 0.010 mg/l P and 0.020 mg/l P are considered "mesotrophic". Lakes with spring phosphorus concentrations greater than 0.020 mg/l P are called "eutrophic". These classifications are made strictly on the basis of spring phosphorus concentrations. Where more detailed water quality data is available for a lake, a more refined trophic classification is possible.

Based on springtime phosphorus concentrations, the number of acres and lakes and their trophic status are given below:

	Acres	# Lakes
Eutrophic	5,225	25
Mesotrophic	9,717	79
Oligotrophic	20,996	116
Unknown	188,128	-

B. The Lay Monitoring Program equips and trains local residents to collect lake water quality data weekly during the summer. Secchi disk transparency and chlorophyll-a data is obtained from most lakes and stations on Lake Champlain that participate in the program. Total phosphorus data is also collected at many Lake Champlain stations and on some smaller lakes. The tremendous success of the Lay Monitoring Program is largely due to the enthusiasm and dedication of the approximately 120 volunteers who monitor the lakes each year. They perform a valuable service for both their lakes and the Department. Yearly reports prepared for the monitors by the Department allow them to follow trends in the water quality of their lakes and to make comparisons between lakes.

Long-term participation in the Lay Monitoring Program is encouraged. Since the initiation of this program in 1979, a total of 53 lakes and 28 stations on Lake Champlain have been sampled during at least one summer sampling period. Twenty-three lakes and 10 Lake Champlain stations have five consecutive years of data.

C. The Summer Lakes Program involves the collection of basic water quality information on a selected number of lakes during the summer. Shoreline bacteria samples, dissolved oxygen and temperature profiles, and secchi disk transparency measurements are taken monthly on 25-30 lakes. Different lakes are selected each year to include as many lakes in the program as possible. In recent years,detailed aquatic plant surveys have also been conducted on a limited number of lakes. These surveys, performed only once on a lake, map and identify existing aquatic plant growth and provide baseline information so that any future

spread in plant growth or the invasion of a new plant species may be detected. Due to the recent spread of Eurasian milfoil in Vermont and an increase in the number of complaints received regarding nuisance aquatic plant growth, the number of plant surveys conducted during the summer will be increased and the number of lakes sampled for bacteria and other water quality data will be reduced during the next few summers so that a widespread aquatic plant data base can be obtained.

Public education and communication with lakeshore residents are an integral part of both the Lay Monitoring Program and the Summer Lakes Program. The contacts obtained through these programs have provided the Department with a large amount of local support and have also helped to further the protection of lakes covered by the Lay Monitoring Program.

D. Using the Lake Eutrophication Analysis Procedure (LEAP), the Department has predicted the water quality condition of priority lakes (determined by the Lake Classification Survey) from watershed land use and lake morphometric data. The result of this modeling work is summarized in a report entitled "The Application of the Lake Eutrophication Analysis Procedure (LEAP) to Vermont's Lakes Program" (Final Report, November, 1982). LEAP has now become an integral part of Vermont's lakes program and provides a basis for planning and regulatory decisions when more detailed information is not available on a lake.

E. At the present time, the use of Landsat to monitor the basic water quality of Vermont's lakes and ponds has been discontinued. It was originally intended to obtain Landsat information three times during the summer months and/or once in the spring immediately after the ice goes off the lakes. However, technical problems with the Landsat satellites, combined with frequent cloud cover in the northeast, have made it impossible to acquire frequent statewide coverage during the summer months. In addition, although springtime coverage was obtained in 1981, no relationship was found between the Landsat data and the in-lake total phosphorus concentrations collected for ground truth by the Department of Water Resources. It is apparent that either Landsat cannot accurately detect spring total phosphorus concentrations in lakes, or the methodology for collecting the ground truth data was not suitable. It was, therefore, decided that the expense and problems involved with obtaining springtime Landsat data made it impractical in Vermont on an operational basis.

II. Studies

A specific lake may be chosen for a detailed water quality study for a variety of reasons. If a monitoring and surveillance program detects a change in lake water quality, a study may be initiated on a lake to diagnose the cause of the change and to

recommend appropriate remedial action. A lake study may be undertaken if a significant number of complaints are received concerning water quality problems on a lake and there is insufficient data available to analyze the situation. Studies may also be initiated when additional water quality data is needed to make critical planning and management decisions on lakes. Since the Department's ability to conduct studies is limited by its existing resources, studies are prioritized to achieve the maximum public benefit.

Lake studies may involve long-term collection of a large amount of water quality data or they may only require a limited amount of data collection and some sophisticated lake modeling techniques. The Environmental Protection Agency's Clean Lakes Program (Section 314 of P.L. 95-217) provides funding (70 percent) to States for diagnostic/feasibility studies on lakes experiencing water quality problems where restorative action is anticipated. Historically, the non-federal match (30 percent) for these studies has been provided by in-kind State services; special legislative appropriations; and by the in-kind services of citizen monitors under the Lay Monitoring Program. Harvey's Lake, Lake Morey and Lake Iroquois are past and current federally-funded Vermont diagnostic/feasibility studies.

The diagnostic feasibility study on Harvey's Lake has been recently completed. The following recommendations resulted from the three-year study:

1. Silica addition should not be used as a lake restoration measure in Harvey's Lake. This treatment might be suitable in lakes with low diatom abundance and with total silica to total phosphorus ratios less than 100.

2. Phosphorus inputs to Harvey's Lake from agricultural runoff should be controlled by diverting two inlet streams (T1 and T2) northward, out of the lake's watershed, as described in the Harvey's Lake Diagnostic-Feasibility Study 1980-1983 Final Report.

3. Agricultural phosphorus runoff in two other streams (T3 and T4) should be controlled by improving manure management practices in these sub-watersheds. Efforts should be made to secure the cooperation of the landowner to achieve this purpose.

4. Phosphorus inputs to the lake from the outlet backflow should be eliminated by constructing a new dam at the lake outlet and removing the existing dam.

An application will be submitted for Federal funding to implement these recommendations on Harvey's Lake through a Clean Lakes Program lake restoration project when local support for the project develops and State and local matching funds become available. These lake restoration procedures could reduce

phosphorus levels in Harvey's Lake by more than 27 percent.

The diagnostic/feasibility study on Lake Morey will be completed early in 1984, and the Lake Iroquois study will be completed during the summer of 1984. Recommendations for lake restoration measures on these lakes will be forthcoming.

Other lakes presently being studied by the Department without federal funding include Waterbury Reservoir, Lake Pinneo, Lake St. Catherine, Orange Reservoir, and Missisquoi Bay and St.Albans's Bay in Lake Champlain.

III. Management or Restoration Activities

When a lake is identified as having a water quality problem, there are two possible courses of action. Either a study is initiated to gather information and determine what management or restoration measures would be appropriate, or management activities may immediately be recommended if a study is not warranted. Management activities are aquatic nuisance control measures that manage a nuisance but do nothing to eliminate the cause of the nuisance. Management activities generally must be repeated yearly to be effective. Chemical treatments, weed harvesting and bottom screening materials are all management techniques. Restoration activities are aimed at eliminating the cause of a lake's problem in order to achieve long-term benefits. Such activities may involve both watershed and in-lake work. (Table 10 lists high priority lakes).

Lake management or restoration projects are often large-scale and expensive. There are several funding sources for these activities in Vermont.

A. In 1979, the Vermont Department of Water Resources requested assistance from the United States Army Corps of Engineers in developing and funding a control program for Lake Champlain as authorized by their Aquatic Nuisance Control Program. Final project approval for a ten year Lake Champlain Aquatic Nuisance Control Program was granted in May, 1982 and the project was initiated during July of 1982.

The goals of the Lake Champlain Aquatic Nuisance Control Program are: (1) to prevent the spread of water chestnut into northern Lake Champlain by reducing the present infestations and confining them south of Benson's Landing, and (2) to control Eurasian milfoil in St. Albans Bay, Vermont, and in the boat passage into Malletts Bay, Vermont. Mechanical harvesting is the control method utilized in both project areas.

The estimated total project cost for the ten year program is $1,120,000. Year to year project continuance is dependent on the availability of state and federal funds.

TABLE 10

High Priority Lakes for Diagnostic Studies or Management Action*

Lake	Action
Lake Carmi	Soil Conservation work in progress
Cedar Lake	
Curtis Pond	
Lake Elmore	
Fairfield Pond	
Harvey's Lake	Diagnostic study completed. Recommendations available for lake restoration.
Lake Hortonia	Aquatic plant harvesting proposed.
Lake Iroquois	Soil Conservation Service work completed; aquatic plant harvesting; diagnostic study in progress.
Lake Morey	Aquatic plant harvesting proposed; diagnostic study nearing completion.
Lake Parker	Soil Conservation Service work completed; aquatic plant harvesting
Lake St.Catherine	Aquatic plant harvesting
Shelburne Pond	Soil Conservation Service work in progress.
Star Lake	
Lake Winona	
Lake Champlain	Soil Conservation Service work in progress; aquatic plant harvesting; tertiary sewage treatment.
Lake Memphremagog	Soil Conservation Serive work in progress, tertiary sewage treatment

*Based on Vermont Lake Classification Survey, December, 1980.

The first two project years have been successfully completed. The 1982 water chestnut harvesting project on South Lake Champlain was completed as planned. However, after one season of harvesting it was realized that a piece of transporting equipment cpable of achieving a faster speed would greatly assist in overcoming the material handling problems which occurred due to the long travel distances between harvesting areas and shore access sites. In order to increase productivity, a high speed transporter was specially developed by the contractor. The implementation of this specially designed equipment allowed productivity to almost triple in certain areas.

The St. Albans Bay harvesting project was conducted by the State through a contract to a private firm during 1982. In early 1983, considerable revisions were made to allow the Town of St. Albans to become actively involved for the remaining duration of the project. An agreement made between the Town and State allows the Town to conduct the harvesting activities through a private contractor under the direction of the State. An aquatic weed harvester and shore conveyor unit were purchased jointly by the State and Town for use on this project.

B. The Department administers an Aquatic Nuisance Control Program that provides matching grant funds for both management and restoration activities. Funds may be granted to municipalities or agencies of the State for new aquatic nuisance control projects (75/25) or to operate and maintain existing projects (25/75). To date, approximately $115,000 has been used for projects on Lake Bomoseen, Lake St. Catherine, Lake Parker, Lake Morey, Harvey's Lake, Lake Hortonia, Lake Iroquois and Lake Paran. Most projects have involved weed harvesting operations. Requests for Aquatic Nuisance Control monies now greatly exceed the available funds. Requests totaled approximately $172,000, and only approximately $40,000 was available in FY 84.

C. The Environmental Protection Agency's Clean Lakes Program currently provides federal funding at a 50 percent match level for lake restoration projects, but does not fund lake management activities. At the present time, it is the Department's position that one-half the non-federal funds for a lake restoration project must be locally supplied. Lakes eligible for federal funding must first undergo a complete diagnostic/feasibility study. Harvey's Lake, Lake Morey, and Lake Iroquois are (or will be) eligible for Clean Lakes restoration funds.

D. The U.S. Soil Conservation Service has been instrumental in lake restoration activities on several Vermont lakes through the implementation of best management practices on agricultural land in the lake watersheds. The Department works closely with the Soil Conservation Service to determine priority watersheds and to provide any necessary water quality data. The watersheds

of Lake Parker, Lake Carmi, Lake Memphremagog and Lake Champlain have all substantially benefited from Soil Conservation Service work in recent years.

IV. Protection

Lakes not currently experiencing water quality problems should be protected to prevent problems from developing in the future. Lakes with problems should also be protected to prevent further degradation. Vermont's Lake Protection Program promotes lake protection in three basic ways - through monitoring and surveillance, through education, and through regulation.

A. The monitoring and surveillance programs are very important for lake protection. The Department must be kept aware of any changes in the water quality of a lake. The early detection of a water quality problem often leads to a simpler, less expensive and more effective solution. By the time a problem becomes visible to lake users, corrective measures are often expensive and may not even be feasible.

B. The educational aspects of the Lake Protection Program are not yet fully developed due to personnel and fiscal constraints. A slide show has been completed; however, to date it has had limited use. There is a need for informational brochures on such topics as aquatic plant control, specific nuisance aquatic plants and shoreland zoning. Short workshops should be conducted on septic system installation and maintenance, nuisance plant control, shoreland zoning and lakeshore management to follow up on two Lake Protection Conferences that were held in Vermont in 1982. There has also been interest expressed recently in the New England area in developing a regional education program to help control the interstate spread of nuisance aquatic plants.

Shoreland zoning can be a very valuable lake protection technique. Since zoning laws in Vermont are adopted and enforced at the local level, the State's role is an educational one. Many towns do not realize the value of shoreland zoning and are unfamiliar with the options available to them. A technical assistance program to aid towns in developing shoreland zoning legislation specific to their lakes and needs should be developed as a major step toward lake protection in Vermont.

C. Vermont's lakes and ponds receive some statewide regulatory protection under the Management of Lakes and Ponds statute (Title 29, Chapter 11, §401-410). This statute gives the Department the authority to issue permits for encroachments into waters beyond the mean water level and on land under such waters. Permits are issued only when an encroachment is found not to adversely affect the public good. Lake protection is a primary

goal of the statute. The Vermont Phosphorus Detergent Ban, the Vermont Water Quality Standards and Act 250 and the State's Land Use Control Law, all provide additional regulatory protection for Vermont's lakes.

GROUNDWATER MANAGEMENT

The Vermont Groundwater Protection Strategy has been completed since October, 1982, following a public review process. This document now guides Vermont's groundwater protection plans for the coming years.

A cornerstone of this program is the development of Aquifer Protection Areas to protect existing water supplies from land use threats. Initially the program began with the mapping of "municipal" groundwater systems or those that serve towns, villages, and fire districts. One hundred thirty-six groundwater systems were mapped for a total of 209 Aquifer Protection Areas. Sixty-six percent of Vermont's population uses groundwater all or in part. The systems mapped cover 30% of this population. This Aquifer Protection Area information is intended to be used by State programs and town governing bodies in review of projects that may threaten existing water supplies.

In order to implement other aspects of the Protection Strategy, a coordinating committee has been formed between three key state departments that deal with groundwater issues. Representatives to the committee from the Department of Water Resources and Environmental Engineering, Department of Health and Department of Agriculture help guide the implementation of the Groundwater Protection Strategy. However, the primary responsibility lies with the Commissioner of Water Resources and Environmental Engineering.

Coordinating Committee guidance has led to the mapping of Aquifer Protection Areas for the remaining community groundwater systems that serve condominiums, trailer parks and subdivisions. This second phase of mapping is progressing on schedule. Field work and data collection are complete for 222 additional groundwater systems as of December 31, 1983.

A draft of a groundwater protection handbook for local officials is complete and will be released in the spring of 1984. A Technical Assistance program has been and continues to be conducted for towns that need to protect their groundwater supplies.

An issue posed by the Groundwater Protection Strategy has to do with the question of what is the appropriate density of on-site waste disposal systems within Aquifer Protection Areas. A literature search on this question has begun with the ultimate goal to define appropriate densities for each Aquifer Protection Area.

The Coordinating Committee has initiated development of memoranda of agreement to coordinate the investigation, reporting, and resolution of groundwater contamination. A study has been conducted to determine the number and types of groundwater contamination incidents in Vermont. The Health Department is also conducting studies to determine the nature of water quality within Aquifier Protection Areas that may have conflicts between existing land uses and the groundwater resource.

Aquifer Protection Area Mapping

Major systems in the first phase that were mapped include those serving towns, villages, and fire districts. APAs were identified utilizing existing, available data including geology, soils and hydrology. Mapped areas have been evaluated for existing land use, projected future land use and the degree of local protection afforded these areas. Potential pollution sources have been evaluated in order to determine the level of protective measures necessary.

The results of the initial land use survey are presented at the end of this section. Aquifer protection mapping continues into a second phase. The remaining community systems are being mapped which include condominiums, trailer parks, and subdivisions. Two hundred twenty-two systems fall into this category. Field work and data collection on the second phase were completed as of December, 1983. A land use survey will also be conducted for the second phase mapping.

The intention of using all this information is to encourage towns to protect their water supplies by using Aquifer Protection Areas in town plans and zoning ordinances. With this in mind, the Department is conducting an information dissemination program by which Regional Planning Commissions have been visited and towns have been contacted to apprise them of this valuable information. Map atlases have been distributed and each town that has an Aquifer Protection Area within its boundaries has received copies. The hope is that towns will appreciate the usefulness of the data and adopt this information into their planning and zoning process. This technical assistance program will continue over the coming years.

Groundwater Monitoring

The Groundwater Management Section has moved away from conducting water quality tests as a priority item; however, a survey has been conducted to determine the number of contamination incidents in Vermont that have been recorded. The results of the survey are of interest and can be used to direct future planning efforts.

Of several hundred potential cases initially identified, 73 were found to be documented contamination incidents. The largest single cause of groundwater contamination reported is the use and storage of road salt. Leaks from underground gas and oil tanks represented the second largest cause of groundwater contamination. These two categories total over 57% of the incidents reported. The next largest category is that of other types of incidents which include truck accidents, delivery of fuel oil into a drilled well, poor spring construction, runoff from silage, and water softener salt disposal. The remaining categories include contamination from manure and fertilizer use, septic system failure, chemical use and landfills. These 73 incidents contaminated 86 water supplies and caused contamination in 13 other locations.

Detailed groundwater monitoring has been conducted in the Town of Williamstown by the Vermont Department of Health following the discovery of trace amounts of organic chemicals in the town water supply and higher levels near the Town Elementary School. The Health Department also plans to monitor water quality in Aquifer Protection Areas that may have conflicts between land use activities and water supply.

Automatic Data Processing

A priority item for the Groundwater Section has been to place over 30,000 well driller's records on computer files for storage and manipulation along with adding computer capability to the solution of groundwater problems. Work has begun on this item with research into the selection of hardware and software. Purchase of an HP-1000 computer system, in conjunction with the Air and Solid Waste Section of the Department of Water Resources and Environmental Engineering, has given the Department extensive computer capabilities. Graphics and data entry terminals, hard disk storage, a dot matrix impact line printer, graphics plotter and a graphics tablet complete the hardware package. Software includes data base management, a graphics package, language software (Fortran 77, Basic 1000, and macro assembler) and application program generator software.

Work has progressed through organizing data from files for input which includes organizing well records and maps. Design for format and display have been developed.

Well Drilling

The largest volume of groundwater data in Vermont is contained in the Well Completion Report files from Vermont licensed water well drillers. The file now containing records of over 30,000 wells, is accessed frequently by well drillers, engineers, geologists, developers, environmentalists, and private

citizens seeking data on the nature of Vermont's subsurface. The Groundwater Management Section seeks to improve the value of this data by inserting it into an automated data storage and processing program. The ultimate goal is to have all data base information input for manipulation and have new uses developed for the graphics and digitizer capabilities. Computer input of well drillers records was started in 1983. In addition to managing the well reports, the Section licenses the drillers. The Vermont Legislature has extended the licensing period from one to three years, thus reducing the administrative workload. Two major goals remain for this program element - the automation of the data and the development of regulations covering well construction criteria and requirements for licensing.

Water Level Monitoring

The Groundwater Management Section continues to cooperate with the U.S. Geological Survey in the regular measurement of groundwater levels in a statewide network of wells. Presently, monthly readings are taken in twenty-two wells of which fifteen are reported to the U.S.G.S. for inclusion in regional and national reports. When the period of record reaches a minimum of three years, some of the other seven may be added to the number reported. This program provides valuable data on the relative condition of the water levels in the State's aquifers. Persistent drought conditions can be effectively monitored to enable the State to develop timely drought remedial measures. Water level data is now on computer files and the monthly calculation of statistical parameters is performed by computer search.

Underground Injection Control

Vermont is presently applying for primary responsibility under the Federal Safe Drinking Water Act to control the injection of fluids into the subsurface where those injections may impact upon underground sources of drinking water. Since almost all of the State's subsurface environment contains fresh groundwater which is providing or could provide drinking water for community and private water supply systems, the program is of vital interest to the State. Minor adjustments are in process in the State regulatory authority to permit the Vermont program to meet the Federal requirements. The control of underground injections will be considerably complicated for Vermont if exploration for oil and natural gas along the State's western portion leads to the need to inject brines and other fluids into the subsurface.

Groundwater Law

The Vermont Legislature has taken up groundwater law questions in two instances. A major bill proposes to change the

common law doctrine of absolute ownership to a modified correlative rights doctrine. At present, Vermont is the last state in the union to use the common law doctrine of absolute ownership, also known as the English Rule. Several drafts of the modification have been submitted over the last two years. The current legislation is an attempt to modernize Vermont groundwater law.

The legislature is also considering a ban on septic tank additives which have the potential of contaminating groundwater supplies. A survey of the availability of these products has been conducted by the Groundwater Section. Use and availability in Vermont is not great so the hope is that a voluntary withdrawal by industry could help alleviate any potential problems.

Contamination of Aquifers, Well Closures, and Depletion Problems

Only one municipal well closure has occurred between January, 1981 and December, 1983. One new well site was turned down because of organic chemicals present in water samples. Lyndonville was forced to abandon a town well after vandalism of a nearby liquid fertilizer tank. Bellows Falls must now look for another new supply following discovery of organic chemicals at the proposed well site.

Use of private individual wells has been disrupted in several contamination cases in Vermont, but most notably in the Village of Williamstown. Three wells surrounding an industrial cleaner came up with high levels of tetrachlorethylene. Further study turned up trace amounts in soil samples at a nearby elementary school and in the town water supply. Studies are being conducted to determine the source of contamination and clean-up options. This incident has pointed to the need for further understanding of toxics in groundwater and determination of the extent of other potential contamination sites around the State.

Well interference occasionally occurs in Vermont. Usually this is due to unrealistic pumping demands by neighboring wells.

Groundwater Use in Vermont

Groundwater use in Vermont makes up a substantial portion of total water use in the State. Sixty-six percent of the State population uses groundwater for some part of their drinking water. Thirty percent of the State's population is covered by the first phase Aquifer Protection Area mapping program. Another 8% will be covered by the second phase of mapping. Individual groundwater users account for 28% of the State's population.

Aquifer Protection Area Land Use Survey

As part of the prototype study, the Department conducted a survey of land use within the 209 Aquifer Protection Areas (APAs). The purpose was to determine which APAs were relatively undeveloped and which areas presented conflicts between existing activities and water supply.

To conduct the land use survey, the United States Department of Agriculture 1977 infrared aerial photos at a base scale of 1:24,000 were used. The presence of buildings, roads, forest and agricultural lands, powerline corridors, and railroads was interpreted from the photos. The acreage for each Aquifer Protection Area, the acreage for the APAs that overlap, and the distance covered by existing roads were calculated.

The Vermont Groundwater Pollution Source Inventory (December 1980) was consulted to locate potential pollution sources within APAs. Potential pollution sources mapped included petrochemical storage sites, salt storage sites, solid waste sites, and waste lagoons.

Knowledgeable State personnel were interviewed to determine the location of other existing and proposed activities within the areas. Activities tabulated included existing and proposed waste generating facilities, proposed sanitary landfills and wastewater treatment plants, and residential subdivisions. Wetlands and primary agricultural lands were also noted where applicable. The extent of any municipal sewer systems and the water quality classification of streams running through APAs or along their borders were also determined.

A report entitled Ground Water Quality for 75 Selected Community Ground Water Systems, (March 1981) was reviewed and those sources that exceeded Vermont's drinking water standards were noted. Figures obtained from the Vermont Division of Property Valuation were used to determine land purchase costs for those towns with documented land values.

This information was then combined and assessed in conjunction with an examination of applicable town plans and/or zoning ordinances for the APA areas in order to determine the degree to which water supplies may be compromised by, or protected from, potential pollution sources.

Findings

1) The 209 Aquifer Protection areas outlined during the prototype study cover 21,728 acres of the 6,149,760 acres in Vermont and encompass four tenths of one percent (.4%) of the land area of the State.

2) The mean size of the Aquifer Protection Areas mapped is 120 acres, the median size is 58 acres. They range in size from 4 acres to 2,649 acres.

3) The Summary of the Aquifer Protection Area Land Use Survey (Appendix C) indicates the kinds of activities that are found in each Aquifer Protection Area. Table 11 shows the statewide totals for the different activities and land uses listed in Appendix C.

4) Aquifer Protection Areas were placed in categories to determine the degree to which water supplies may be compromised by or protected from potential pollution sources. The categories were based primarily on a look at the town's present plan or zoning ordinance that deals with the land encompassed by the Aquifer Protection Areas. Included in this assessment was the nature of the land use activities already located within the Aquifer Protection Area.

The following are the four categories determined. For each category the number and percent of groundwater systems in relation to the statewide total of 136 systems are given.

Protected: The area does not contain any potential pollution sources, the densities of septic systems are greater than one system per acre or the area is zoned for recreation, forestry, agricultural use or open space.
total: 25 groundwater systems or 19% of the statewide total.

Possibly Protected: Generally the town has one acre residential zoning or a groundwater protection goal in the plan with no zoning.
total: 29 groundwater systems or 21% of the statewide total.

Minimal Protection: Planned or zoned for medium to high residential development, commercial, industrial or village areas. Potential pollution sources are already present.
total: 31 groundwater systems or 23% of the Statewide total.

Not Protected: Major conflicts exist between groundwater protection goals and current or projected uses. Plans and zoning ordinances openly permit or encourage the siting of high risk, potentially polluting activities within the area.
total: 50 groundwater systems or 37% of the statewide total.

TABLE 11

Land Use Activities Contained Within
Aquifer Protection Areas

Number of Groundwater Systems Containing a Type of Activity or Land Use	Number and Type of Activity or Land Use
118	12,522 acres, forested land
112	104.2 miles, roads
82	3,435 acres, agricultural land
68	1,244 units, on-site sewage disposal
37	37 areas are sewered, all or in part
26	59 petrochemical storage tanks
16	5.4 miles, railroad
14	contain "Class C waters"
12	have existing sewer systems nearby, but not in the APA.
6	2.8 miles, powerline corridor
7	9 salt storage/1 discontinued
6	7 hazardous waste generators
6	7 Solid Waste sites/1 discontinued
8	5 Sludge and septage application areas/3 discontinued
3	have had on-site sewage disposal problems
2	3 industrial lagoons
2	3 large scale septic tank leachfields
2	2 junk salvage yards
1	1 industrial leachfield
1	1 electric utility transfer station
1	1 municipal lagoon
1	1 sewer lift
1	1 pesticide mixing area

(The Vermont Health Department, in subsequent studies to define water quality in potentially compromised areas, has since modified some of the above numbers)

5) Water quality data for 86 of the 136 systems were available. Existing data indicate that 17 systems had better than drinking water standards for at least one of the constituents measured.

6) Land purchase costs were not available for all towns with Aquifer Protection Areas. Values varied widely depending on the size of the parcel and the specific town. The smallest purchase price determined for an Aquifer Protection Area was $4,260 while the largest was $1,986,750.

HYDROPOWER

The number of applications for hydropower development licenses have begun to decrease the last six months as compared to the last reporting period. The Department is presently reviewing approximately 50 proposed hydro developments as compared to approximately 70 proposed developments two years ago (Appendix D). It is believed that the decrease was caused by developers waiting to see what the new rate structure would be, as determined by the State Public Service Board. Also, contributing to the decrease is the fact that virtually all the major rapids or waterfalls have either been licensed or are under consideration for licensing.

The Vermont Agency of Environmental Conservation is involved in the review and licensing of hydroelectric projects through the Federal Energy Regulatory Commission (FERC) licensing process and through the issuance of water quality certificates. General areas of Agency concern include recreation, aesthetics, fish and game, water quality, flooding, and dam safety issues. The potential environmental impact on Vermont's rivers and streams is tremendous and the development of these sites presents serious ecological, economic, and legal issues which have grown in significance with the increasing interest in hydropower development.

Through the 401 process, administered by the Department of Water Resources and Environmental Engineering, no Federal license or permit may be granted if the discharge from a proposed hydroelectric project will not comply with the applicable provisions of the Clean Water Act. With regard to other Agency concerns, particularly recreation and aesthetics, the only legal recourse is through the FERC licensing process. Historically, this process has not been effective in denying licenses based on potential impacts to these values. Due to this fact, the Department has begun to utilize the recently completed waterfalls and gorges study to support recommended denials based on potential impacts to recreation and aesthetics. The study,"Waterfalls, Gorges and Cascades of Vermont", was performed under contract for the Department of Forests, Parks and Recreation as part of their Fragile Areas program. It was partially funded by 205(j) monies from the Department of Water Resources and Environmental Engineering. The study investigated 92 of Vermont's waterfalls and gorges and ranked them according to whether they were of high, moderate, local or of no value. As the study was performed objectively by an outside consultant, it is hoped that it will become a valuable tool in preserving those few remaining undeveloped waterfalls and gorges which have been determined to be of unique value to the scenic quality of the State of Vermont.

The Public Service Board has recently set the rates that utilities must pay for electricity purchased from privately owned

generating facilities. These rates were a disappointment for would-be developers who were expecting to earn a high rate of return on their potential investment. They were set according to a complex rate structure based upon on-and-off peak summer rates and on-and-off peak winter rates. Also, entering into the rate determination is whether the rate is for one year or is for a long term contract - 20 or 30 years and whether or not it is firm (constant) or non-firm power (production of power only when source is available). The rates go from 3.58¢/KWH for short-term annual power to 10.26¢/KWH for a 30-year contract for firm power. As mentioned above, these rates are "levelized" or averaged from the four on/off seasonal peak rates.

The new short-term rates are considerably less than the old annual rate which was a flat 7.8¢/KWH. This will probably discourage the small hydro developer who does not want to be committed to a long-term rate, fearing that he will miss out on future rates which may be higher than 10.26¢. Economics, then, from the Department's point of view, may be the main factor which will ultimately assist efforts to preserve the State's environmentally significant cascades, waterfalls and gorges.

ASSIMILATIVE CAPACITY - WASTELOAD ALLOCATION

Assimilative capacity-wasteload allocation determinations continued on several river segments during 1982-1983. In addition, a statewide screening for assimilative capacity problem areas was conducted during 1983. The results of these studies, and updates of pre-existing studies are summarized below. For a full report of the statewide screening, see Appendix E.

Municipal Assimilative Capacity Screening

As part of the National Municipal Policy effort, a statewide screening of all municipal dischargers was conducted. A conservative modeling analysis was used to predict those river segments where the potential for an assimilative capacity problem exists. Site specific field visits were then used to further refine the estimate. The municipal facilities thus identified have been recommended for further study.

Ottauquechee River

During July, 1982, a water quality study was conducted along the Upper Ottauquechee River, from Sherburne to West Bridgewater. The results of this study indicated the need for additional data collection. Initial estimates of assimilative capacity, based on the preliminary data, have been made as part of an overall basin planning effort.

Waterbury River

A conservative screening model applied to the Waterbury River below Stowe indicated possible assimilative capacity restrictions. An intensive water quality sampling study was conducted by the Town of Stowe during August, 1983, preliminary to requesting a substantial increase in their permitted municipal discharge. Subsequent assimilative capacity modeling by the Town has not been completed.

Hoosic River

A water quality sampling study was conducted along the reach of the Hoosic River within Vermont during August, 1983. The purpose of the study was to determine the effect of the Pownal Tannery discharge upon the dissolved oxygen regime of the Hoosic River. Preliminary data analysis and modeling is underway.

Stevens Brook

An assimilative capacity study was conducted during July, 1983, on Stevens Brook in St. Albans. This study was designed to evaluate the feasibility of discharging effluent from the upgraded St. Albans wastewater treatment facility, to the Stevens Brook at the facility. Modeling of the assimilative capacity is pending, based on final facility design.

Table 12 summarizes the status of those water quality studies which were ongoing efforts identified in the 1982 305(b) report.

TABLE 12

STATUS OF ASSIMILATIVE CAPACITY WASTELOAD ALLOCATION PROGRAM

RIVER BASIN	SEGMENT	DESCRIPTION	STATUS
Winooski River	Main Stem (8-6)	Below discharge from IBM to confluence with Lake Champlain.	Data collection and modeling complete. Allocation process pending Water Quality Standards Review.
Otter Creek	Main Stem (3-3)	Below Rutland City dischare to confluence with Lake Champlain.	Modeling and allocation process complete.
Connecticut River	Main Stem	Upper Ammonoosuc to Commerford Dam.	Final modeling due to be completed in May, 1984.
Waloomsac River	Main Stem (1-4)	Below discharge from Bennington to New York State Line.	Modeling and allocation process complete. EPA funding approved.
Poultney River	Main Stem	Poultney to the Castleton River.	Pending.
Hoosic River	Main Stem (1-2)	Below Pownal Tannery to New York State Line.	Data collection completed. Pending water quality modeling.

WETLANDS

The Department continues to place a high priority on the protection of wetlands. Existing laws have been analyzed and jurisdictional gaps determined. A joint resolution relating to the preservation of wetlands was submitted to the Legislature in 1983. The Legislature responded that the Agency did not need additional legislative authority to carry out the wetland program at this time, but to request legislative changes if needed in the future. The Department has gathered the necessary information to prepare such changes but, as yet, has not submitted them. Presently, an amendment to the shoreland zoning legislation has been drafted, which would require protection of wetlands adjacent to lakes.

Therefore, in the absence of formal legislation, the current protection strategy uses existing laws at the state and local level, incremental expansion and enhancement of existing programs, and purchase of fee or development rights. The protection strategy also focuses on technical assistance and education. Four copies of a slide/tape show "Vermont Wetlands", are available for distribution to schools. Many wetlands presentations have been given to schools and youth groups. A new publication for teachers entitled: "An Activity Guide to Wetland Education", has recently been completed.

A model town wetland zoning bylaw is still in the draft stage. Towns will be encouraged to use their plans and zoning for further wetland protection.

Requests for technical wetland reviews have continued to increase. These include responses to Act 250 (development) applications, comments on Corps of Engineers 404 permits, orders from the Public Service Board, Lakes and Ponds Management permits, stream alteration permits, hydropower applications for FERC licenses, and EIS reports. Specific projects reviewed to date include: The VELCO powerline, West Rutland marsh, Lake Champlain-Alburg bridge, Northern Connector (Burlington Intervale), Southern Connector (Potash Brook and Barge Canal), Robinson Brook-Mill Hill Wetland, and several filling projects around the State.

Two researchers conducted studies on Vermont wetlands during the summer of 1983[1]. The studies dealt with the character and productivity of wetlands afected by hydroelectric reservoir water level fluctuations and the function and importance of headwater wetlands on river fishery productivity. This information will be important in reviewing projects which will have impacts on wetlands.

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(1) Berino, J., "The Relationship of Headwater Wetlands to the Quality of Freshwater Fisheries", September, 1983 and Schnur, E., "Effects of Daily Water Fluctuations on Marshes", September, 1983.

With the reception of a nearly complete set of final National Wetlands Inventory Maps late in 1983, the Department has been able to supply better wetland descriptions throughout the State. Recent requests for these wetland maps have increased dramatically indicating that the public is becoming more aware of the importance of wetlands.

The Water Resources Research Center of the University of Vermont is continuing a study on Stevens Brook wetland on the north end of St. Albans Bay-Lake Champlain. The intensive study traces the influence of nutrients on the water quality of the marsh.

All losses of wetlands in Vermont during 1982-83 have not been verified. Projects such as road construction, housing construction, powerline, marinas and filling projects, among others, continue to decrease the amount and quality of Vermont's wetland resources. This gradual loss of values will, in the long-run, increase the cost of wetland functions such as water quality maintenance, flood control, and fish and wildlife production which occurred naturally.

Over 900 wetland acres were dropped from the Department of Agriculture's Water Bank Program in 1982 and 1983 due to loss of federal incentive funds to farmers. It is estimated that 350 acres of these wetlands have already been converted to farmland/pasture.

Vermont will continue to pursue and develop stronger wetland protection measures and will strive for better legislative recognition of wetland values. A major concern will focus on helping Vermonters to recognize and protect wetlands as important and fragile features of the State.

OIL AND HAZARDOUS MATERIALS

During 1982, 204 oil and hazardous material incidents were reported to the Agency of Environmental Conservation. Of those, 44 reached the surface waters and 5 reached the groundwaters of the State. During 1983, 237 oil and hazardous material incidents were reported. Of these, 48 reached surface waters and 15 reached groundwaters of the State. These were investigated by the Agency's Hazardous Materials Management Section or the Regional Water Resources Investigator. Response activities included mitigating the spill, advising the responsible party on spill control, clean-up and disposal activities, advising local authorities on the properties of the spilled material, and on-site monitoring of the clean-up. Where appropriate, reports of spills are written and forwarded to the State's Attorney for prosecution under Section 1259 of the Vermont Water Pollution Control Statutes.

The Vermont Committee on Hazardous Materials, formed as a result of 3 V.S.A. §3116-3117, and working through the executive order which designates responsibilities of various State agencies involved in a spill incident, continues to provide for better overall coordination of environmental emergencies, especially in the area of chemical spills. The Hazardous Materials Management Chief represents the Agency of Environmental Conservation on this committee.

The Hazardous Materials Management Section, as part of the Air and Solid Waste Programs, has worked with local officials to develop sites for the disposal of large amounts of oil-soaked debris in the event of a major oil spill on Lake Champlain. This section expects to use landfarming as the disposal method; this eliminates the need to permanently dedicate a portion of a landfill to oil-soaked debris. The Bristol Town Landfill has been designated as a landfarming site for this type of emergency. In non-emergency situations, all heavily-contaminated oil spill debris is shipped out-of-state, since there are no secure landfills or hazardous waste treatment facilities in Vermont.

The Oil and Hazardous Materials Contingency Plan for the Waters of the State of Vermont, developed to reflect hazardous materials environmental emergency response procedures, was published in 1980. Since, July 1980, the entire printing of approximately 600 copies of the plan has been distributed to various agencies in the State of Vermont. This document is currently being updated for re-release in calendar year 1984. Technical assistance in the laboratory, office and on-scene at environmental emergencies has been and will continue to be expanded.

The details concerning oil and hazardous materials incidents for 1982 and 1983 are summarized in tables 13 and 14. Although there has been a leveling off of reported truck accidents in recent years, continued growth in public awareness of

environmental hazards from oil or chemical spills and dumping are expected to result in increased numbers of incident reports in the coming years. The number of underground tank leaks has increased steadily during the years 1972 to 1983. Similarly, there has been a significant increase in the total numbers of reported incidents.

Considering this steady growth in reports and field investigative activity, program participation and support of activities directed at spill prevention, such as the state petroleum industry task force on underground tank leaks and the Montpelier Rotary/City of Montpelier used oil pick-up station, will become especially important.

TABLE 13
SUMMARY OF 1982 OIL AND HAZARDOUS MATERIALS INCIDENT REPORTS

SUMMARY	
Total Number Reported Incidents	204
Number that reached Surface Waters	44
Number that reached Groundwater	5
Number of Oil Spills	146
Number of Hazardous Materials Spills	39
Number of Fish Kills	2
Miscellaneous	17

QUANTITY SPILLED	# OF SPILLS
100 gallons	124
100 - 500	28
500 - 1,000	12
1,000 - 5,000	8
5,000 - 10,000	1
10,000	1
Miscellaneous	4
No Spill	7
Unknown, Minor or Sheen	20

MONTH	# OF SPILLS
JAN	14
FEB	24
MAR	17
APR	26
MAY	14
JUNE	11
JULY	17
AUG	12
SEPT	21
OCT	15
NOV	13
DEC	14

CAUSE OF SPILLS	
Above-ground tank, piping, valve	28
Truck accidents	27
Under-ground tanks, piping, etc.	24
Capacitor & transformer failures	19
Overfills	18
Mystery Spills	9
Insufficient Data	8
Poor Housekeeping	8
No Spill	7
Car/Bus accidents	6
Construction accidents	6
Deliberate dumping/improper disposal	6
Container failure	5
Fire	5
Plugged piping	5
Seepage	5
Service Station problems	5
Vandalism	4
Road Oiling	3
Barge/Vessel spills	2
Railroad accidents	2
Chemicals at Abandoned Camp	1
Spraying	1
Industrial accident	1

PRODUCTS SPILLED	# OF SPILLS
Diesel and #2 Fuel Oil	51
Gasoline	44
Transformer Oil	14
Waste Oil	14
Dilute Industrial Wastewater	13
#6 Fuel Oil	8
Unknown Chemicals	7
LPG	5
Hydraulic Oil	4
Sheen	4
Non-Hazardous	3
Xylene	3
Butyl Acetate	2
#4 Fuel Oil	2
Milk	2
Whey	2
Sewage	2
Propylene Glycol	1
FFF Foam	1
Urea Formaldehyde	1
Sulfuric Acid	1
Mercury	1
Creosote	1
1,1,1 - Trichloroethane	1
Pesticide	1
Concrete Additive	1
Paint	1
Concentrated Industrial Wastewater	1
Jet Fuel	1
Coal Tar	1
Sodium Aluminate	1
Ammonium Nitrate	1
Laboratory Chemicals	1
Sodium Hydroxide	1
Tetrachloroethane	1

TABLE 14

SUMMARY OF 1983 OIL AND HAZARDOUS MATERIALS INCIDENT REPORTS

SUMMARY	
Total Number Reported Incidents	237
Number that reached Surface Waters	48
Number that reached Groundwater	15
Number of Oil Spills	182
Number of Hazardous Materials Spills	17
Number of Fish Kills	3
Miscellaneous	14
Algae Blooms	1

QUANTITY SPILLED	
100 gallons . . .	89
100 - 500 . .	17
500 - 1,000 . .	8
1,000 - 5,000 . .	7
5,000 - 10,000 . .	1
10,000	1
Miscellaneous . . .	2
No Spill	23
Overchlorinated	1
Unkown, Minor or Sheen	96

MONTH	SPILLS
JAN	16
FEB	17
MAR	23
APR	24
MAY	15
JUNE	29
JULY	20
AUG	24
SEPT	21
OCT	18
NOV	21
DEC	14

CAUSE OF SPILLS	
Above-ground tank, piping, valves	10
Capacitor & Transformer failures	13
Truck accidents	27
Under-ground tanks, piping, etc.	35
Improper disposal	15
Overfills	14
Construction accidents	6
Car/Bus accidents	11
Vandalism	3
No Spill	23
Barge/Vessel spills	2
Poor housekeeping	15
Fire	2
Acts of God (floods, lightning, etc.)	1
Mystery Spills	7
Seepage	2
Railroad accidents	1
Service Station problems	2
Spraying	2
Equipment failure	12

PRODUCTS SPILLED	# OF SPILLS
Diesel & #2 Fuel Oil	63
Gasoline	52
Unknown	19
Transformer Oil	12
Waste Oil	12
#6 Fuel Oil	6
LPG	6
Hydraulic Oil	5
PCB Oil	4
Machine Oil	4
Sulfuric Acid	3
Industrial Wastewater	3
Sewage	3
Kerosene	2
Oil-Emulsifier	2
Milk	2
Pesticide	2
Oily Wastewater	2
Fire Debris	2
Algae Bloom	1
Ammonium Phosphate	1
Asbestos	1
Asphalt	1
Acetic Anydride	1
Butyl Acetate	1
Calcium Carbonate Soda	1
Chlorine	1
CO_2	1
Coal Tar/Water	1
Coolant Oil	1
Creosote/Water	1
Formaldehyde	1
#4 Fuel Oil	1
HCN	1
Hydrochloric acid	1
Hydrofluoric Acid	1
Mercaptans	1
NH_4OH	1
Paint	1
Perchloroethylene	1
Proprionic Acid	1
Silt	1
1,1,1 - Trichloroethane	1
Wood Stain	

NONPOINT SOURCE CONTROL PROGRAM

In 1978, Governor Richard A. Snelling endorsed the initial nonpoint source pollution control plan, "State Water Quality Plan for Controlling Agricultural Pollution". This plan listed eight large watersheds tributary to Lakes Champlain and Memphremagog where water quality impairment was known to be the primary nonpoint source problem in the State and in part where water quality impairment was the result of the nutrient phosphorus. As phosphorus washes from farm land it stimulates the growth of noxious algae as it becomes concentrated in lakes and embayments.

Nonpoint source pollution control projects are nearing completion in many of the watersheds on the original list and planning is in progress on most of the remainder. Since 1978, five million dollars have been committed by the U.S. Department of agriculture in accordance with the plan to help landowners in the Lake Champlain and Lake Memphremagog watersheds install special soil and fertilizer conservation measures. Even in 1978, it was evident that it would not be possible to obtain Federal funds for all the conservation practices that would be needed to control farm nutrient runoff in the large designated watersheds.

In an addendum to the plan (October 2, 1979) reference was made to a comprehensive inventory by the U.S.D.A. Soil Conservation Service of the types and extent of nonpoint pollution sources in 19 small watersheds which have both high agricultural intensity and contain impaired waterbodies or fragile high quality waters.

Subsequently, the Soil Conservation Service began a study of portions of the larger watersheds to determine which sub-watersheds had the greatest rate of sediment and phosphorus loss and how the most agricultural nutrient and sediment runoff could be contained for the money anticipated from future Federal sources. Several additional watersheds tributary to Lakes Champlain and Memphremagog, but not in the original plan, were also reviewed where field studies had indicated that there may be a high rate of sediment or phosphorus loss. The studies were completed and provided new data on where cost sharing funds could be effective in resolving water quality problems. The study of small watersheds provided a basis for amending the initial ranking of priority watersheds to receive agricultural nonpoint source control cost-sharing and technical assistance.

Status of Planning and Implementation

The initial "State Water Quality Plan for Controlling Agricultural Pollution" listed watersheds in the following priority for cost-sharing (Figure 3):

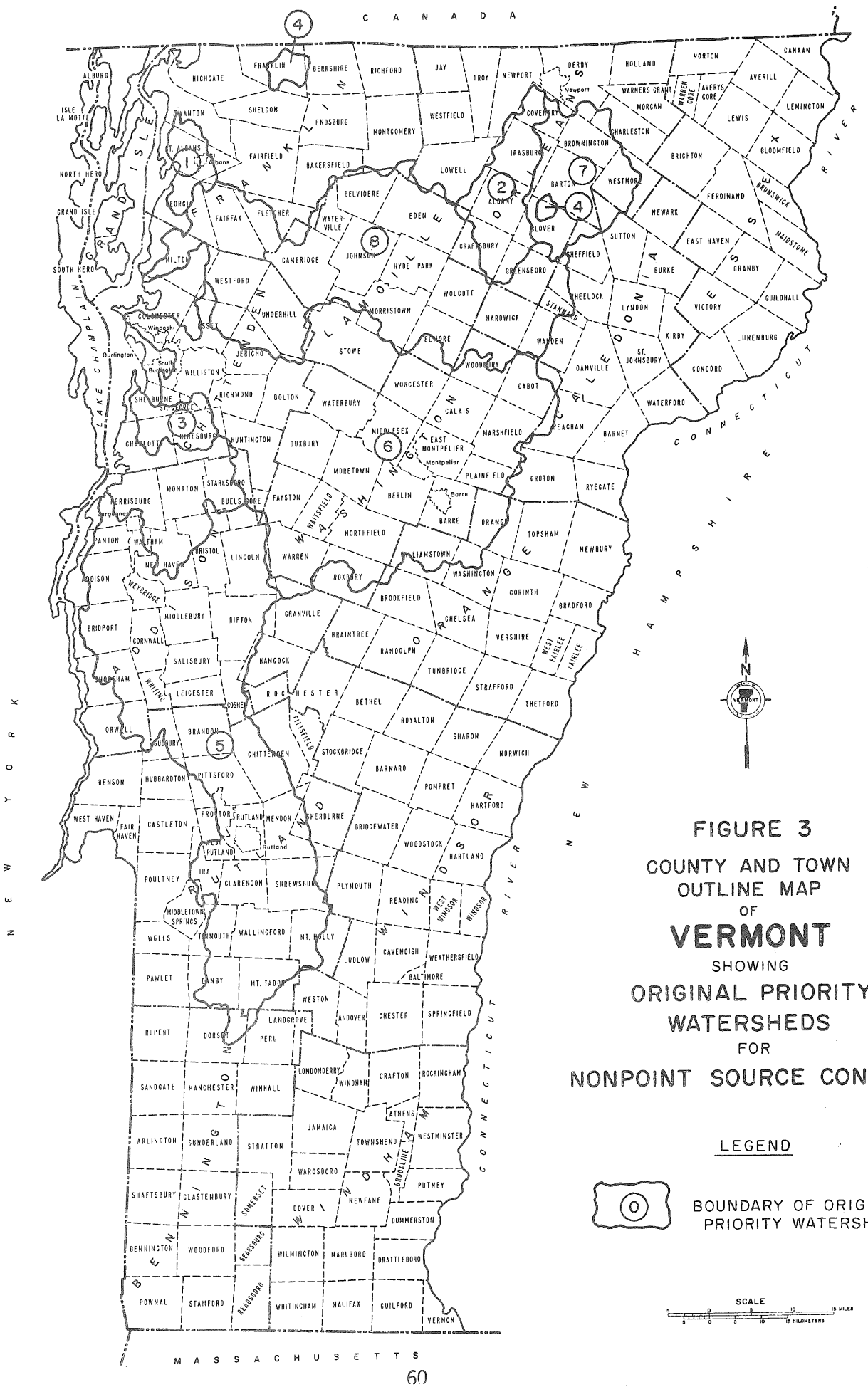


FIGURE 3

COUNTY AND TOWN OUTLINE MAP OF VERMONT SHOWING ORIGINAL PRIORITY WATERSHEDS FOR NONPOINT SOURCE CONTROL

LEGEND

(0) BOUNDARY OF ORIGINAL PRIORITY WATERSHEDS

SCALE

Priority for Funding	Hydrologic Unit	Drainage Area Size
1	St. Albans Bay Drainage Area	48,000 acres
2	Black River (Northern) Drainage Area	85,000 acres
3	Shelburne Bay Drainage Area	34,000 acres
4	Lake Carmi 11.2 square miles Lake Parker 8.1 square miles	12,352 acres
5	Otter Creek Drainage Area	599,040 acres
6	Winooski Drainage Area	691,200 acres
7	Barton River Drainage Area	111,360 acres
8	Lamoille River Drainage Area	451,840 acres

The present status of planning and implementation of nonpoint source control practices in watersheds as contained in the initial list is as follows:

Basin	Planning	Implementation
St. Albans	Complete	43 farm contracts signed; 13 in preparation; goal 70 farm contracts
Black River (Northern)	Complete	Construction recently authorized; goal 60 contracts for farms
Shelburne Bay	Complete	28 contracts signed; goal 31 contracts
Lake Parker	Complete	8 contracts signed; 8 contracts completed
Lake Carmi	Complete	6 contracts signed and in progress; goal 14 farms
Otter Creek Lower Otter and Dead Creek	Complete	15 contracts signed; 12 in progress 60 applications; goal 90 farms
Lemon Fair River	Plan in Development	

Winooski	Plan in Development for Lower Winooski (in Chittenden County) due Sept. 1983
Barton River	Application in Development
Lamoille River	"Trouble shooter" has been working with individual farmers
Inner Malletts Bay	Preliminary Planning (report due 1984)
Browns River	Preliminary Planning (report due 1984)

The Soil Conservation Service small watersheds study evaluated phosphorus loss and erosion as well as the cost of controls for phosphorus and soil loss. On this basis, the watersheds were ranked in the following order in priority for treatment.

High Priority Group	Medium Priority	Low Priority
Lower Lake Champlain	Little Otter Creek	Mettawee River
Malletts Bay and Browns River	Tyler Branch	New Haven River
Barton River	Lewis Creek	Trout River
Clyde River	Black Creek	Mid Otter Creek
Rock River and Pike Creek		
Harvey's Lake		

The original priority list prepared by the 208 Board assured that the planning and implementation of work to correct water quality nonpoint problems would proceed in an orderly manner and in areas where present water quality problems were severe or where the trend in water quality was towards deterioration. The Soil Conservation Service priority list breaks down the watersheds on the original list and includes sub-basins of the

Missisquoi River Basin, the Clyde River Basin, Lewis Creek Basin, the Little Otter Creek and the Mettawee River, all of which are tributaries to Lake Memphremagog or Lake Champlain. The Harvey's Lake Basin was also included for the purpose of study of a high priority problem.

Update to the Plan

On the basis of water quality considerations and also because of the greatest cost effectiveness for implementing nonpoint source controls, the original priority list is amended and replaced by the list which follows. This list combines and revises the initial list with the Soil Conservation Service small watershed study list. Since implementation of practices has been completed on only one of the watersheds on the initial list and since the effectiveness of the practices remains to be confirmed in the future, all watersheds have been retained in the revised list. In the future the completed watersheds will be removed from the priority list once it has been determined that the desired level of nonpoint source control has been achieved.

Updated Nonpoint Source Control Area Priority List (Figure 4)

1. St. Albans Bay Basin
2. Black River Basin (Northern)
3. Shelburne Bay Drainage
4. Lake Carmi Basin
5. Otter Creek Basin (Lower Otter and Dead Creek watershed and Lemon Fair watersheds only).
6. Winooski River Basin (Lower Winooski only)
7. Barton River and Clyde River
8. Lamoille River Basin (Inner Malletts Bay Drainage only)
9. Rock River, Pike Creek and Lower Missisquoi
10. Lamoille River (Browns River Drainage only)
11. Lower Lake Champlain direct drainages
12. Little Otter Creek Basin
13. Lewis Creek Basin
14. Missisquoi River (Trout River, Tyler Branch and Black Creek only)
15. Mid Otter Creek
16. New Haven River
17. Mettawee River
18. Upper Winooski River
19. Upper Lamoille River
20. Champlain Islands
21. Upper Otter Creek

The current review of the initial priority list also revealed new data which indicates that the Champlain Islands should be studied for agricultural nonpoint sources of pollution. On the basis of this prelminary information, the Champlain Islands are included as priority number 20 for the purposes of

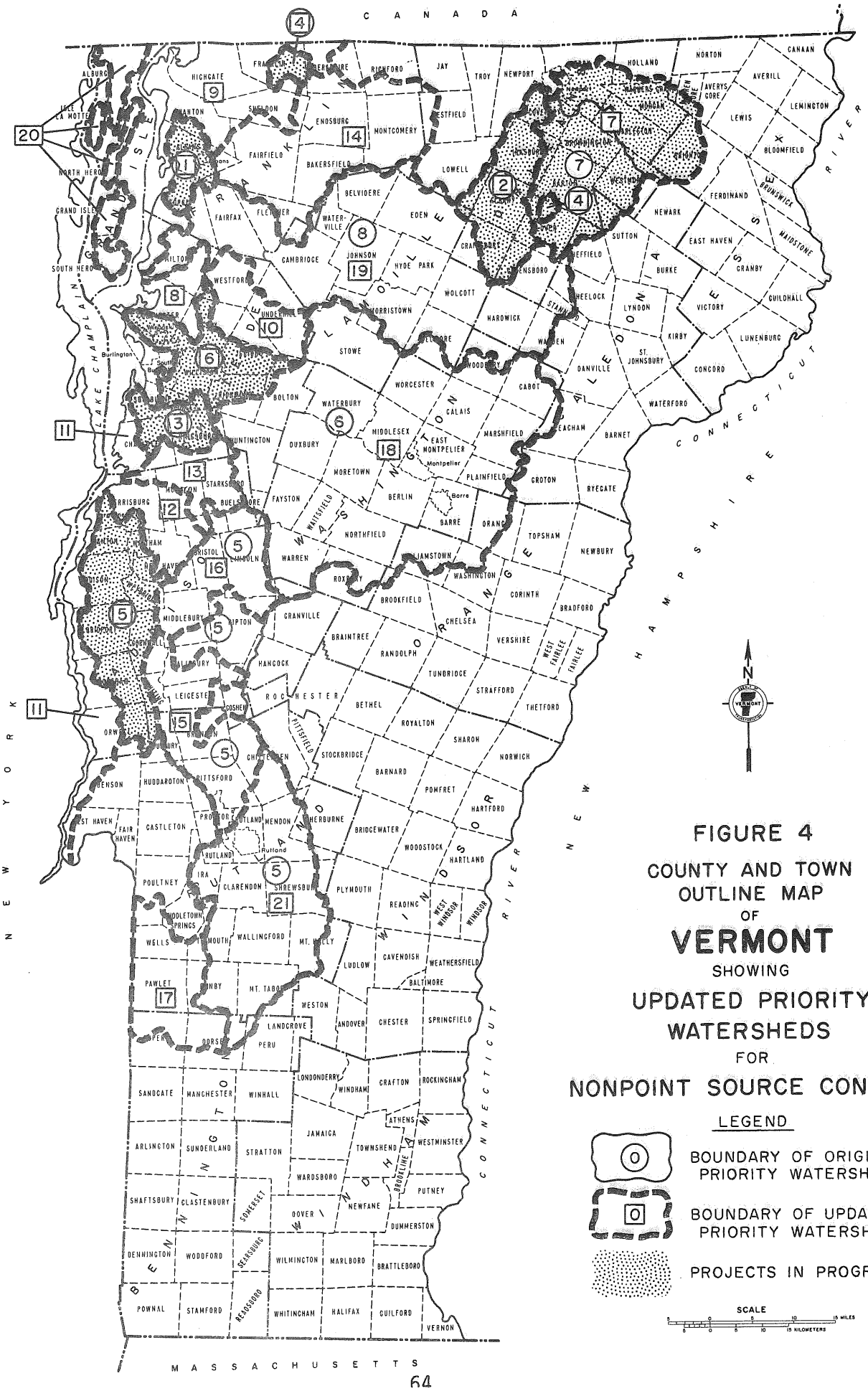


FIGURE 4

COUNTY AND TOWN OUTLINE MAP OF VERMONT SHOWING UPDATED PRIORITY WATERSHEDS FOR NONPOINT SOURCE CONTROL

LEGEND

- (0) BOUNDARY OF ORIGINAL PRIORITY WATERSHEDS
- [0] BOUNDARY OF UPDATED PRIORITY WATERSHEDS
- PROJECTS IN PROGRESS

SCALE

study. Once this area is studied, it will be determined whether the rate of phosphorus loss is sufficient to warrant the expenditure of cost-sharing funds.

This list shall be the basis of planning and nonpoint control cost-sharing until such time when there is evidence that another priority list is needed to guide cost-sharing in a cost-effective and efficient manner.

The revised priority list remains consistent with the primary objective to first treat the Lake Champlain and Lake Memphremagog drainage basins where animal waste and soil loss problems are the cause of present or projected water quality impairment.

Nonpoint Source Pollution Control Strategy

In anticipation of passage of a nonpoint source amendment to the Clean Water Act in October, 1984, the Agency has prepared a draft nonpoint source control strategy. A strategy will be required of the states to participate in federal funding assistance should the amendments pass. At this time, Vermont's strategy is being circulated in-house for review, so it would be premature to report its recommendations as being final. Basically, the strategy calls for new positions to carry out education and compliance actions to reduce nonpoint sources of pollution. Table 15 summarizes the severity and extent of nonpoint source contributions in Vermont.

TABLE 15 - SEVERITY AND EXTENT OF NONPOINT CONTRIBUTIONS

TYPE OF NPS	EXTENT	SEVERITY	PRIMARY PARAMETERS
Urban	L	M	T, C, O, N, T
Agriculture (irrigated)	N/A	N/A	N/A
Agriculture (nonirrigated)	M	M	N, T, O
Animal wastes	M	M	N
Silviculture	M	M	T, O, SS
Mining	L	S	M
Construction	L	S	T, O, SS
Hydrologic modification	L	S	LF
Saltwater intrusion	N/A	N/A	N/A
Residual waste/ landfill	L	S	C, N, M

EXTENT

W = widespread (50% or more of the State's waters are affected)
M = moderate (25% to 50% of the State's waters are affected)
L = localized (less than 25% of the State's waters are affected)

SEVERITY

S = severe (designated use is impaired)
M = moderate (designated use is not precluded, partial support)
I = minor (designated use is almost always supported)

PRIMARY PARAMETERS

C = coliforms
LF = low flow
M = metals
N = nutrients
OD = oxygen demand
P = pesticides/herbicides
S = salinity
SS = suspended solids
T = turbidity
O = sediment on bottom harming fish foods and spawning substrate

URBAN RUNOFF

The Vermont Urban Stormwater Runoff Program objectives and target dates for their attainment are given below:

Vermont Urban Stormwater Program

Target Dates	Objectives
1978	1. Set forth Interim Stormwater Management Policy to slow the increase of stormwater pollution in Vermont. (The interim policy based treatment levels on the size of the paved parking area for the initial ease of administration under the Vermont permit program).
1979-1980	2. Evaluate paved areas subjected to diverse uses; i.e., shopping centers, high volume streets, low volume streets, fast food restaurants, motels, and gas stations to determine if the policy should require treatment based on use rather than size, or a combination thereof. Begin broad spectrum analysis of suspected problem parameters and priority pollutants.
1980-1981	3. Evaluate a portion of these treatment systems in place and determine treatment efficiency. Determine the relationship between the untreated pollutant concentration and the runoff hydrograph at various sites.
1982-1985	4. Develop Stormwater Control Plan and revise Interim Stormwater Management Policy.

A discussion of the first two objectives of the Stormwater Program took place in the previous 305(b) report. The third objective has been completed and the results will be reported herein. The fourth, the development of the Stormwater Control Plan, is nearing completion, as a draft plan has been produced.

Regarding the third objective, the 208 Water Quality Management Board funded a 208 stormwater runoff study in 1981. The duration and scope of this study was greatly reduced from the study previously proposed for NURP funding and rejected by the Legislature. This 208 study proposed to evaluate the pollutant removal efficiency of both a catch basin and a sand filter since these two systems are most frequently installed in compliance with the Interim Policy.

The field work was completed at the end of August, 1982. It can be concluded that:

1. The sand filter was the more efficient of the two systems in removing pollutants.

2. Neither system exhibited any consistency in efficiency from storm to storm.

3. Neither system was very efficient in removing dissolved pollutants.

Development of the Stormwater Management Plan

In response to deficiencies of the Interim Stormwater Management Policy and to reports that sand filters either were not cost effective in abating stormwater pollution or were not working properly, the 1982 session of the Vermont General Assembly reviewed the stormwater issue. House Bill H-402 enacted §1264 of 10 V.S.A., Chapter 47, which requires the Secretary of the Agency of Environmental Conservation to develop a Stormwater Control Plan for the State of Vermont.

To initiate the development of a State Stormwater Control Plan, the Agency of Environmental Conservation met with the Homebuilders Association, developers and engineers to determine appropriate management rquirements. An analysis was made of sixty-four developments required to install and filter treatment systems. Also, during the summer of 1982, twelve developments were visited to inspect the sand filters and to determine if alternative runoff control methods were feasible. The conclusion reached was that, due to the relatively small size of the impervious areas (see Tables #16 and #17), and the relatively high cost ($5,000-$40,000) of the sand filters, (only approximately 50% of which were functioning properly) other alternatives, such as utilizing natural drainage and infiltration, were, in fact, feasible and also more appropriate.

Regarding the above-mentioned inventory of sixty-four sites, it should be noted that 73% of the sites are located in Chittenden County. Table 16 shows that approximately 67% of the sites, regardless of land use, involve impervious areas of two acres or less. Table 17 shows an even distribution (30% each) of commercial and industrial sites and slightly more residential sites (40%). Table 17 also shows that the average size of impervious areas of residential, commercial and industrial developments is 1.4 acres, 1.83 acres, and 3.58 acres respectively.

TABLE 16
Size Distribution of Impervious Areas for
Development Required to Install Sand Filters

Area (Acres)	Number of Developments in Each Size	Percent of Sites in Each Size	
0.5-1.0	21	32.8	67.2%
1.0-1.5	9	14.1	
1.5-2.0	13	20.3	
2.0-2.5	5	7.7	
2.5-3.0	3	4.7	
3.0-3.5	3	4.7	
3.5-4.0	5	7.7	
4.0-4.5			
4.5-5.0			
5.0-5.5			
5.5-6.0	1	1.6	
6.0-6.5			
6.5-7.0	1	1.6	
7.0-7.5			
7.5-8.0	1	1.6	
8.0-8.5			
8.5-9.0			
9.0-9.5			
9.5-10.0			
greater than 10	1	1.6	
Total	64	100%	

TABLE 17
Land-Use Distribution of Developments Required
to Install Sand Filters

Land Use	Number of Sites	Percentage of Sites Inventoried	Average Size of Impervious Area (acres)
Residential	26	40	1.40
Commercial	19	30	1.83
Industrial	19	30	3.58
Total	64	100%	

Next, National Urban Runoff Program (NURP) personnel were contacted to discuss NURP experiences, especially with the impact of stormwater runoff on receiving waters. At a meeting in September, 1982, NURP officials presented a runoff model which

predicts receiving water concentrations of pollutants below stormwater discharges. The use of the NURP model was considered applicable in Vermont because of the AEC's interest in determining receiving water impact on a statewide basis rather than on a site-specific basis.

Through the EPA Region I Office of Program Support of the Water Management Division, Metcalf and Eddy, Inc. (M&E) was retained to assist Vermont in running the NURP model, determining if there are any water quality impacts to the receiving water from stormwater runoff, and recommending appropriate runoff controls where necessary.

The NURP runoff model was applied and tested by M&E. The model is briefly summarized as below:

The downstream concentration of pollutants (Co) in the receiving waters below a stormwater discharge is a function of four variables. These variables include: 1) the runoff flow (Qr), 2) the runoff concentrations (Cr), 3) the stream flow (Qs), and 4) the background stream concentration of pollutants (Cs). The receiving water concentration of pollutants below the discharge may be calculated using the following equation:

$$Co = \frac{(Qr \times Cr) + (Qs \times Cs)}{Qr + Qs}$$

The NURP model is based upon the statistical probability of the occurrence of the four variables above in order to compute the downstream concentrations (C_o). Because the model is based heavily upon statistics, a large data base is desirable. The data base used for the NURP model consisted of 1980 runoff data collected in Vermont during the 208 runoff study and data collected by the NURP from various locations nationwide judged to have conditions similar to those found in Vermont.

The stormwater analysis was conducted by Metcalf and Eddy at no cost to Vermont and was completed in January, 1983[1]. The results of the Metcalf and Eddy analysis were utilized to develop the Stormwater Management Plan.

The Stormwater Management Plan and the Rationale

The Stormwater Management Plan for the State of Vermont is presently awaiting approval by the Water Resources Board. Portions of the plan may be included in the Water Quality Standards which are now being revised. Based on the experience and information gained in the last five years, significant changes are being proposed in the management of stormwater. The plan emphasizes a minimization of stormwater runoff to waters of

(1) Metcalf and Eddy. "Report to the Vermont Agency of Environmental Conservation on Stormwater Management". Boston, February, 1983.

the State by utilizing natural drainage and infiltration on the land. Since most stormwater discharges, if properly handled, will not detrimentally affect water quality, proposals are made in the Plan for a general stormwater discharge permit. Certain other stormwater discharges, where dilution of the receiving water is low and where sensitive environmental areas are involved, would be subjected to a more detailed review and would be issued a regular stormwater discharge permit. In both types of permits the utilization of natural drainage and infiltration, standard erosion and control practices, provisions for handling peak runoff flows, and provisions for continued maintenance of control measures are emphasized.

The proposed plan recognizes that in most situations, stormwater runoff from developments with impervious areas of one acre or less will not be a problem if good erosion control practices are implemented and a general permit would be issued to such dischargers. This differs from the Interim Stormwater Management Policy where collection and retention of the first one-half inch of runoff from impervious areas of one-half acre or more was required.

Use is made in the proposed plan of a relationship between watershed area above the discharge and the size of the impervious area in the development to trigger a more detailed review of the discharge. In situations where the watershed area is small compared to the impervious area in the development, water quality problems from heavy metals could arise due to lower instream flows and reduced dilutional capacity. In these situations, a more detailed application would be required and a more detailed review of the discharge and proposed control methods would be performed.

Rationale for the Stormwater Management Plan

The proposed Stormwater Management Plan is based upon the Metcalf and Eddy, Inc. stormwater analysis, the NURP runoff model, and studies conducted by the Agency of Environmental Conservation. The NURP runoff model and the results obtained by Metcalf and Eddy were intended to be utilized as planning tools and were used as such by the Agency of Environmental Conservation to develop the Stormwater Management Plan.

The Stormwater Discharge Permit Process

The proposed Stormwater Management Plan is divided into two sections - new discharges and existing discharges and for most new discharges a General Stormwater Discharge Permit would be issued. A general permit is one which has standard conditions and is issued automatically to an applicant when he certifies that certain conditions are met in the signed

application form. Each specific application and permit would not need to go through a notification and hearing process because this would be done once at the outset for all discharges meeting the requirements for a general permit. Based on the last five years of experience and studies done to date, most stormwater discharges in Vermont will not present a water quality problem. Problems can occur if good erosion control practices are not applied and maintained and if peak runoff flows are not handled properly. Also, special circumstances such as stormwater discharges to sensitive environmental areas, such as wetlands and fish spawning areas would need a detailed review as would stormwater discharges from facilities engaged in the use or generation of toxic or hazardous materials.

In the above special cases and cases that are triggered by the watershed area to impervious area relationship a detailed review would be required leading to the issuance of a Regular Stormwater Discharge Permit. In these cases a detailed review would be performed to ascertain that the applicant has adequately planned for:

1. Use of natural drainage and infiltration.

2. Use of temporary and permanent erosion control practices.

3. Use and design of control structures as needed to protect bottom fauna, the physical or chemical nature of the bottom, and the propagation of fish.

4. Maintenance of and responsibility for runoff control structures and erosion control structures.

5. Peak runoff flows.

6. Protection of existing waters uses.

A major emphasis of the proposed plan is to control stormwater runoff and protect water quality by utilizing natural drainage and infiltration of the land. Such action in conjunction with standard erosion control measures and their regular maintenance will handle most potential stormwater problems in Vermont. Preliminary results of the Durham, New Hampshire NURP Project indicate good attenuation of pollutants from runoff as it passes over natural surfaces.

Existing stormwater discharges which were issued temporary pollution permits would be reviewed as these permits expire. The provisions of the Stormwater Management Plan would be applied to determine if a general or regular stormwater discharge permit is needed.

In the long-term, the cumulative effect of many stormwater discharges in heavily developed areas may present water quantity as well as water quality problems. The Agency of Environmental Conservation plans to develop an inventory of such areas and to assess their impact on the receiving waters within the next five years.

In summary, the proposed Vermont Stormwater Management Plan is intended to apply a detailed review in those few cases where assurance is needed to protect water quality. In all cases, whether a general permit or regular permit is issued or not, it is the intention of the Agency of Environmental Conservation to hold the applicant responsible for applying proper measures to protect water quality and to handle peak stormwater runoff flows.

Stormwater Manual

The Department, through a consultant, has prepared a draft "Stormwater Manual". In-house review and discussion with the consultant has taken place, and a second draft is being prepared. As soon as the draft has been accepted by the Department, it will be incorporated into the "Erosion Control Manual". Its purpose is to illustrate the various principles of the stormwater management plan for developers, reviewers and planners.

Thermal Pollution Control

Vermont has completed the plan for control of thermal pollution on the Mettawee River, and has forwarded it to New York State water quality officials. Presently, the Department is awaiting a response to a request for a meeting to discuss the plan. As soon as New York accepts the plan, meetings will be held with conservation districts, funds will be requested and implementation begun.

ASSESSMENT OF THE STATE'S WATER QUALITY

Vermont has continued to take positive steps towards achieving the desirable goal of total fishable/swimmable waters. Likewise, insofar as the fishable portion of the goal is concerned, Vermont has for all practical purposes attained total fishable waters. Also, all waters in the State having a designated water use compatible with swimming are capable of achieving this goal. Obviously, the swimmable goal requires a qualifier of "when and where attainable". The level of coliform bacteriological organisms in flowing waters has continued to occasionally present itself as a basic water quality problem. Historical and current data collected from Vermont waterways receiving virtually no point source discharges continue to show levels of elevated coliform organisms in excess of the criteria established for swimmable waters following storm events. Nonpoint runoff originating from agricultural, silvicultural, and urban areas (stormwater and combined sewer overflows) are believed to be essentially responsible for the elevated bacteriological levels. The public health significance of these elevated levels is not known at this time.

Tables 18 and 19 have been prepared as an assessment of the current water quality conditions for the State's segmented river reaches. Table 18 is intended to be a specific segment by segment assessment whereas Table 19 serves as a summary of the State's water quality conditions on a river basin basis. Figure 5 has been prepared to accompany these tables by mapping the individual river basins and segmented river reaches a total of 1126 miles. Also identified on Figure 5 is the present status of each designated reach with regard to limitedness. It has been assumed for the purposes of this report that all nonsegmented river reaches, 1199 miles with a drainage area over 10 square miles, are meeting all applicable water quality standards since these waters are not receiving any pollutional discharges and nonpoint problems are minor or natural in origin.

The water quality problems indicated in Table 18 for the individual river segments are for the majority of instances based upon historical water quality data and best professional judgement. In all instances where current water data was available, the assessment was made utilizing that information. Caution is advised when utilizing data not based upon recent water quality surveys. It is highly unnecessary that an assessment of all streams and rivers in Vermont be accomplished biannually. An assessment schedule of once in five years would be more realistic and meaningful. Vermont will continue to survey its river and stream systems but only at a rate which is within our personnel and budgetary constraints.

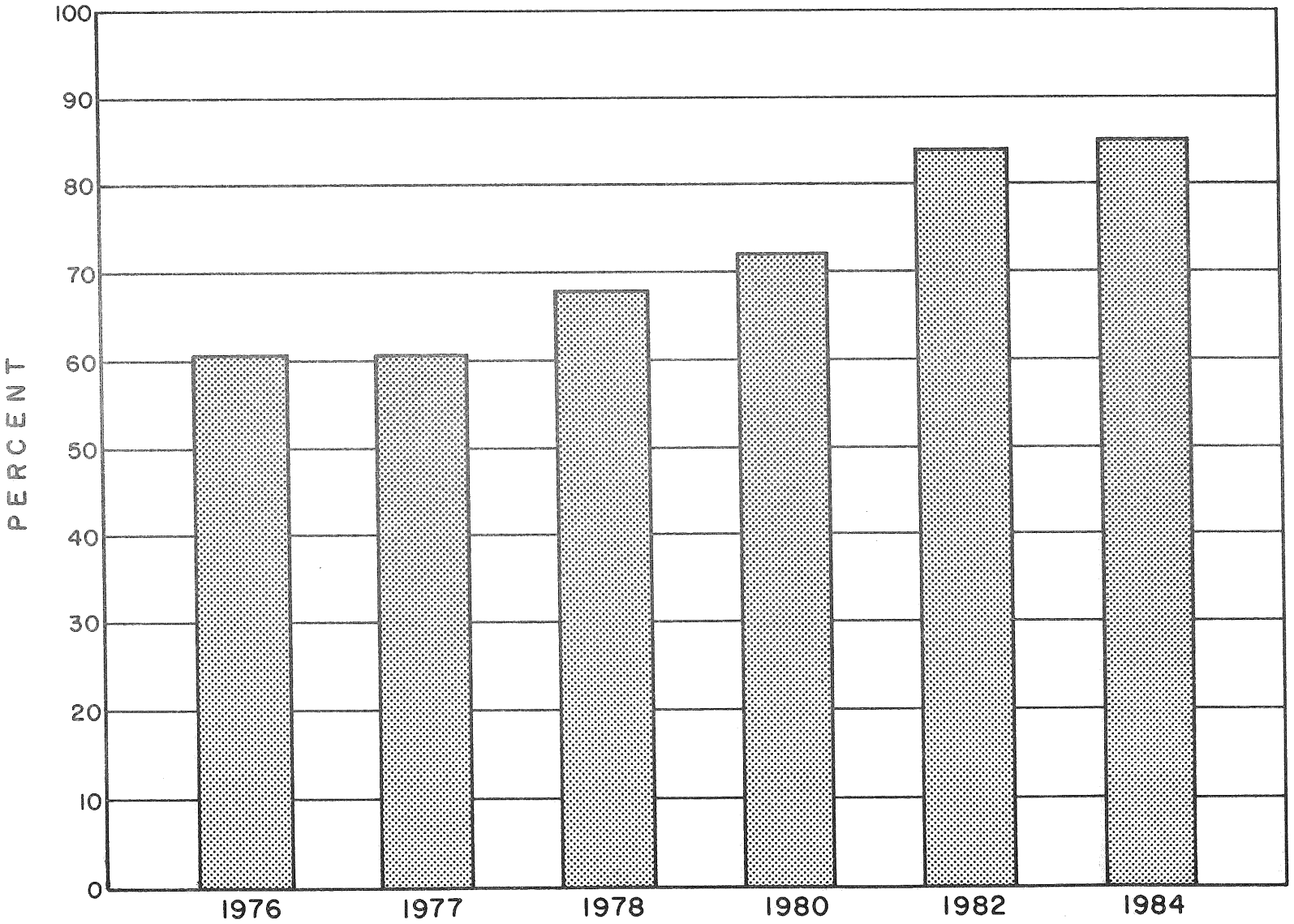
On the basis of our current water quality assessment, eight-five percent of Vermont's segmented river miles are presently in compliance with all applicable water quality standards. Waters that have been brought into compliance have been done so mainly through the upgrading and new construction of municipal wastewater treatment facilities. The State's program to maintain maximum pollutant removal efficiency and maximum effective useful life of treatment facilities is a vital link in Vermont's overall water resource management activities.

Vermont is taking positive steps towards achieving and maintaining its outstanding water resource. Figure 6 depicts the steady increase in improved water quality conditions that Vermont has been able to achieve. It is fully recognized that serious potential problems still remain and must be addressed if Vermont's high water quality is to be maintained for future generations. Many of these problem areas, mentioned in various sections of this document, do not have straight-forward solutions and will require new and innovative approaches to water quality management. Solutions to existing and emerging problems will require a widespread awareness of the short and long term impacts of the problems and a real commitment of public and private entities in terms of financial and personnel resources. In the face of increasingly limited financial resources, implementation of viable solutions to these complex problems will also be made more difficult. Vermont is determined to meet this challenge and to protect and maintain its high quality waters.

FIGURE 6

VERMONT WATER QUALITY SUMMARY 1976-1984

Percent of Segmented Stream Miles Meeting or Exceeding Class B Standards (Fishable/Swimable)



KEY TO WATER QUALITY INVENTORY
OF SEGMENTED RIVER MILES
(TABLE 18)

NOTE (1) CLASSIFICATION

STATUS: EL-1 - Effluent Limited Segment (presently meeting water quality standards)

EL-2 - Effluent Limited Segment (presently not meeting water quality standards)

WQ-1 - Water Quality Limited Segment (for parameters or wastes noted)

WQ-2 - Water Quality Limited Segment (with existing polluting discharge to upland stream)

Upland - Water Quality Limited Segment (without a polluting discharge to an upland stream)

USE: Class B waters are suitable for bathing and recreation, irrigiation and agricultural uses; good fish habitat; good aesthetic value, acceptable for public water supply with filtration and disinfection.

Class C waters are suitable for recreational boating, irrigation of crops not used for consumption without cooking, habitat for wildlife and for common food and game fishes indigenous to the region; and such industrial uses as are consistent with other class uses. Number in parenthesis ( ) indicates number of Class C miles in each segment.

NOTE (2) WATER QUALITY STANDARDS VIOLATED

The majority of the segmented stream miles indicating elevated coliform levels as a water quality problem are listed because of temporary violations of the technical standards for swimmable waters as a result of nonpoint surface runoff and point source runoff resulting from stormwater and/or combined sewer overflows.

TABLE 18
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: BATTENKILL-WALLOOMSAC-HOOSIC (BASIN #1)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
1-1	Hoosic R.-Mass. State Line to Pownal	C(2.2)	EL-2	2.2	2.2	Coliform	Municipal Wastes./ Co.	Municipal wastes entering from Massachusetts.
1-2	Hoosic R.-Pownal to N.Y. State Line	C(4.8)	WQ-1	4.8	4.8	D.O. Coliform	Tannery, Industrial & Municipal Wastes/ D.O.	Water Quality Survey completed in Aug., 1983. Modeling is pending.
1-3	Walloomsac R.-Bennington to Paran Creek	B	EL-1	5.5	0	Coliform	Combined Sewer Overflows & Stormwater	W.Q.S. met except during periods of high flow.
1-4	Walloomsac R.-Paran Creek to N.Y. Line	C(2.7) B	WQ-1	4.4	2.7	D.O. Coliform	Municipal & Industrial Wastes/D.O.	Modeling results to be implemented thru NPDES to Bennington.
1-5	Paran Creek-S. Shaftsbury to Walloomsac R.	B	EL-1	5.0	0			
1-6	No Name Brook-Fairdale Farms to Walloomsac R.	B	EL-2	3.0	1.5	Coliform	Dairy Wastes	Process waste to be conveyed to upgraded municipal facility.
1-7	Batten Kill R.-Manchester Center Depot to Arlington	C(1.7)	EL-1	11.5	0	Coliform	Combined Sewer	W.Q.S. met except during periods of high flow.
1-8	Batten Kill R.-Arlington to New York State Line	B	EL-2	7.0	2.0	Coliform	Municipal Wastes Untreated	
1-9	Warm Brook & Roaring Brook-Fayville Branch to Batten Kill R.	C(3.6)	EL-2	3.6	3.6	Coliform	Sanitary Wastes	

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: POULTNEY-METTAWEE (BASIN #2)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
2-1	Mettawee R.-Pawlet to N.Y. State Line	C(2.5)	EL-2	8.0	2.5	Coliform	Municipal Waste (untreated) Nonpoint Runoff, Potential Thermal Problems.	
2-2	Poultney R.-Poultney to Castleton R.	C(3.0) B	WQ-1	9.0	0	D.O.	Municipal Waste	Actual miles of W.Q.S. violated unknown pending assimilative capacity water quality study.
2-3	Poultney R.-Castleton R. to Hubbardton R.	B	EL-1	5.0	0			
2-4	Poultney R.-Hubbardton R. to Lake Champlain	B	EL-1	7.0	0			
2-5	Castleton R.-Castleton to Poultney River	C(5.3) B	WQ-1	7.0	0	D.O.	Municipal Waste	Actual miles of W.Q.S. violated unknown pending assimilative capacity water quality study.
2-6	Tributary to Hubbardton and Hubbardton R.-Benson STP to Hubbardton R.	C(3.0) B	EL-1	8.0	0			
2-7	Indian River-West Pawlet STP to State Line	C(20 feet)	EL-1	0	0			

Refer to Key for explantion (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: OTTER CREEK (BASIN #3)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
3-1	Otter Creek-Danby to Wallingford	B	EL-1	9	0			
3-2	Otter Creek-Wallingford to Rutland	C(1.8) B	EL-1	8	0			
3-3	Otter Creek-Rutland to Pittsford	C(11.7)	WQ-1	11.7	6	D.O. Coliform	Municipal Waste, Combined Sewer Overflows, Stormwater/ D.O.	Water quality study completed for assimilative capacity. Wasteload allocation process completed. EPA funding approved.
3-4	Otter Creek-Pittsford to Neshobe R.	B	EL-1	8	0			
3-5	Otter Creek-Neshobe R. to Middlebury	B	EL-1	21	0	Coliform	Nonpoint Agricultural	
3-6	Otter Creek-Middlebury to Vergennes	C(2.0) B	EL-1	16	0	Coliform	Combined Sewer Overflows, Stormwater, Nonpoint Agricultural	W.Q.S. met except during periods of high flow.
3-7	Otter Creek-Vergennes to Lake Champlain	C(2.0)	EL-1	8	0	Coliform	Combined Sewer Overflows, Stormwater, Nonpoint Agricultural	W.Q.S. met except during periods of high flow.
3-8	Clarendon R.-Rutland to Otter Creek	C(1.7)	EL-1	1.7	0			
3-9	Neshobe R.-Brandon to Otter Creek	C(1.8) B	EL-1	2	0			

Refer to Key for explanation (1), (2)

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: LOWER LAKE CHAMPLAIN-UPPER LAKE CHAMPLAIN-LAPLATTE MALLETTS BAY, ST. ALBANS BAY, ROCK, PIKE (BASIN #4-#5)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION(1) USE	STATUS	SEGMENTED STREAM MILES TOTAL	VIOLATED W.Q.S.(2) W.Q.S.	VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
4-1	L. Champlain-South Bay to Crown Point	B	WQ-1	Lake	-		Natural Condition/ Phosphorus	Industrial (paper wastes) & Natural condition at times prevents attainment of Class B standards.
4-2	East Creek-Orwell to L. Champlain	C(2.3) B	EL-2	4	0	D.O.	Natural Condition/D.O.	Natural condition causes dissolved oxygen problem.
4-3	L. Champlain-Crown Point to Addison-Chittenden County Line	B	WQ-1	Lake	-		Phosphorus	
5-1	Laplatte R.-Hinesburg to Shelburne	C(4.6) B	WQ-1	8.0	2	D.O.	Municipal Waste, Dairy Waste, Phosphorus, Nonpoint Agricultural	Municipal facility experiencing operational difficulties as a result of heavy loadings of dairy waste. Initial modeling undertaken. Additional data collection necessary.
5-2	Laplatte R.-Shelburne L. Champlain	C(0.75) B	EL-2	2	0	D.O.	Natural causes, Municipal Waste & Phosphorus.	
5-3	Stevens Brook-St. Albans to L. Champlain	C(5.5) B	WQ-1	6	5.5	D.O. Coliform	Municipal Waste, Dairy, Industrial & Phosphorus Combined Sewers/D.O., Storm-water Overflows.	W.Q.S. met, except during periods of high flow. Municipal facility to be upgraded to remove phosphorus.

Refer to key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: BASIN #4-#5 (Continued)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
5-4	Lake Champlain-Shelburne Bay	B	WQ-1	Lake	-		Phosphorus/Nonpoint Agricultural/Municipal Wastes	
5-5	Lake Champlain-Burlington Harbor	B	WQ-1	Lake	-		Phosphorus, Combined Sewer Overflows, Stormwater, Municipal Wastes.	
5-6	Lake Champlain-St. Albans Bay	B	WQ-1	Lake	-		Phosphorus, Municipal Wastes, Nonpoint Agricultural	Municipal facility to be upgraded to remove phosphorus
5-7	Main Lake-Addison-Chittenden County Line to Canadian Border	C(0.18 acre) B	WQ-1	Lake	-		Phosphorus/Municipal Wastes	Class C zone accommodates discharge from Alburg Treatment Facility.
5-8	Indian Brook-Coldwater to Lake Champlain	C(1.0) B	EL-1	2		Rule 12		
5-9	Malletts Bay (Inner & Outer)	C(0.72 acre) B	WQ-1	Lake	-		Phosphorus/Nonpoint Agricultural/ Municipal Wastes	Existing Class C zone of 0.72 acre accommodates discharge from Brown Ledge Camp.

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: BASIN #4-#5 (Continued)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION (1) USE	STATUS	SEGMENTED STREAM MILES TOTAL	VIOLATED W.Q.S.	W.Q.S. (2) VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
5-10	Missisquoi Bay	B	WQ-1	Lake	-		Phosphorus/Municipal Waste	Bay experiencing advanced signs of eutrophication as evidenced by dense algal blooms
5-11	Lake Champlain-Northeast Malletts Bay to Hog Island	B	WQ-1	Lake	-		Phosphorus	
5-12	McCabes Brook-Shelburne STP to LaPlatte River	C(1.0) B	EL-2	1	0.5	D.O.	Phosphorus/Industrial & Municipal Wastes/ Combined Sewers/D.O.	Natural condition causes dissolved oxygen problems. Secondary municipal Facility operational. W.Q.S. met except during periods of high flow.

Refer to key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: MISSISQUOI (BASIN #6)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES TOTAL	VIOLATED W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
6-1	Missisquoi R.-Troy to Canada Line	C(3.0) B	EL-2	11.0	1.6	Coliform	Dairy & Municipal Waste	
6-2	Missisquoi R.-Canada Line to Enosburg Falls	C(1.0) B	EL-2	17.0	0		Possible Municipal Wastes from Canada	Status of Canadian discharges unknown
6-3	Missisquoi R.-Enosburg to Sheldon Springs	C(1.9) B	EL-1	12.0	0	Coliform	Nonpoint Agricultural/ Combined Sewers	W.Q.S. met except during periods of high flow
6-4	Missisquoi R.-Sheldon Springs to Swanton	C(1.5) B	EL-1	15.0	0		Nonpoint Agricultural	
6-5	Missisquoi R.-Swanton to Lake Champlain	C(1.0) B	WQ-1	8.0	0		Phosphorus/Municipal Wastes/Combined Sewers	W.Q.S. met except during periods of high flow
6-6	Trout R.-Montgomery to Missisquoi R.	B	Upland	6.0	0	Coliform	Nonpoint Agricultural/ Domestic Wastes	Sanitary survey has been performed
6-7	Black Creek-East Fairfield to Missisquoi R.	C(1.0) B	EL-2	12.0	3.0	Coliform	Domestic & Industrial Waste	Sanitary survey has not been performed
6-8	Mud Creek-Newport Center to Canada Line	C(3.0) B	EL-1	7.0	0		Nonpoint Agricultural	
6-9	Burgess Branch to conflu-with Missisquoi R.	B	EL-1	5.0	0		Industrial Wastes/ Groundwater from asbestos mine	

Refer to key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: LAMOILLE (BASIN #7)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
7-1	Lamoille R.-Hardwick to Morrisville	C(0.9) B	EL-1	15	0	Coliform	Combined Sewers	W.Q.S. met except during periods of high flow
7-2	Lamoille R.-Morrisville to Hyde Park	C(0.7) B	EL-1	6	0	Coliform	Combined Sewers	W.Q.S. met except during periods of high flow
7-3	Lamoille R.-Hyde Park to Johnson	C(1.0) B	EL-1	9	0			
7-4	Lamoille R.-Johnson to Fairfax	C(1.9) B	EL-1	27	0			
7-5	Lamoille R.-Fairfax to Milton	C(0.6) B	EL-1	8	0			
7-6	Lamoille R.-Milton to Lake Champlain	C(3.0) B	WQ-1	9	0	D.O.	Phosphorus/Municipal Wastes	
7-7	Brewster R.-Madonna Corp. to Lamoille R.	B	Upland	7	0			
7-8	Browns R.-Jericho to Lamoille R.	B	Upland	16	0		Nonpoint Agricultural	

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: WINOOSKI (BASIN #8)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
8-1	Winooski R.-Marshfield to Plainfield	C(2.0) B	EL-1	7	0			
8-2	Winooski R.-Plainfield to Stevens Branch	C(4.0) B	EL-1	9	0			
8-3	Winooski R.-Stevens Branch to Dog River	C(4.0)	EL-1	4	0	Coliform	Combined Sewers & Stormwater Overflow	W.Q.S. met except during periods of high flow
8-4	Winooski R.-Dog R. to Waterbury	C(2.0) B	EL-1	9	0	Coliform	Combined Sewers	W.Q.S. met except during periods of high flow
8-5	Winooski R.-Waterbury to Alder Brook	C(2.7) B	EL-1	22	0		Nonpoint Agricultural	
8-6	Winooski R.-Alder Brook to Lake Champlain	C(14.8) B	WQ-1	18.5	4	D.O.	Municipal & Industrial Waste, Combined Sewers & Stormwater Overflow, Phosphorus	Water quality survey completed for assimilative capacity. Wasteload allocation on hold, waiting for Water Resources Board review of Water Quality Standards. Completion by June, 1984. W.Q.S. met except during periods of high flow
8-7	Jail Branch-East Barre to Stevens Branch	C(3.8)	EL-2	3.8	2	Coliform	Municipal Wastes	

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: BASIN #8 (Continued

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
8-8	Stevens Branch-Williamstown to Jail Branch (Barre)	C(2.0) B	EL-1	6	0			
8-9	Stevens Branch-Jail Branch (Barre) to Winooski R.	C(6.0)	WQ-1	6	3	D.O.	Municipal Waste Combined Sewers & Stormwater Overflow	Water quality survey completed for assimilative capacity. W.Q.S. met except during periods of high flow. No further modeling to be undertaken (Berlin is to combine with Montpelier and discharge to Winooski R.)
8-10	Dog R.-Northfield to Winooski R.	C(1.0) B	EL-1	10	0	Coliform	Combined Sewers	W.Q.S. met except during periods of high flows
8-11	Waterbury R.-Stowe to Winooski R.	C(1.3) B	WQ-1	12	0		Municipal Wastes	Screening analysis has been completed, allocation between municipality and private developer must be completed
8-12	Alder Brook-Essex Center to Winooski R.	B	EL-2	3	2	Coliform	Municipal Waste	Existing treated discharge to be eliminated by connection to upgraded Essex Junction facility
8-13	Allen Brook-Williston to Winooski R.	C(5.0) B	EL-2	6	6	Coliform	Municipal Waste (Untreated)	Municipal waste to be treated at upgraded Essex Junction Facility (1984)

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: WHITE (BASIN #9)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
9-1	White R.-Rochester to Third Branch	B	WQ-2	18	2	Coliform	Municipal Waste	Failed municipal subsurface system
9-2	White R.-Third Branch (Bethel) to First Branch	C(3.0) B	EL-2	8	4	Coliform	Municipal Waste (untreated)	
9-3	White R.-First Branch (So. Royalton) to Connecticut R.	C(1.4) B	EL-1	19	0			
9-4	Third Branch-Randolph to White R.	C(1.2) B	EL-1	8	0	Coliform	Combined Sewers	W.Q.S. met except during periods of high flow
9-5	First Branch-Chelsea to White R.	C(2.0) B	EL-1	16	0			

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: OTTAUQUECHEE-BLACK (BASIN #10)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
10-1	Ottauquechee R.-Killington Recreation Area to Bridgewater Corners	C(2.0) B	EL-2	10	5	Coliform	Domestic Waste	Assimilative capacity study to be done July/ August 1984 (summer) and Jan./Feb. 1985 (winter)
10-1A	Ottauquechee R.-Bridgewater corners to Woodstock	C(2.0) B	EL-1	6	0			
10-2	Ottauquechee R.-Woodstock to Deweys Mills Pond	C(3.0) B	EL-1	10	4			
10-3	Ottauquechee R.-Deweys Mills Pond to Conn. R.	C(0.9) B	EL-1	5	0			
10-4	Kedron Brook-S. Woodstock to Ottauquechee R.	C(2.0) B	EL-1	6	0			
10-5	Black R.-Ludlow to Cavendish	C(1.5) B	EL-1	6	0			
10-6	Black R.-Cavendish to North Springfield Reservoir	C(2.0) B	EL-1	12	0			
10-7	Black R.-North Springfield Reservoir to Springfield	C(4.5)	EL-1	4.5	0			Class C zone for No. Springfield discharge is no longer needed
10-8	Black R.-Springfield to Conn. R.	C(3.7)	WQ-1	3.7	0		Industrial & Municipal Waste, Combined Sewer & Stormwater Overflow	Classification status is tentative. Assimilative capacity study to be performed after construction of proposed hydro facility

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: WEST-WILLIAMS-SAXTONS (BASIN #11)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES TOTAL	VIOLATED W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
11-1	Williams R.-Middle Branch (Chester) to Conn. R.	C(2.0) B	EL-1	12	0			
11-2	Saxtons R.-Saxtons R. to North Westminster	C(2.0) B	EL-1	14	0			Proposed hydro project requires bonding for phosphorus removal at Saxtons River facility
11-3	Saxtons R.-North Westminster to Conn. R.	B	EL-2	2	2	Coliform	Municipal & Wood Product Waste	
11-4	West R.-Londonderry to Ball Mountain Dam	B	Upland	10	0			
11-5	West R.-Ball Mountain Dam to Townshend Dam	B	Upland	8	0			
11-6	West R.-Townshend Dam to Conn. R.	B	Upland	18	0			
11-7	No Name Brook-Magic Mountain Inc. to South Londonderry	B	WQ-2	4	2	Coliform	Domestic Waste	
11-8	Mill Brook & Winhall R.-Bromley Ski Area to West R.	B	Upland	9	0			
11-9	No. Branch & Ball Mountain Brook-Stratton Corp. to West R.	B	Upland	9	0			

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: DEERFIELD (BASIN #12)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	CLASSIFICATION[1] STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	SEGMENTED STREAM MILES VIOLATED W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
12-1	No. Branch, Deerfield R.- Snow Lake to Wilmington	B	Upland	9	0			
12-2	No. Branch, Deerfield R.- Wilmington to Readsboro	C(1.0) B	EL-2	12	2	Coliform	Municipal Waste/ Combined Sewers	W.Q.S. met except during periods of high flows
12-3	Deerfield R.-Readsboro to Mass. State Line	C(1.0) B	EL-1	4	0			
12-4	East Branch, North R.- Jacksonville to Mass. State Line	C(1.4) B	EL-1	9	0			New secondary municipal facility made operational

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: LOWER CONNECTICUT-MILL BROOK (BASIN #13)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
13-1	Conn. R.-Wilder Dam to Windsor	C(2.6) B	EL-2	15	5	Coliform	Municipal & Industrial Waste/Combined Sewers	W.Q.S. met except during periods of high flows
13-2	Conn R.-Windsor to Bellows Falls	C(1.7) B	EL-2	27	1	Coliform	Municipal & Industrial Waste, Combined Sewers & Stormwater Overflows in Bellows Falls	W.Q.S. met except during periods of high flow
13-3	Conn R.-Bellows Falls to Brattleboro	C(1.6) B	EL-2	21	2	Coliform	Municipal & Industrial Waste	
13-4	Conn. R.-Brattleboro to Ashuelot R.	C(2.3) B	EL-2	10	5	D.O. Coliform	Municipal & Industrial Waste	
13-5	Conn R.-Ashuelot R. to Mass. State Line	B	EL-2	6	1	D.O. Coliform	Municipal & Industrial Waste	
13-6	Sacketts Brook-Putney to Conn R.	C(1.3) B	EL-1	2	0			

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: STEVENS-WELLS-WAITS-OMPOMPANOOSUC (BASIN #14)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
14-1	Wells R.-South Ryegate to Conn. R.	C(1.0) B	EL-1	7	3			
14-2	Stevens R.-Barnet to Conn. R.	B	EL-1	1	0			
14-3	Trib. to Ompompanoosuc R.-Ely Mine to Main Stem	B	WQ-1	2	1	Metals, pH, D.O.	Mine Drainage	No action contemplated at this time to correct mine drainage
14-4	Copperas Brook & West Branch of Ompompanoosuc-Elizabeth Mine to Main Stem	B	WQ-1	5	5	Metals, pH, D.O.	Mine Drainage	No action contemplated at this time to correct mine drainage
14-5	Waits R.-Bradford upstream municipal boundary to mouth	C(0.9) B	EL-1	2	0			

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: PASSUMPSIC (BASIN #15)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES VIOLATED TOTAL	W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
15-1	East Branch, Passumpsic R.- East Haven to West Branch	C(1.2) B	EL-1	12	0			
15-2	Passumpsic R.-West Branch to St. Johnsbury Center	C(5.3) B	EL-1	11	0	Coliform	Municipal Wastes/ Combined Sewers	W.Q.S. met except during periods of high flow
15-3	Passumpsic R.-St. Johnsbury Center to Conn. R.	C(4.8) B	EL-2	12	8	Coliform	Combined Sewer Overflow & Stormwater	Primary municipal facility requiring upgrade. W.Q.S. met except during periods of high flows.
15-4	Moose R.-East St. Johnsbury to Passumpsic R.	C(1.1) B	EL-2	5	4	Coliform	Municipal Waste	
15-5	Water Andric Brook-Danville to Passumpsic River	C(3.8) B	WQ-1	7	2	D.O.	Municipal Waste	Secondary facility with storage to meet water quality standards (D.O.) during low flows. Wasteload allocation completed

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: UPPER CONNECTICUT-NULHEGAN-WILLARD STREAM-PAUL STREAM (BASIN #16)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	STATUS	SEGMENTED STREAM MILES TOTAL	VIOLATED W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
16-1	Conn. R.-Canada Line to Upper Ammonoosuc	C(2.0) B	EL-1	48	0			
16-2	Conn. R.-Upper Ammonoosuc to Comerford Dam	C(0.9) B	WQ-1	44	44	D.O.	Municipal & Industrial Waste, Metcalf & Eddy study for EPA determined that extensive additional data needs to be collected for modeling re: S.O.D.	
16-3	Conn. R.-Comerford Dam to Wells R.	B	EL-2	15	2	D.O. Coliform	Municipal & Industrial Waste & Benthic Demand	
16-4	Conn. R.-Wells R. to Bradofrd	C(2.2) B	EL-2	18	2	Coliform	Municipal Waste	
16-5	Conn. R.-Bradford to Wilder Dam	C(0.9) B	EL-1	32	2			

Refer to Key for explanation (1), (2).

TABLE 18 (Cont.)
1984
WATER QUALITY INVENTORY SUMMARY OF SEGMENTED RIVER MILES

RIVER: LAKE MEMPHREMAGOG-BLACK-BARTON-CLYDE-COATICOOK (BASIN #17)

SEGMENT NUMBER	SEGMENT DESCRIPTION	CLASSIFICATION[1] USE	CLASSIFICATION[1] STATUS	SEGMENTED STREAM MILES TOTAL	SEGMENTED STREAM MILES VIOLATED W.Q.S.	W.Q.S.[2] VIOLATED	WATER QUALITY PROBLEM	CURRENT STATUS
17-1	Clyde R.-Island Pond to Derby Center	C(2.0) B	WQ-1	21	0		Phosphorus/Municipal Wastes, Nonpoint Agricultural	
17-2	Clyde R.-Derby Center to Lake Memphremagog	C(0.25) B	WQ-1	5	4	Coliform	Municipal Wastes Phosphorus	New Newport City secondary facility with phosphorus removal now under construction
17-3	Lake Memphremagog (Vt. Portion)	B	WQ-1	Lake	-		Phosphorus/Municipal Wastes, Combined Sewers	W.Q.S. met except during periods of high flows
17-4	Barton R.-Glover to Barton	B	WQ-1	4	0		Phosphorus/Municipal Wastes, Nonpoint Agricultural	Phosphorus removal implemented
17-5	Barton R.-Barton to Lake Memphremagog	C(4.7) B	WQ-1	15	0		Phosphorus/Municipal Wastes, Nonpoint Agricultural	W.Q.S. met except during periods of high flows. Phosphorus removal implemented
17-6	Tomifobia R.-Vt. Line to Canada Line	C(0.25)	EL-1	1	0			
17-7	Black R.-Albany to Lake Memphremagog	B	Upland	21	0		Nonpoint Agricultural	

Refer to Key for explanation (1), (2).

TABLE 19

STATE OF VERMONT
SUMMARY OF WATER QUALITY FOR SEGMENTED RIVER MILES
1984

MAJOR WATER AREAS INCLUDING MAINSTEM AND MAJOR TRIBS.	TOTAL MILES ASSESSED	MILES NOW MEETING STATE WATER QUALITY STANDARDS	MILES NOT MEETING STATE WATER QUALITY STANDARDS	WATER QUALITY* PROBLEMS	SOURCE OF WATER QUALITY PROBLEM M = MUNICIPAL I = INDUSTRIAL CS = COMBINED SEWERS NPS = NONPOINT SOURCE
Basin 1-Battenkill, Walloomsac, Hoosic	47	30	17	5, 6	M, I, CS
Basin 2-Poultney, Mettawee	44	41	3	5, 6	M, NPS
Basin 3-Otter Creek	85	79	6	3, 5, 6	M CS, NPS
Basin 4 and 5-Lake Champlain and Tributaries	23	15	8	2, 3, 5	M, I, CS, NPS
Basin 6-Missisquoi	93	88	5	3, 5, 6	I, CS, NPS
Basin 7-Lamoille	97	97	0	3, 5, 6	
Basin 8-Winooski	116	99	17	2, 3, 5, 6	M, I, CS, NPS
Basin 9-White	69	63	6	6	M, CS
Basin 10-Ottauquechee, Black	63	54	9	1, 6	M, I, CS
Basin 11-West, Williams, Saxtons	86	82	4	6	M
Basin 12-Deerfield	34	32	2	6	M

*WATER QUALITY PROBLEMS -
1 Harmful substances
2 Physical modification (suspended solids, temp., etc.)
3 Eutrophication potential
4 Salanity, acidity, alkalinity
5 Oxygen depletion
6 Health hazards (coliform)

TABLE 19 (Cont.)
STATE OF VERMONT
SUMMARY OF WATER QUALITY FOR SEGMENTED RIVER MILES
1984

MAJOR WATER AREAS INCLUDING MAINSTEM AND MAJOR TRIBS.	TOTAL MILES ASSESSED	MILES NOW MEETING STATE WATER QUALITY STANDARDS	MILES NOT MEETING STATE WATER QUALITY STANDARDS	WATER QUALITY* PROBLEMS	SOURCE OF WATER QUALITY PROBLEM M = MUNICIPAL I = INDUSTRIAL CS = COMBINED SEWERS NPS = NONPOINT SOURCE
Basin 13 and 16-Upper and Lower Connecticut	238	174	64	2, 6	M, I, CS, NPS
Basin 14-Stevens, Wells, Waits, Ompompanoosuc	17	8	9	1, 4, 6	NPS
Basin 15-Passumpsic	47	33	14	5, 6	M, CS
Basin 17-Lake Memphremagog, Black, Barton and Clyde	67	63	4	2, 3, 6	M, CS, NPS
TOTAL MILES	1126	958	168		
% OF MILES ASSESSED		85	15		

*WATER QUALITY PROBLEMS - 1 Harmful substances
2 Physical modification (suspended solids, temp., etc.)
3 Eutrophication potential
4 Salinity, acidity, alkalinity
5 Oxygen depletion
6 Health hazards - (coliform)

APPENDIX A

KEY TO PERMIT DATA
FOR
APPENDIX A

(Inventory of all permitted discharges)

Discharge Type: SW = Stormwater
PT = Pretreatment
DR = Drainage
OT = Other

Discharge Description: (Select applicble type, 2 char. code)

Stormwater:
- SF = Sand filter
- CB = Catch Basins
- GS = Grassed Swale
- SS = Stone-Lined Swale
- DP = Detention Pond
- SP = Settling Pond
- OF = Overland Flow
- OW = Oil/Water Sep.

NOTE: more than 1 code may be required to describe the discharge i.e., CB, GS.

Pretreatment:
- DY = Textile Dying
- MP = Metal Plating or Finishing
- DA = Dairy Products
- CO = Coolant/Cutting Oils
- LA = Commercial Laundries
- PA = Paper Products
- BA = Battery Manufacturers
- ME = Meat Packers/Handlers
- PF = Photo Finishers
- OT = Other

Drainage:
- FL = Floor Drains
- FO = Foundation Drains
- WO = Well Overflows
- GW = Groundwater

Other: Abbreviation as necessary to describe wastes.

NPDES Permits:
- FB = Filter Backwash
- CW = Cooling Water
- QW = Quench Water
- SA = Sanitary

ADDISON 01

Addison - 01-01

Bridport - 01-02

Bristol - 01-03

Cornwall - 01-04

Ferrisburg - 01-05

Goshen - 01-06

Granville - 01-07

Hancock - 01-08

Leicester - 01-09

Lincoln - 01-10

Middlebury - 01-11

Monkton - 01-12

New Haven - 01-13

Orwell - 01-14

Panton - 01-15

Ripton - 01-16

Salisbury - 01-17

Shoreham - 01-18

Starksboro - 01-19

Vergennes - 01-20

Waltham - 01-21

Weybridge - 01-22

Whiting - 01-23

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
01-02-002	TRI-TOWN WATER	VT	0000680	3-1250 001	FB	LAKE CHAMPLAIN			Y	5	31	84
01-03-001	BRIAN BROWN	SW		2-0854 001	CB	NEW HAVEN RIVER				6	30	80
01-05-059	CONLEY G EAGAN	OT		2-0714 001	DOMEST (INV)	LAKE CHAMPLAIN				9	1	77
01-11-001	MIDDLEBURY	VT	0100188	3-1210 001	WWTF	OTTER CREEK	02.2	MGD	Y	3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 001A	BYPASS	OTTER CREEK				3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 002	SAN/COMBINED	OTTER CREEK				3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 003	SAN/COMBINED	OTTER CREEK				3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 004	SAN/COMBINED	OTTER CREEK				3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 005	SAN/COMBINED	OTTER CREEK				3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 006	SAN/COMBINED	OTTER CREEK				3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 007	SAN/COMBINED	OTTER CREEK				3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 008	SAN/COMBINED	OTTER CREEK				3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 009	SAN/COMBINED	OTTER CREEK				3	31	87
01-11-001	MIDDLEBURY	VT	0100188	3-1210 010	SAN/COMBINED	OTTER CREEK				3	31	87
01-11-002	STD REGISTER	VT	0000701	3-1144 001	CW	TRIB OF OTTER CR	.022	MGD	Y	12	1	83
01-11-003	POLYMERS	VT	0000761	3-1191 001	CW	DOW POND	.144	MGD	Y	6	31	83
01-11-003	POLYMERS	VT	0000761	3-1191 002	QUENCH WATER	MUDDY BRANCH	.144	MGD	Y	6	31	83
01-11-004	MIDDLEBURY DEVEL	SW		2-0837 001	SP	TRIB OTTER CREEK				6	30	80
01-11-005	KRAFT FOODS	SW		2-0869 001	CB	OTTER CREEK				6	30	85
01-11-005	KRAFT FOODS	PT		4-0244 001	DA	MIDDLEBURY WWTF	.200	MGD	Y	9	30	84
01-11-007	WHITE PIGMENT CO	DR		3-0349 001	QUARRY SEEPG	FOSTER BROOK			Y	1	1	85
01-11-009	BUTTOLPH ACRES	SW		2-0730 001	CB	TRIB OTTER CREEK				6	30	80
01-11-009	BUTTOLPH ACRES	SW		2-0730 001A	CB	TRIB OTTER CREEK				6	30	80
01-11-009	BUTTOLPH ACRES	SW		2-0730 002	CB	TRIB OTTER CREEK			N	6	30	80
01-11-009	BUTTOLPH ACRES	SW		2-0730 003	CB	TRIB OTTER CREEK				6	30	80
01-11-009	BUTTOLPH ACRES	SW		2-0730 004	UNTREATED	TRIB OTTER CREEK				6	30	80
01-11-010	MIDDLEBURY TOWN	SW		2-0803 001	OF	TRIB OTTER CREEK				6	30	80
01-11-011	WEISSMAN & DEMON	SW		2-0858 001	OF,GS,SS	TRIB OTTER CREEK				6	30	81
01-11-012	WOODBRIDGE CONDO	SW		2-0874 001	SS,CB,OF	OTTER CREEK				6	30	85
01-11-012	WOODBRIDGE CONDO	SW		2-0874 002	SS,CB	OTTER CREEK				6	30	85
01-11-013	GEIGER OF AUSTR	SW		2-0896 001	CB,SS	OTTER CREEK				07	1	85
01-11-014	OMYA, INC	DR		1-0330 001	QUARRY	BEAVER BROOK			N	5	15	86
01-11-015	H P HOOD	PT		4-0243 001	DA	MIDDLEBURY WWTF	.014	MGD	Y	9	30	84
01-11-016	HALLADAY RIDGE	SW		2-0138 001	DP,GS	OTTER CREEK				7	1	85
01-11-017	DAVID K ROSS	OT		3-0385 001	CAR WASH	TRIB OTTER CREEK	700	GPD	Y	3	1	88
01-11-018	AGWAY	SW		2-0168 001	SS	OTTER CREEK				7	1	85
01-11-019	FOSTER BROS FARM	SW		2-0174 001	SS,GS	OTTER CREEK				7	1	85
01-11-019	FOSTER BROS FARM	SW		2-0174 002	SS,GS	OTTER CREEK				7	1	85
01-11-019	FOSTER BROS FARM	SW		2-0174 003	SS,GS	OTTER CREEK				7	1	85
01-11-020	WILLIAM BUSH	SW		2-0184 001	OF	OTTER CREEK				7	1	85
01-13-001	WH PIGMENT NEW H	VT	0000426	3-1127 001	LIMESTONE	LITTLE OTTER CR	.035	MGD	Y	2	28	83
01-13-001	ORWELL	VT	0100676	3-1214 001	WWTF	SO FORK, EAST CR	.033	MGD	Y	9	30	87
01-14-003	IRWIN CUMMINGS	OT		2-0432 001	DOMES (INV)	LAKE CHAMPLAIN				9	1	73
01-17-001	VT FISH & GAME	OT		3-0361 001	HATCHERY	HILNON BROOK			N	4	1	85
01-20-001	VERGENNES	VT	0100404	3-0368 001	WWTF	OTTER CREEK	.660	MGD	Y	5	31	85
01-20-002	SIMMONDS PRECIS	PT		3-0337 001	MFG	VERGENNES WWTF	.1	MGD	Y	2	28	85
01-20-003	LABERGE CONST	SW		2-0755 001	CB,OPEN SW	OTTER CREEK				6	30	80
01-20-004	SIMMONDS PRECIS	SW		2-0766 001	FB	OTTER CREEK				6	30	80
01-20-005	MERCHANTS BANK	SW		2-0799 001	OF	OTTER CREEK				7	1	80
01-20-006	VERGENNES PANTON	DR		1-0332 001	FILT BKWASH	LAKE CHAMPLAIN	13000	GPD	Y	3	1	86
01-20-007	OTTER CR TNHSE	SW		2-0131 001	GS	OTTER CREEK				7	1	85

51 records selected from 91 processed.

Bennington 02

Arlington - 02-01

Bennington - 02-02

Dorset - 02-03

Landgrove - 02-04

Manchester - 02-05

Peru - 02-06

Pownal - 02-07

Readsboro - 02-08

Rupert - 02-09

Sandgate - 02-10

Searsburg - 02-11

Shaftsbury - 02-12

Stamford - 02-13

Sunderland - 02-14

Winhall - 02-15
(Bondville)

Woodford - 02-16

Unorganized - 02-17

BENNINGTON COUNTY PERMITS

Date: 04/10/84 VT-AEC Report Generator Vers. 3.06

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
02-01-001	HALE COMPANY INC	OT		3-0234 001	SAN	WARM BROOK			Y	7	1	80
02-01-002	ARLINGTON	VT	0100587	4-1169 001	EXIST OUTF'S	BATTENKILL RIVER			N	10	1	83
02-01-009	CHITTENDEN TRUST	SW		1-0232 001	GW,SW RUNOFF	TRIB DRY BROOK			N	4	1	82
02-02-001	FAIRDALE FARMS	VT	0000663	4-1082 001	DOMESTIC	WALLOOMSAC RIVER	9.03	MGD	Y	1	31	80
02-02-002	TANSITOR ELEC	VT	0020346	4-0137 001	SAN/PROCESS	BROWNS BROOK				11	1	72
02-02-003	UNION CARBIDE CO	PT		3-0303 001	MP	BENNINGTON WWTF	.022	MGD	Y	1	31	83
02-02-003	UNION CARBIDE CO	OT		3-0332 001	FB	MORGAN BROOK	.055	MGD	Y	10	30	83
02-02-003	UN CARB WAL/MORG	VT	0000361	3-1163 001	CW	WALLOOMSAC RIVER	.182	MGD	Y	10	31	84
02-02-003	UNION CARBIDE CO	VT	0000361	3-1163 002	CW	MORGAN BROOK	.175	MGD	Y	10	31	84
02-02-005	FREDERICK CAREY	OT		2-0335 001	DOMEST (INV)	DEWEY BROOK	1000	GPD		12	1	72
02-02-006	F L BROWNING	OT		2-0206 001	DOMEST (INV)	JEWETT BROOK	200	GPD		11	1	72
02-02-007	BENNINGTON	VT	0100021	4-1048 001	WWTF	WALLOOMSAC RIVER	4.000	MGD	Y	7	1	77
02-02-007	BENNINGTON	VT	0100021	4-1048 002	COMB OVERFLO	WALLOOMSAC RIVER				7	1	77
02-02-007	BENNINGTON	VT	0100021	4-1048 003	COMB OVERFLO	WALLOOMSAC RIVER				7	1	77
02-02-007	BENNINGTON	VT	0100021	4-1048 004	COMB OVERFLO	WALLOOMSAC RIVER				7	1	77
02-02-008	FISH & GAME DEPT	OT		3-0341 001	HATCHERY	WALLOMSAC RIVER				1	1	85
02-02-009	FIRST FLORIDA	SW		2-0838 001	UNTREATED	WALLOOMSAC RIVER				7	1	80
02-02-010	BENNINGTON HOUSE	SW		2-0851 001	SW, FD	WALLOOMSAC RIVER				4	28	85
02-02-012	APPLEGATE ASSOC	SW		1-0223 001	GREASE TRAP	FURNACE BROOK				2	1	82
02-02-016	ECONOMY GRAPHICS	VT	0000744	3-1012 001	CW	PARAN CREEK	.216	MGD		6	1	79
02-02-017	HAVILANDS PRIV	DR		1-0316 001	FD	PARAN CREEK				4	1	85
02-02-018	JOHNSON CONTROLS	PT		3-1110 001	MP	BENNINGTON WWTF	.300	MGD	Y	10	1	81
02-02-019	VT TISSUE PAPER	PT		3-0364 001	PA	BENNINGTON WWTF	.010	MGD	Y	7	1	85
02-02-022	OMEGA SHOPPING	DR		1-0247 001	ROOF DRAIN	ROARING BROOK				10	1	82
02-02-023	CATAMOUNT DYERS	PT		4-0242 001	DY	BENNINGTON WWTF			Y	9	30	84
02-02-025	WILLIAM H MORSE	SW		2-0736 001	CB	SOUTH STREAM				6	30	80
02-02-025	WILLIAM H MORSE	SW		2-0736 002	CB	SOUTH STREAM				6	30	80
02-02-025	WILLIAM H MORSE	SW		2-0736 003	CB	SOUTH STREAM				6	30	80
02-02-025	WILLIAM H MORSE	SW		2-0736 004	CB	SOUTH STREAM				6	30	80
02-02-026	RAMADA INN	SW		1-0275 001	FILT BASIN	FURNACE BROOK				6	30	80
02-02-026	RAMADA INN	SW		1-0275 002	FILT BASIN	FURNACE BROOK				6	30	80
02-02-026	RAMADA INN	SW		1-0275 003		FURNACE BROOK				6	30	80
02-02-027	BENN CTY IND COR	SW		2-0756 001	CB	FURNACE BROOK				6	30	80
02-02-028	BENN HOUSING	SW		2-0781 001	CB	WALLOOMSAC RIVER				6	30	80
02-02-029	TRIANGLE PWC	OT		3-0373 001	CW	FURNACE BROOK			Y	12	31	85
02-02-030	BENN CONVALESCEN	SW		2-0943 001	CB, GS	TRIB SOUTH STREA				7	1	85
02-02-032	BENN HOUSING	SW		2-0957 001	CB	WALLOOMSAC RIVER				7	1	85
02-02-033	OLD BENNINGTON	SW		2-0124 001	CB	WALLOOMSAC RIVER				7	1	85
02-02-035	DIV STATE BLDGS	SW		2-0217 001	CB,DP,GS	ROARING BRANCH				7	1	87
02-05-002	MANCHESTER TOWN	VT	0100170	3-1153 001	WWTF	BATTENKILL RIVER	.600	MGD	Y	6	30	84
02-05-003	THE ORVIS CO INC	DR		1-0039 001	FL	MUNSON BROOK				7	1	78
02-05-005	J & J HAND	SW		2-0850 001	CB	WEST BRANCH				4	28	85
02-05-006	IVOW CORP	SW		1-0201 001	CB	BATTENKILL RIVER				6	1	81
02-05-007	CHRIS SWEZEY III	SW		1-0209 001	CB	GULF BROOK				7	1	81
02-05-008	THOMAS WOLF	SW		1-0243 001	OF	BROMLEY BROOK				7	1	82
02-05-010	MANCHESTER TOWN	DR		1-0339 001	GW	BROMLEY BROOK				8	1	82
02-05-011	DEXTER SHOE CO	SW		2-0123 001	GS	BATTENKILL RIVER				7	1	85
02-05-012	AGENCY OF TRANSP	SW		2-0122 001	CB	BATTENKILL RIVER				7	1	85
02-05-013	GRAND UNION	SW		2-0127 001	GS	MUNSON BROOK				7	1	85
02-05-014	EQUINOX HOUSE	SW		2-0216 001	GS,SS,CB	MUNSON BROOK				7	1	85
02-06-001	BIG BROMLEY INC	OT		4-0112 001	SA	MILL BROOK	40000	GPD		12	1	73
02-07-001	POWNAL TANNING	VT	0000388	4-1173 001	TANNERY	HOOSIC RIVER			Y	11	1	84
02-07-002	GENERAL CABLE	VT	0000639	3-1150 001	CW	HOOSIC RIVER	.007	MGD	Y	4	30	84

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
02-07-005	GREEN MT RACE TR	SW		4-0515 001	LAGOON,CB	HOOSIC RIVER	45000	GPD	Y	4	1	77
02-07-006	LEO PAMBIANCHI	SW		2-0902 001	CB	CORP MANCHEST BR				7	1	85
02-07-007	POWNAL SCHOOL	OT		2-0935 001	SA	JEWETT BROOK			Y	10	15	83
02-08-001	READSBORO	VT	0100731	3-1215 001	WWTF	DEERFIELD RIVER	.075	MGD	Y	9	30	87
02-08-002	MELVIN H COE	OT		2-0538 001	DOMEST (INV)	DEERFIELD RIVER	1000	GPD		10	1	74
02-08-004	LEONA UNDERWOOD	DR		1-0147 001	GW	DEERFIELD RIVER				7	1	80
02-08-007	WOODEN INDIAN	SW		2-0968 001	CB	DEERFIELD RIVER				7	1	85
02-12-001	STANLEY TOOLS	DR		1-0344 001	SS	TRIB PARAN CREEK			N	11	1	87
02-12-001	STANLEY TOOLS	VT	0000612	3-0311 001	PROC,CW	PARAN CREEK	.036	MGD	Y	12	31	88
02-12-002	WILLIAM PALLMAN	OT		4-0217 001	DOMEST (INV)	PARAN CREEK	1500	GPD		6	30	78
02-15-001	PETER SHIH	DR		1-0113 001	CURTAIN DR	TRIB BROMLEY				5	1	80
02-17-020	CHALET SUSSE INT	SW		2-0214 001	CB,GS,DP	MUDDY BROOK			N	7	1	85
02-17-020	CHALET SUSSE INT	SW		2-0214 002	GS	MUDDY BROOK			N	7	1	85
02-17-020	CHALET SUSSE INT	SW		2-0214 003	GS	MUDDY BROOK			N	7	1	85

67 records selected from 144 processed.

CALENDONIA 03

Barnet - 03-01
(Passumpsic)

Burke - 03-02

Danville - 03-03

Groton - 03-04

Hardwick - 03-05

Kirby - 03-06

Lyndon - 03-07

Newark - 03-08

Peacham - 03-09

Ryegate - 03-10

St. Johnsbury - 03-11

Sheffield - 03-12

Stannard - 03-13

Sutton - 03-14

Walden - 03-15

Waterford - 03-16

Wheelock - 03-17

CALEDONIA COUNTY PERMITS

VT-AEC Report Generator Vers. 3.06

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
03-01-011	KILFASSET FARMS	VT	0000027	3-1170 001	CW	PASSUMPSIC RIVER	.004	MGD	Y	10	1	84
03-01-052	N E POWER	OT		2-0723 001	SA	CONNECTICUT RIVE			Y	9	1	78
03-01-053	KARME-CHOLING	OT		4-0230 001	COMB/LCH FLD	TRIB STEVENS R	1000	GPD	Y	8	1	79
03-01-053	KARME-CHOLING	OT		4-0230 002	SAN/LCH FLD	STEVENS RIVER	5500	GPD	Y	8	1	79
03-02-021	ALDRICH GEN'L ST	OT		2-0246 001	DOMEST (INV)	SUTTON RIVER				7	1	72
03-02-041	BURKLYN	DR		2-0734 001	ROOF DRAINS	PASSUMPSIC RIVER				6	30	80
03-02-042	WINTER GREEN DEV	SW		2-0903 001	OF	PASSUMPSIC RIVER				7	1	85
03-03-014	DANVILLE	VT	0100633	3-1235 001	WWTF	WATER ANDRIC	.060	MGD	Y	6	30	88
03-03-061	JOES PD COUNTRY	OT		2-0984 001	DOMESTIC	JOES BROOK	1000	GPD	Y	9	1	82
03-03-064	RALPH U HASTINGS	OT		2-0985 001	DOMESTIC	JOES BROOK	400	GPD	Y	7	1	83
03-03-065	PHILIP ASTLE	OT		2-0986 001	DOMESTIC	JOES BROOK	100	GPD	Y	9	1	82
03-05-001	HARDWICK	VT	0100137	3-1143 001	WWTF	LAMOILLE RIVER	.371	MGD	Y	4	30	84
03-05-006	ARSENE FRADETTE	DR		1-0030 001	GW	LAMOILLE RIVER				9	1	74
03-07-002	LYNDON	VT	0100595	3-1111 001	WWTF	PASSUMPSIC RIVER	.750	MGD	Y	3	1	87
03-07-002	LYNDON	VT	0100595	3-1111 002	SA/SW OVERFL	PASSUMPSIC RIVER				3	1	87
03-07-002	LYNDON	VT	0100595	3-1111 003	SA/SW OVERFL	PASSUMPSIC RIVER				3	1	87
03-07-002	LYNDON	VT	0100595	3-1111 004	SA/SW OVERFL	PASSUMPSIC RIVER				3	1	87
03-07-002	LYNDON	VT	0100595	3-1111 005	SA/SW OVERFL	PASSUMPSIC RIVER				3	1	87
03-07-006	LYNDON INSTITUTE	DR		1-0146 001	SW	PASSUMPSIC RIVER				8	1	80
03-07-016	CLIFFORD E GEE	DR		1-0298 001	GW	COPELAND POND BR				1	1	85
03-07-023	VT TAP & DIE CO	PT		3-0318 001	TAP & DIE	LYNDONVILLE WWTF	750	GPD	Y	3	31	84
03-07-024	NORTHEAST TOOL	PT		3-0390 001	MP	LYNDONVILLE WWTF	.0025	MGD	Y	6	30	88
03-08-001	VT FISH & GAME	SW		3-0336 001	GS	BEAN BROOK				1	1	85
03-10-001	RYEGATE TOWN	VT	0101206	3-1218 001	WWTF	WELLS RIVER	.006	MGD	Y	3	31	88
03-10-003	CPM RYEGATE	VT	0000167	3-1117 001	PA	CONNECTICUT RIV	1.5	MGD	Y	12	31	82
03-10-003	CPM RYEGATE	VT	0000167	3-1117 003	BLOWDOWN	CONNECTICUT RIV			Y	12	31	82
03-10-003	CPM RYEGATE	VT	0000167	3-1117 004	CW	CONNECTICUT RIV	.070	MGD	Y	12	31	82
03-10-008	KILFASSET FARMS	OT		2-0483 001	MILK RM(INV)	CONNECTICUT RIV	1000	GPD		10	1	73
03-11-002	ALFRED L BARRETT	OT		2-0042 001	DOMEST (INV)	SLEEPERS RIVER	800	GPD		7	1	73
03-11-008	ST JOHNSBURY	VT	0100579	4-1076 001	WWTF	PASSUMPSIC RIVER	1.90	MGD	Y	7	1	77
03-11-011	AIMES RESTAURANT	OT		4-0081 001	DOMEST (INV)	MOOSE RIVER	2500	GPD		7	1	77
03-11-022	GHI REALTY TRUST	SW		2-0873 001	GS	SPAULDING BROOK				6	30	85
03-11-025	EUGENE FONTAINE	OT		2-0022 001	DOMEST (INV)	SLEEPERS RIVER	400	GPD		7	1	73
03-11-031	LESLIE H SMITH	OT		2-0027 001	DOMEST (INV)	MOOSE RIVER	400	GPD		7	1	73
03-11-045	ROMEO A THERRIEN	OT		2-0044 001	DOMEST (INV)	SLEEPERS RIVER	400	GPD		7	1	73
03-11-056	W & M COPP	OT		2-0071 001	DOMEST (INV)	SLEEPERS RIVER	200	GPD		7	1	73
03-11-069	ARMOND MCELROY	OT		2-0088 001	DOMEST (INV)	SLEEPERS RIVER	200	GPD		7	1	73
03-11-072	BARBARA FARR	OT		2-0049 001	DOMEST (INV)	SLEEPERS RIVER	100	GPD		7	1	73
03-11-073	L & B BRYER	OT		2-0036 001	DOMEST (INV)	SLEEPERS RIVER	300	GPD		7	1	73
03-11-080	EHV WEIDMAN	VT	0000019	3-1184 001	PA	PASSUMPSIC RIVER	.200	MGD	Y	11	30	83
03-11-084	COLT INDUSTRIES	VT	0000086	3-1125 001	SCALE MFG	MOOSE RIVER	.015	MGD	Y	2	28	83
03-11-102	BARBARA O'BRIEN	OT		2-0325 001	DOMEST (INV)	MOOSE RIVER	800	GPD		9	1	73
03-11-115	LESTER BURNHAM	SW		2-0868 001	CB	PASSUMPSIC RIVER				6	30	81
03-11-126	MERWIN SIMONS	OT		2-0490 001	DOMEST (INV)	MOOSE RIVER	300	GPD		10	1	73
03-11-128	LUCY FORTIN	OT		2-0403 001	DOMEST(INV)	PASSUMPSIC RIVER	400	GPD		9	1	73
03-11-145	HERBERT ZITER	SW		1-0116 001	GS	PASSUMPSIC RIVER				5	1	80
03-11-165	S & D DODGE	SW		2-0965 001	SS	PASSUMPSIC RIVER				7	1	85
03-11-166	PASSUMPSIC SAV'S	SW		2-0113 001	SA, CB	PASSUMPSIC RIVER				7	1	85
03-16-002	WHITE BIRCH FARM	DR		1-0336 001	WD	STILES BROOK				10	1	86

49 records selected from 190 processed.

CHITTENDEN 04

Bolton - 04-01

Buels Gore - 04-02

Burlington - 04-03

Charlotte - 04-04

Colchester - 04-05

Essex - 04-06

Hinesburg - 04-07

Huntington - 04-08

Jericho - 04-09

Milton - 04-10

Richmond - 04-11

St. George - 04-12

Shelburne - 04-13

South Burlington - 04-14

Underhill - 04-15

Westford - 04-16

Williston - 04-17

Winooski - 04-18

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
04-01-001	BOLTON VALLEY	SW		2-0882 001	SS	JOINER CREEK				7	1	85
04-01-002	BOLTON VALLEY CO	SW		1-0328 001	OF	JOINER BROOK				12	31	85
04-03-001	BURLINGTON MAIN	VT	0100153	4-0231 001	WWTF	LAKE CHAMPLAIN	4.000	MGD	Y	6	30	81
04-03-001	BURLINGTON MAIN	VT	0100153	4-0231 002	SAN/SW	LAKE CHAMPLAIN				6	30	81
04-03-001	BURLINGTON MAIN	VT	0100153	4-0231 003	SAN/SW	LAKE CHAMPLAIN		003		6	30	81
04-03-001	BURLINGTON NORTH	VT	0100226	4-1124 001	WWTF	WINOOSKI RIVER	2.100	MGD		6	30	81
04-03-001	BURLINGTON NORTH	VT	0100226	4-1124 002	SAN/SW	WINOOSKI RIVER				6	30	81
04-03-001	BURLINGTON RIVER	VT	0100307	4-1125 001	WWTF	WINOOSKI RIVER	1.000	MGD	Y	6	30	81
04-03-001	BURLINGTON RIVER	VT	0100307	4-1125 002	SAN/SW	WINOOSKI RIVER				6	30	81
04-03-002	BURLINGTON WATER	VT	0000540	3-1162 001	FB	LAKE CHAMPLAIN			Y	7	31	84
04-03-002	BURLINGTON WATER	VT	0000540	3-1162 002	FB	LAKE CHAMPLAIN			Y	7	31	84
04-03-003	G S BLODGETT	VT	0000337	3-1148 001	CW	LAKE CHAMPLAIN	.05	MGD	Y	5	31	84
04-03-004	GENERAL ELECTRIC	PT		3-0370 001	MP	BURL MAIN WWTF	.075	MGD	Y	8	31	84
04-03-005	MOBIL OIL CORP	VT	0000353	3-1239 001	SW, O/W SEP	LAKE CHAMPLAIN			Y	4	30	84
04-03-008	BURL ELEC MORAN	VT	0000531	3-1186 001	CW	LAKE CHAMPLAIN	26.5	MGD	Y	3	1	85
04-03-012	EXXON	VT	0000370	3-1137 001	SW, O/W SEP	LAKE CHAMPLAIN			Y	6	30	83
04-03-015	BURLINGTON STREE	VT	0101079	4-1160 001	WW/SW O'FLOW	WINOOSKI RIVER			N	4	30	85
04-03-015	BURLINGTON STREE	VT	0101079	4-1160 002	WW/SW O'FLOW	INTERVALE			N	4	30	85
04-03-015	BURLINGTON STREE	VT	0101079	4-1160 003	WW/SW O'FLOW	INTERVALE			N	4	30	85
04-03-015	BURLINGTON STREE	VT	0101079	4-1160 004	WW/SW O'FLOW	INTERVALE			N	4	30	85
04-03-015	BURLINGTON STREE	VT	0101079	4-1160 005	WW/SW O'FLOW	WINOOSKI RIVER			N	4	30	85
04-03-015	BURLINGTON STREE	VT	0101079	4-1160 006	WW/SW O'FLOW	LAKE CHAMPLAIN			N	4	30	85
04-03-015	BURLINGTON STREE	VT	0101079	4-1160 007	WW/SW O'FLOW	LAKE CHAMPLAIN			N	4	30	85
04-03-015	BURLINGTON STREE	VT	0101079	4-1160 008	WW/SW O'FLOW	LAKE CHAMPLAIN			N	4	30	85
04-03-021	HAROLD ROLLS	SW		2-0107 001	GS	LAPLATTE RIVER				7	1	85
04-03-027	EDLUND CO INC	PT		4-1118 001	MP	BURL MAIN WWTF			Y	1	31	79
04-03-028	BURL ELEC MCNEIL	VT	0020401	3-1219 001	CW,FB,FL	WINOOSKI RIVER	.310	MGD	Y	11	1	85
04-03-029	MEDICAL CTR HOSP	SW		2-0747 001	CB	LAKE CHAMPLAIN				1	22	84
04-03-030	GENERAL ELECTRIC	SW		2-0744 001	SEEPAGE	LAKE CHAMPLAIN				6	30	80
04-03-030	GENERAL ELECTRIC	SW		2-0744 002	ROOF DRAIN	LAKE CHAMPLAIN				6	30	80
04-03-030	GENERAL ELECTRIC	SW		2-0744 003	AREA DRAIN	LAKE CHAMPLAIN				6	30	80
04-03-031	JAMES M FARRELL	SW		2-0771 001	CB,SA	LAKE CHAMPLAIN				6	30	80
04-03-032	REDROCK PROP	SW		2-0770 001	FILT/TRENCH	LAKE CHAMPLAIN				6	30	80
04-03-032	REDROCK PROP	SW		2-0770 002	FILT/TRENCH	LAKE CHAMPLAIN				6	30	80
04-03-032	REDROCK PROP	SW		2-0770 003	FILT/TRENCH	LAKE CHAMPLAIN				6	30	80
04-03-033	BURL GEN'L CONTR	SW		2-0768 001	CB	LAKE CHAMPLAIN				6	30	80
04-03-034	OVERLAKE PROP	SW		2-0789 001	CB,GS	LAKE CHAMPLAIN				10	1	84
04-03-035	SPARROW INC	SW		2-0784 001	CB	LAKE CHAMPLAIN				6	30	80
04-03-036	GOLDEN PLACE APT	SW		2-0796 001	FD,CB	LAKE CHAMPLAIN				7	1	80
04-03-037	FERN HILL ELD HS	SW		2-0816 001	GS	WINOOSKI RIVER				7	1	80
04-03-038	BARRY MOSSMAN	SW		2-0826 001	CB	LAKE CHAMPLAIN				3	18	85
04-03-039	VT FED SAVINGS	SW		2-0871 001	CB	L CHAMPL VIA SS				6	30	85
04-03-040	LIMOGE BROTHERS	SW		2-0886 001	CB	LAKE CHAMPLAIN				6	30	85
04-03-041	BURLINGTON CITY	SW		2-0894 001	GS	FRESHWATER MARSH				7	1	85
04-03-042	NO AVE ALLIANCE	SW		2-0892 001	GS	LAKE CHAMPLAIN				7	1	85
04-03-043	UNIV OF VERMONT	SW		2-0898 001	GS	WINOOSKI RIVER				7	1	85
04-03-044	BURLINGTON HSG	SW		2-0926 001	CB	WINOOSKI RIVER				7	1	85
04-03-045	LCTC AQUARIUM	OT		3-0375 001	AQUARIUM	LAKE CHAMPLAIN	100	GPHR		5	15	86
04-03-046	GENERAL ELECTRIC	PT		3-1206 001	MP	BURL MAIN WWTF	.035	MGD	Y	1	2	87
04-03-048	LEDGEWOOD ASSOC	SW		2-0971 001	FILT PD,CB	LAKE CHAMPLAIN				7	1	85
04-03-049	MEDICAL CTR HOSP	SW		2-0134 001	CB,SF	TRIB TO WINOOSKI				7	1	85
04-03-050	VT AGENCY TRANSP	SW		2-0997 001	CB	POTASH BROOK				7	1	85
04-03-051	BURLINGTON DEV	SW		2-0989 001	CB	WINOOSKI RIVER				7	1	85

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
04-03-052	HOWARD MENT HLTH	DR		1-0337 001	SS	ENGLESBY RAVINE				2	28	87
04-03-053	MEDICAL CTR HOSP	OT		3-0393 001	CW	WINOOSKI VIA SS	.676	MGD	Y	12	31	83
04-03-055	BURLINGTON STREE	SW		2-0112 001	FILT/BASIN	WINOOSKI RIVER				7	1	85
04-03-056	LTH ASSOCIATES	SW		2-0999 001	CB	LAKE CHAMPLAIN				7	1	85
04-03-057	CHAMPL COLLEGE	SW		2-0104 001	CB	LAKE CHAMPLAIN				7	1	85
04-03-058	BOBBIN MILL APT	SW		2-0117 001	CB	LAKE CHAMPLAIN				7	1	85
04-03-059	VT DIV OF BLDGS	SW		2-0133 001	SF,CB	LAKE CHAMPLAIN				7	1	85
04-03-061	GENERAL ELECTRIC	SW		2-0171 001	OF	LAKE CHAMPLAIN				7	1	85
04-03-062	FAIRFIELD ASSOC	SW		2-0189 001	CB,GS,DP	LAKE CHAMPLAIN				7	1	85
04-04-002	ROBERT FIORENZA	SW		1-0206 001		LAKE CHAMPLAIN				7	1	81
04-04-003	ANTHONY PASCVAL	SW		2-0830 001	SS	HOLMES CREEK				6	30	80
04-04-004	CHARLOTTE SCHOOL	OT		2-0844 001	SANITARY	MCCARTHY BROOK	950	GPD	Y	8	1	80
04-04-006	JEFFREY SMALL	DR		1-0329 001	WO	LAKE CHAMPLAIN	86			4	30	
04-05-002	ETH ALLEN BEECH	VT	0000051	3-1123 001	BOIL BLOWDN	HALL STREAM	.005	MGD	Y	2	28	83
04-05-002	BROWN LEDGE CAMP	OT		4-0207 001	DOMESTIC	LAKE CHAMPLAIN			Y	11	1	75
04-05-004	CHAMPLAIN CABLE	VT	0000396	3-1190 001	CW	SUNDERLAND BROOK	.125	MGD	Y	4	1	85
04-05-004	CHAMPLAIN CABLE	VT	0000396	3-1190 002	CW	SUNDERLAND BROOK	.070	MGD	Y	4	1	85
04-05-006	COLCHESTER FD#1	VT	0100960	4-1122 001	WWTF	WINOOSKI RIVER	.310	MGD	Y	6	30	81
04-05-010	BRAULT'S MOBILE	OT		4-0111 001	DOMESTIC	POND BROOK	36000	GPD		10	1	72
04-05-013	COLCHESTER TOWN	SW		2-0981 001	OUTFALL PIPE	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 002	OUTFALL PIPE	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 003	OUTFALL PIPE	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 004	NATURAL DTCH	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 005	CULVERTS	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 006	CULVERTS	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 007	CULVERTS	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 008	CULVERTS	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 009	CULVERTS	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 010	CULVERTS	LAKE CHAMPLAIN				4	13	85
04-05-013	COLCHESTER TOWN	SW		2-0981 011	SUMP OUTFALL	LAKE CHAMPLAIN				4	13	85
04-05-015	FANNY ALLEN HOSP	SW		2-0889 001	STORM DRAINS	WINOOSKI RIVER				7	1	85
04-05-017	HOWARD CRANWELL	SW		1-0049 001	CB	LAKE CHAMPLAIN				7	1	78
04-05-019	COLONIAL DEVEL	SW		1-0052 001	CB	SUNDERLAND BROOK				1	1	79
04-05-020	JAMES N CORRIGAN	OT		1-0064 001	CW	LAKE CHAMPLAIN	250	GPD		7	1	79
04-05-021	VT FURNITURE CO	SW		2-0732 001	PIPE OUTFALL	POND BROOK				9	18	83
04-05-021	VT FURNITURE CO	SW		2-0732 002	DRAINAGE SW	POND BROOK				9	18	83
04-05-029	ROGER VILLEMAIRE	SW		2-0735 001	PIPE OUTFALL	LAKE CHAMPLAIN				9	18	83
04-05-029	ROGER VILLEMAIRE	SW		2-0735 002	PIPE OUTFALL	LAKE CHAMPLAIN				9	18	83
04-05-029	ROGER VILLEMAIRE	SW		2-0735 003	PIPE OUTFALL	LAKE CHAMPLAIN				9	18	83
04-05-029	ROGER VILLEMAIRE	SW		2-0735 004	PIPE OUTFALL	LAKE CHAMPLAIN				9	18	83
04-05-029	ROGER VILLEMAIRE	SW		2-0735 005	PIPE OUTFALL	LAKE CHAMPLAIN				9	18	83
04-05-031	ALAN BARTLETT	SW		2-0762 001	CB,FILT BAS	SUNDERLAND BROOK				6	30	80
04-05-034	WILLIAM HOLBROOK	SW		2-0740 001	CB	HALF MOON COVE				6	30	80
04-05-035	SNYDER CO INC	SW		2-0814 001	SS,CB	SUNDERLAND BROOK				6	30	80
04-05-036	MEADOWOOD TOWN H	SW		2-0843 001	DRAIN SWALE	SUNDERLAND BROOK				6	30	80
04-05-037	LEO DEFORGE	SW		2-0840 001	CB	LAKE CHAMPLAIN				7	1	80
04-05-038	LARRY ROBERTS	SW		2-0861 001	OF,CULVERT	ALLEN BROOK				6	30	81
04-05-038	LARRY ROBERTS	SW		2-0861 002	OF,CULVERT	ALLEN BROOK				6	30	81
04-05-040	VT AGENCY TRANSP	SW		2-0923 001	CB	WINOOSKI RIVER				7	1	85
04-05-041	MUNSON EARTH MOV	SW		2-0919 001	CB,SF	INDIAN BROOK				7	1	85
04-05-042	ESSEX PUBLISHING	SW		2-0941 001	SF,DP	SUNDERLAND BROOK				7	1	85
04-05-043	COCA COLA BOTTL	PT		3-0378 001	SAN/WASH WAT	WINOOSKI WWTF	.040	MGD	Y	6	1	86

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
04-05-044	RED PINES CONDO	SW		2-0950 001	GS,CB	WINOOSKI RIVER				7	1	85
04-05-046	ALAN D PALMER	SW		2-0960 001	OUTFALL PIPE	WINOOSKI RIVER				7	1	85
04-05-047	ROGER VILLEMAIRE	SW		2-0975 001	CB	SUNDERLAND BROOK				7	1	85
04-05-049	ST MICHAEL'S COL	SW		2-0102 001	CB	WINOOSKI RIVER				7	1	85
04-05-050	SNYDER CO INC	SW		2-0149 001	CB,GS	INDIAN BROOK				7	1	85
04-05-051	WIEMANN LAMPHERE	SW		2-0172 001	GS	WINOOSKI RIVER				7	1	85
04-05-052	F W WHITCOMB	SW		2-0210 001	OF,CB	WINOOSKI RIVER			N	7	1	85
04-06-001	ESSEX JUNCTION	VT	0100111	4-1139 001	BYPASS	WINOOSKI RIVER				2	28	83
04-06-001	ESSEX JUNCTION	VT	0100111	4-1139 001A	WWTF	WINOOSKI RIVER	1.250	MGD	Y	2	28	83
04-06-002	ESSEX TOWN	VT	0100994	4-1140 001	WWTF	WINOOSKI RIVER	.100	MGD	Y	6	30	82
04-06-003	DANA CORPORATION	OT		3-0394 001	DOMESTIC	ALDER BROOK	20000	GPD	Y	11	1	84
04-06-004	GMPC ESSEX	VT	0000752	3-1151 001	CW	WINOOSKI RIVER	1.728	MGD	Y	7	31	84
04-06-007	IBM COMP DIV	VT	0000400	4-1172 001	COMB IND/SA	WINOOSKI RIVER	5.0	MGD	Y	9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 002	RO,FB	WINOOSKI RIVER	1.5	MGD	Y	9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 002A	TREATED SW	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 003	RO,FB	WINOOSKI RIVER	1.5	MGD	Y	9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 003A	TREATED SW	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 004	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 005	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 006	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 007	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 008	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 009	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 010	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 011	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 012	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 013	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-007	IBM COMP DIV	VT	0000400	4-1172 014	SW,ROOF DR,	WINOOSKI RIVER				9	30	88
04-06-008	MAPLE LEAF APT	SW		2-0191 001	SF	ALDER BROOK				11	1	72
04-06-011	FORESTDALE HGHTS	SW		2-0877 001	SS,CB	ALDER BROOK				7	1	85
04-06-011	FORESTDALE HGHTS	SW		2-0877 002	CB,SS	WINOOSKI RIVER				7	1	85
04-06-012	GAGE & LANG	SW		1-0236 001	CB	INDIAN BROOK				6	1	82
04-06-014	ESSEX REALT CORP	SW		1-0250 001	HEADWALL	SUNDERLAND BROOK				11	30	82
04-06-015	PIZZAGALLI ESSEX	SW		2-0733 001	PIPE OUTFALL	WINOOSKI RIVER				9	18	83
04-06-016	ESSEX TOWN	SW		2-0761 001	COMBINED	ALDER BROOK				6	30	80
04-06-016	ESSEX TOWN	SW		2-0761 001A	FRENCH DRAIN	ALDER BROOK				6	30	80
04-06-016	ESSEX TOWN	SW		2-0761 002		ALDER BROOK				6	30	80
04-06-016	ESSEX TOWN	SW		2-0761 002A		ALDER BROOK				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 001	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 002	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 003	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 004	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 005	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 006	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 007	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 008	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 009	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 010	CB	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 011	CULVERT	WINOOSKI RIVER				6	30	80
04-06-017	LEE & LEE REALTY	SW		2-0741 012	CULVERT	WINOOSKI RIVER				6	30	80
04-06-018	PINEWOOD MANOR	SW		2-0752 001	CB	ALDER BROOK				6	30	80
04-06-018	PINEWOOD MANOR	SW		2-0752 002	CB	ALDER BROOK				6	30	80

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
04-06-018	PINEWOOD MANOR	SW		2-0752 003	CB	ALDER BROOK				6	30	80
04-06-018	PINEWOOD MANOR	SW		2-0752 004	CB	ALDER BROOK				6	30	80
04-06-019	FREDERICK DOANE	SW		2-0754 001	DRAIN DITCH	INDIAN BROOK				6	30	80
04-06-021	PIZZAGALLI ESSEX	SW		2-0760 001	SF	WINOOSKI RIVER				5	1	84
04-06-023	ESSEX JCT VOC	SW		2-0769 001	CB, MANHOLE	INDIAN BROOK				6	30	80
04-06-024	LTH ASSOC/SAYBRK	SW		2-0983 001	GS,CB	ALDER BROOK				6	10	85
04-06-025	JAMES R EWING	SW		2-0863 001	GS	SUNDERLAND BROOK				6	30	81
04-06-026	SAVINGS REALTY	DR		1-0294 001	CURTAIN DR	ALDER BROOK				12	1	84
04-06-027	SAXON HILL RESCH	SW		2-0807 001	SF,DP	WINOOSKI RIVER			Y	1	1	85
04-06-028	VILLAGE GLEN	SW		2-0835 001	SLOW FILTER	INDIAN BROOK				6	30	80
04-06-028	VILLAGE GLEN	SW		2-0835 002	CB	INDIAN BROOK				6	30	80
04-06-028	VILLAGE GLEN	SW		2-0835 003	CB	INDIAN BROOK				6	30	80
04-06-030	RONALD BOUFFARD	SW		2-0855 001	OF,CB	INDIAN BROOK				6	30	80
04-06-031	COLONY ASSOC	SW		2-0872 001	CB,SUMP	SUNDERLAND BROOK				6	30	85
04-06-032	TOWN MKT PLACE	SW		2-0925 001	SS,CB	SUNDERLAND BROOK				7	1	85
04-06-033	MAPLES TOWNHOUSE	SW		2-0920 001	CB,SS	SUNDERLAND BROOK				7	1	85
04-06-035	IBRAHIN QATANI	SW		2-0136 001	GS	WINOOSKI RIVER				7	1	85
04-06-037	ESSEX HOUSING	SW		2-0952 001	FILT BASIN	INDIAN BROOK				7	1	85
04-06-037	ESSEX HOUSING	SW		2-0952 002	CB	INDIAN BROOK				7	1	85
04-06-037	ESSEX HOUSING	SW		2-0952 003	CB	INDIAN BROOK				7	1	85
04-06-037	ESSEX HOUSING	SW		2-0952 004	DRAIN SWALES	INDIAN BROOK				7	1	85
04-06-037	ESSEX HOUSING	SW		2-0952 005	DRAIN SWALES	INDIAN BROOK				7	1	85
04-06-038	ESSEX HOUSING	SW		2-0961 001	GS	INDIAN BROOK				7	1	85
04-06-039	PIZZAGALLI ESSEX	SW		2-0962 001	GS,DP	WINOOSKI RIVER			Y	7	1	85
04-06-040	PIZZAGALLI BLDG	SW		2-0994 001	SS,SF,DP	WINOOSKI RIVER				7	1	85
04-06-042	SAXON HILL ASSOC	SW		2-0103 001	GS,CB,POND	WINOOSKI RIVER				7	1	85
04-06-043	PIZZAGALLI ESSEX	OT		3-0384 001	BOIL BLOWDN	WINOOSKI RIVER	50	GPD	Y	2	1	88
04-06-043	PIZZAGALLI ESSEX	OT		3-0384 002	SOOT WASH	WINOOSKI RIVER	40	GPWK	Y	2	1	88
04-06-044	ESSEX HOUSING	SW		2-0155 001	CB,GS	INDIAN BROOK				7	1	85
04-06-046	ESSEX JCT VILL	SW		2-0162 001	CB	WINOOSKI RIVER				7	1	85
04-06-046	ESSEX JCT VILL	SW		2-0187 001	CB	INDIAN BROOK				7	1	85
04-06-047	R M BOUFFARD	SW		2-0198 001	CB	TRIB WINOOSKI R				7	1	85
04-06-047	R M BOUFFARD	SW		2-0198 002	SS	TRIB WINOOSKI R				7	1	85
04-06-047	R M BOUFFARD	SW		2-0198 003	SS	TRIB WINOOSKI R				7	1	85
04-06-047	R M BOUFFARD	SW		2-0198 004	CB	TRIB WINOOSKI R				7	1	85
04-07-001	IROQUOIS MFG CO	OT		1-0299 001	CW	POND BROOK	5.5	GPM		1	1	85
04-07-002	HINESBURG	VT	0101028	3-1172 001	WWTF	LAPLATTE RIVER	.250	MGD	Y	1	1	85
04-07-003	INTERN'L CHEESE	PT		3-0335 001	DA	HINESBURG WWTF	.065	MGD	Y	1	1	85
04-07-003	INTERN'L CHEESE	VT	0020575	3-0389 001	UCW	PATRICK BROOK	.078	MGD	Y	6	30	89
04-07-004	O'BRIEN BRO RLTY	SW		2-0765 001	CB	TEXAS HILL BROOK			Y	6	30	80
04-07-004	O'BRIEN BRO RLTY	SW		2-0765 002	DR DITCH	TEXAS HILL BROOK				6	30	80
04-07-004	O'BRIEN BRO RLTY	SW		2-0765 003	DR DITCH	TEXAS HILL BROOK				6	30	80
04-07-005	ROBERT SCHRYER	SW		2-0757 001	SS	LAPLATTE RIVER				6	30	80
04-07-006	F KEITH BALLARD	DR		2-0842 001	CULVERTS	LAPLATTE RIVER				6	30	80
04-07-007	CHARLES R ROSS	SW		2-0870 001	GS or SS	HOLLOW BROOK				6	30	85
04-07-008	MERCHANTS BANK	SW		2-0884 001	CB	LAPLATTE RIVER				7	1	85
04-07-009	KELLEY FIELD APT	SW		2-0945 001	CB,DR SWALE	LAPLATTE RIVER				7	1	85
04-07-010	INTERN'L CHEESE	SW		2-0158 001	CB,GS	PATRICK BROOK				7	1	85
04-07-010	INTERN'L CHEESE	SW		2-0158 002	GS,BLOWDN	PATRICK BROOK				7	1	85
04-07-010	INTERN'L CHEESE	SW		2-0158 003	GS,CB	PATRICK BROOK				7	1	85
04-07-010	INTERN'L CHEESE	SW		2-0158 004	FO,GS	PATRICK BROOK				7	1	85
04-08-001	GENE JAQUES	SW		2-0946 001	GS	HUNTINGTON RIVER				7	1	85

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
04-09-002	B & R OF ESSEX	SW		1-0019 001		LEE RIVER				12	01	73
04-09-004	MT MANSFIELD UHS	DR		2-0183 001	SEEPAGE	LEE RIVER				8	31	84
04-10-003	MILTON	VT	0100684	3-1203 001	WWTF	LAMOILLE RIVER	.225	MGD	Y	9	1	86
04-10-003	MILTON	VT	0100684	3-1203 002	SW RUNOFF	LAMOILLE RIVER				9	1	86
04-10-003	MILTON	VT	0100684	3-1203 003	SW RUNOFF	LAMOILLE RIVER				9	1	86
04-10-004	CVPSC MILTON	VT	0000671	3-1181 001	CW	LAMOILLE RIVER	8.43	MGD	Y	8	1	85
04-10-008	BIRCHWOOD MANOR	OT		4-0214 001	DOMESTIC	LAMOILLE RIVER				6	1	78
04-10-011	ROUNDS FARM CORP	SW		2-0879 001	GS,OF	MALLETTS CREEK				7	1	85
04-10-012	ALAN PALMER	SW		2-0810 001	CB,OF,SWALE	LAMOILLE RIVER				1	28	85
04-10-014	BLAKELY-LADD	SW		2-0912 001	GS	STREETER BROOK				7	1	85
04-11-002	RICHMOND	VT	0100617	3-1173 001	WWTF	WINOOSKI RIVER	.222	MGD	Y	8	1	84
04-11-005	THOMAS O'NEIL	SW		2-0974 001	SS	SNIPE ISLAND				7	1	85
04-11-006	JAMES R EWING	SW		2-0977 001	SS	WINOOSKI RIVER				7	1	85
04-11-007	LARRY WESTALL	SW		2-0169 001	SS	DONAHUE BROOK				7	1	85
04-12-003	MORTIMER KAUFMAN	OT		4-0229 001	M H PK(INV)	LAPLATTE RIVER				10	1	78
04-12-009	ELMER CHAMBERS	OT		2-0728 001	DOMEST(INV)	LAPLATTE RIVER	800	GPD		10	1	78
04-12-013	HUBBARD, CLARK,	SW		2-0763 001	SWALE/CULV	IROQUOIS LAKE				6	30	80
04-12-013	HUBBARD, CLARK,	SW		2-0763 002	SWALE/CULV	IROQUOIS LAKE				6	30	80
04-13-001	SHELBURNE FD#1	VT	0100331	4-1170 001	WWTF	LAKE CHAMPLAIN	.280	MGD	Y	1	1	88
04-13-002	SHELBURNE FD#2	VT	0100820	4-1150 001	WWTF	MCCABES BROOK	.450	MGD	Y	3	31	81
04-13-003	CREATIVE HOMES	SW		2-0956 001	CB	MONROE BROOK				7	1	85
04-13-005	SHELBURNE IND	PT		3-0300 001	HDWARE MFG	SHELB #2 WWTF			Y	12	31	82
04-13-006	JOHN L LESSARD	SW		2-0990 001	GS	LAPLATTE RIVER				7	1	85
04-13-007	LOREN PALMER	OT		1-0246 001	STORM DRAIN	MCCABE'S BROOK				10	1	82
04-13-008	DOUG LITTLEFIELD	SW		2-0146 001	CB,SF	LAPLATTE RIVER				7	1	85
04-13-009	CRAIG D STAFFORD	SW		2-0746 001	CULVERT	LAPLATTE RIVER				6	30	80
04-13-009	CRAIG D STAFFORD	SW		2-0746 002	CULVERT	LAPLATTE RIVER				6	30	80
04-13-009	CRAIG D STAFFORD	SW		2-0746 003	SF,DP	LAPLATTE RIVER				6	30	80
04-13-009	CRAIG D STAFFORD	SW		2-0746 004	SF,DP	LAPLATTE RIVER				6	30	80
04-13-009	CRAIG D STAFFORD	SW		2-0746 005	POND OUTFLOW	LAPLATTE RIVER				6	30	80
04-13-009	CRAIG D STAFFORD	SW		2-0746 006	CULVERT	LAPLATTE RIVER				6	30	80
04-13-009	CRAIG D STAFFORD	SW		2-0746 007	GROUNDWATER	LAPLATTE RIVER				6	30	80
04-13-011	PAUL HANDY	SW		2-0749 001	SF,CULVERT	SHELBURNE BAY				7	1	85
04-13-012	RICHARD J COLTON	SW		2-0748 001	CB	LAKE CHAMPLAIN				6	30	80
04-13-013	CEDAR RIDGE EST	SW		2-0788 001	GS,SP	LAPLATTE RIVER				6	30	80
04-13-015	CVD INC	SW		2-0900 001	DR SWALE	LAPLATTE RIVER				7	1	85
04-13-015	CVD INC	SW		2-0900 002	CB,DR SWALE	LAPLATTE RIVER				7	1	85
04-13-015	CVD INC	SW		2-0900 003	CB,DR SWALE	LAPLATTE RIVER				7	1	85
04-13-016	LOCUST HILL DEV	SW		2-0841 001	SF,CB	LAKE CHAMPLAIN				7	1	85
04-13-019	PILLARS INC	SW		2-0109 001	DP	LAPLATTE RIVER				7	1	85
04-13-020	G S BLODGETT INC	SW		2-0982 001	SF,GS	LAPLATTE RIVER				7	1	85
04-13-023	THA INC	SW		2-0129 001	OF,SF	MCCABES BROOK				7	1	85
04-13-024	SHELBURNE LEASIN	VT	0020761	2-1216 002	FB	LAKE CHAMPLAIN	200	GPD	Y	9	30	87
04-13-024	SHELBURNE LEASIN	VT	0020761	3-1216 001	CW	LAKE CHAMPLAIN	.030	MGD	Y	9	30	87
04-13-025	WILLIAM WESSEL	SW		2-0166 001	CB	SHELBURNE SS				7	1	85
04-13-026	JELLY MILL VILL	SW		2-0170 001	CB,DP	MUNROE BROOK				7	1	85
04-14-001	AIRPORT PARKWAY	VT	0100366	4-1009 001	WWTF	WINOOSKI RIVER	1.25	MGD		6	30	87
04-14-001	BARTLETTS BAY	VT	0100358	4-1120 001	WWTF	LAKE CHAMPLAIN	.700	MGD	Y	6	30	81
04-14-005	ADCOM INC	SW		2-0100 001	CB	POTASH BROOK				7	1	85
04-14-006	RIDGEWOOD ESTATE	SW		1-0239 001	CB	POTASH BROOK				7	1	82
04-14-008	IRELAND IND	SW		1-0202 001	CB	LAKE CHAMPLAIN				6	1	81
04-14-009	GBIC	SW		3-0295 001	CB	POTASH BROOK				7	1	81

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
04-14-010	INVESTORS CORP	SW		1-0233 001	CB	POTASH BROOK				5	1	82
04-14-011	BLP CORP	SW		1-0234 001	CB	POTASH BROOK				5	1	82
04-14-012	DIGITAL EQUIP	SW		2-0114 001	GS,CB,DP	MUDDY BROOK				7	1	85
04-14-013	COUNTY PARK	SW		1-0237 001	GRIT,GREASE	POTASH BROOK				7	1	82
04-14-014	VEVE ASSOC	DR		1-0242 001	CB	POTASH BROOK				8	1	82
04-14-016	HICKOK&BOARDMAN	SW		2-0737 001	OUTFALL PIPE	POTASH BROOK				9	1	83
04-14-016	HICKOK&BOARDMAN	SW		2-0737 002	OUTFALL PIPE	POTASH BROOK				9	1	83
04-14-016	HICKOK&BOARDMAN	SW		2-0737 003	SF	POTASH BROOK				9	1	83
04-14-017	FASSETTS BAKERY	SW		2-0729 001	OUTFALL PIPE	LAKE CHAMPLAIN				6	30	80
04-14-017	FASSETTS BAKERY	SW		2-0729 002	OUTFALL PIPE	LAKE CHAMPLAIN				6	30	80
04-14-017	FASSETTS BAKERY	SW		2-0729 003	OUTFALL PIPE	LAKE CHAMPLAIN				6	30	80
04-14-018	TWIN OAKS ASSOC	SW		2-0825 001	OF,GS,SF	POTASH BROOK				6	30	80
04-14-020	JOHN H OSGOOD	SW		2-0767 001	CB	POTASH BROOK				6	30	80
04-14-021	FARRELL DISTRIB	SW		2-0106 001	FILT BASINS	LAKE CHAMPLAIN				7	31	84
04-14-022	CHAMPLAIN WATER	VT	0020729	3-1161 001	FB,FL,FO	POTASH BROOK	.050	MGD	Y	8	31	84
04-14-023	BROOKWOOD LTD	SW		2-0794 001	OF,CB	POTASH BROOK				7	1	80
04-14-024	PLYWOOD RANCH	SW		2-0811 001	CB	POTASH BROOK				7	1	80
04-14-025	BURLINGTON AIRPT	DR		2-0805 001	UNTREATED	POTASH BROOK				7	1	80
04-14-025	BURLINGTON AIRPT	DR		2-0805 002	FL,PIT,YARD	POTASH BROOK				7	1	80
04-14-026	LTH ASSOCIATES	SW		2-0824 001	CB	POTASH BROOK				7	1	80
04-14-027	GREGORY&DAUGHTER	SW		2-0885 001	CB	MUDDY BROOK				8	31	85
04-14-028	O'BRIEN BROTHERS	SW		2-0848 001	SF,DP	POTASH BROOK				6	30	80
04-14-028	O'BRIEN BROTHERS	SW		2-0848 002	CB	POTASH BROOK				6	30	80
04-14-028	O'BRIEN BROTHERS	SW		2-0848 003	CB	POTASH BROOK				6	30	80
04-14-029	SUGARTREE CONDOS	SW		2-0878 001	CB	POTASH BROOK				6	30	85
04-14-030	CITY OF SO BURL	SW		2-0909 001	FILT POND	POTASH BROOK				7	1	85
04-14-031	PIZZAGALLI RLTY	SW		2-0908 001	CB	LAKE CHAMPLAIN				7	1	85
04-14-032	L & C FARRELL	SW		2-0933 001	SF,GS	LAKE CHAMPLAIN				7	1	85
04-14-033	VT NAT'L GUARD	SW		2-0930 001	CB,GS	WINOOSKI RIVER				7	1	85
04-14-034	ALAN PALMER	SW		2-0939 001	GS,SF	POTASH BROOK				7	1	85
04-14-035	MITEL CORP	SW		2-0940 001	GS,SF	POTASH BROOK				7	1	85
04-14-036	MITEL CORP	PT		3-0380 001	OT	AIRPT PKWY WWTF	.006	MGD	Y	3	31	87
04-14-037	ROBERT RYAN	SW		2-0988 001	SF,GS	POTASH BROOK				7	1	85
04-14-038	YING H LIU	SW		2-0101 001	CB	POTASH BROOK				7	1	85
04-14-039	LAKELAND CORP	SW		2-0108 001	GS,FILT	LAKE CHAMPLAIN				7	1	85
04-14-040	LTH ASSOCIATES	SW		2-0120 001	SF,CB	LAKE CHAMPLAIN				7	1	85
04-14-041	HARPER HOTEL	SW		2-0126 001	GS,CB	WINOOSKI RIVER				7	1	85
04-14-042	CMPC	SW		2-0135 001	GS,CULVERT	LAKE CHAMPLAIN				7	1	85
04-14-042	CMPC	SW		2-0135 002	CB	LAKE CHAMPLAIN				7	1	85
04-14-043	RSM PROPERTIES	SW		2-0140 001	SF,GS	POTASH BROOK				7	1	85
04-14-045	V L PROPERTIES	SW		2-0144 001	GS	POTASH BROOK				7	1	85
04-14-046	WESTINGHSE ELEC	SW		2-0153 001	GS,CB	LAKE CHAMPLAIN				7	1	85
04-14-047	D & L O'BRIEN	SW		2-0159 001	GS,CB	WINOOSKI RIVER				7	1	85
04-14-047	D & L O'BRIEN	SW		2-0159 002	GS,CB	WINOOSKI RIVER				7	1	85
04-14-048	D MORVAN-MEREK	SW		2-0167 001	GS,CB	POTASH BROOK				7	1	85
04-14-049	LATTER DAY SAINT	SW		2-0179 001	GS	POTASH BROOK				7	1	85
04-14-050	SHELB PLASTIC	SW		2-0180 001	GS	TRIB TO SHEL BAY				7	1	85
04-14-050	SHELB PLASTIC	SW		2-0180 002	OF,GS	SHELBURNE BAY				7	1	85
04-14-051	CHINA LITE INC	SW		2-0195 001	GS	TRIB OF POTASH				11	17	83
04-14-052	BURLINGTON INT'L	SW		2-0188 001	DEEP SUMP CB	WINOOSKI RIVER				7	1	85
04-14-053	NEW ENGLAND TEL	SW		2-0212 001	CB,GS	POTASH BROOK			N	7	1	85
04-15-001	J & T WHEELER	SW		2-0813 001	SS,CULVERT	THE CREEK				6	30	80

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
04-15-002	RICH VILLENEUVE	SW		2-0428 001	SS	CRANE & CLAY BKS				6	30	80
04-17-001	WILLISTON	VT	0100439	4-1136 001	EX OUTFALLS	WINOOSKI RIVER				11	30	84
04-17-005	SNO-JET INC	DR		1-0094 001	OVERFLOW	MUDDY BROOK				11	1	79
04-17-007	COLONY PK ASSOC	SW		2-0181 001	GS,CULVERTS	WINOOSKI RIVER				7	1	85
04-17-007	COLONY PK ASSOC	SW		2-0181 002	GS,CULVERTS	WINOOSKI RIVER				7	1	85
04-17-007	COLONY PK ASSOC	SW		2-0181 003	GS,CB	WINOOSKI RIVER				7	1	85
04-17-007	COLONY PK ASSOC	SW		2-0181 004	GS,CULVERT	WINOOSKI RIVER				7	1	85
04-17-008	EXTRA SPACE INC	SW		2-0823 001	OF,CB	MUDDY BROOK				6	30	80
04-17-009	BLAIR FAMILY TST	SW		2-0918 001	SF	MUDDY BROOK				7	1	85
04-17-010	DORSET LANE PROP	SW		2-0881 001	FILT POND	WINOOSKI RIVER				7	1	85
04-17-011	KNIGHT CONS ENGR	SW		2-0860 001	GS	MUDDY BROOK				6	30	81
04-17-013	CAMBRIDGE MEWS	SW		2-0911 001	FILT	MUDDY BROOK				7	1	85
04-17-014	F HENRY ADAMS	SW		2-0928 001	CB	MUDDY BROOK				7	1	85
04-17-015	ALLENBROOK MEAD	SW		2-0954 001	SS,DET BASIN	ALLEN BROOK				7	1	85
04-17-017	IBM	SW		2-0115 001	GS,SP	WINOOSKI RIVER				7	1	85
04-17-018	TRINITY BAPTIST	SW		2-0145 001	GS	WINOOSKI RIVER				7	1	85
04-17-019	WILLISTON WOODS	SW		2-0156 001	GS,SS	WINOOSKI RIVER				7	1	85
04-18-003	WINOOSKI	VT	0100510	4-1129 001	WWTF	WINOOSKI RIVER	1.200	MGD	Y	9	30	82
04-18-003	WINOOSKI	VT	0100510	4-1129 002	OVERFLOW	WINOOSKI RIVER				9	30	82
04-18-003	WINOOSKI	VT	0100510	4-1129 003	OVERFLOW	WINOOSKI RIVER				9	30	82
04-18-008	WINOOSKI CDC	SW		1-0229 001	CB	WINOOSKI RIVER				3	1	82
04-18-010	TWINCRAFT INC	OT		3-0309 001	CW	WINOOSKI RIVER	6000	GPD		7	30	83
04-18-011	J CHADWICK	SW		1-0264 001	CB	WINOOSKI RIVER				3	31	83
04-18-012	VT NATIONAL BANK	SW		2-0802 001	CB	WINOOSKI RIVER				12	3	84
04-18-014	MERCHANTS BANK	SW		2-0779 001	CB	LAKE CHAMPLAIN				6	30	80
04-18-014	MERCHANTS BANK	SW		2-0779 002	CB	LAKE CHAMPLAIN				6	30	80
04-18-015	R BRUCE/G MILOT	SW		2-0783 001	CB	WINOOSKI ST SEW				6	30	80
04-18-016	VT ASSOCIATES	SW		2-0787 001	CB	WINOOSKI RIVER				6	30	80
04-18-017	WOOLEN MILL ASSO	SW		2-0806 001	CB,SF	WINOOSKI RIVER				1	1	85
04-18-018	LAKE REALTY	SW		2-0866 001	CB,SF	WINOOSKI RIVER				6	30	85
04-18-019	R F NIQUETTE	SW		2-0947 001	GS,CB,SF	WINOOSKI RIVER				7	1	85
04-18-020	CEDRIC DEMERITT	SW		2-0154 001	GS,CB	WINOOSKI RIVER				7	1	85

345 records selected from 543 processed.

ESSEX 05

Averill - 05-01

Averys Gore - 05-02

Bloomfield - 05-03

Brighton - 05-04
(Island Pond)

Brunswick - 05-05

Canaan - 05-06
(Beecher Falls)

Concord - 05-07

East Haven - 05-08

Ferdinand - 05-09

Granby - 05-10

Guildhall - 05-11

Lemington - 05-12

Lewis - 05-13

Lunenburg - 05-14
(Gilman)

Maidstone - 05-15

Norton - 05-16

Victory - 05-17

Warners Grant - 05-18

Warrens Gore - 05-19

ESSEX COUNTY PERMITS

Date: 04/10/84 VT-AEC Report Generator Vers. 3.06

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
05-04-001	BRIGHTON	VT	0100072	3-1213 001	WWTF	PHERRINS RIVER	.150	MGD	Y	9	30	87
05-06-001	CANAAN	VT	0100625	3-0330 001	WWTF	CONNECTICUT RIV	.185	MGD	Y	4	30	84
05-06-008	US BORD STA CANA	SW		2-0128 001	BSMT SUMP	LEACH CREEK				7	1	85
05-07-013	D KURT SINGER	OT		2-0694 001	DOMEST(INV)	MOOSE RIVER	200	GPD		8	1	77
05-07-014	ROBERT HAMBLY	OT		2-0698 001	DOMEST (INV)	MOOSE RIVER	700	GPD		7	1	77
05-07-015	R B STARBUCK	DR		1-0323 001	WD	MOOSE RIVER				8	31	85
05-08-002	TEACHOUT BROS	OT		3-0240 001	DOMESTIC	PASSUMPSIC RIVER	15000	GPD	Y	4	1	80
05-14-001	LUNENBURG FD#2	VT	0101061	3-1140 001	WWTF	CONNECTICUT RIV	.076	MGD	Y	6	30	88
05-14-002	GEORGIA PACIFIC	VT	0000116	3-1182 001	PA	CONNECTICUT RIV	3.0	MGD	Y	3	31	81
05-14-005	GUY F HAIRE	OT		2-0392 001	DOMEST(INV)	NEAL BROOK	300	GPD		9	1	73

10 records selected from 677 processed.

FRANKLIN 06

Averys Gore - 06-01

Bakersfield - 06-02

Berkshire - 06-03

Enosburg - 06-04

Fairfax - 06-05

Fairfield - 06-06

Fletcher - 06-07

Franklin - 06-08

Georgia - 06-09

Highgate - 06-10

Montgomery - 06-11

Richford - 06-12

St. Albans City - 06-13

St. Albans Town - 06-14

Sheldon - 06-15

Swanton - 06-16

FRANKLIN COUNTY PERMITS

Date: 04/10/84 VT-AEC Report Generator Vers. 3.06

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
06-04-001	ENOSBURG FALLS	VT	0100102	3-1234 001	WWTF	MISSISQUOI RIVER	.450	MGD	Y	6	30	88
06-04-001	ENOSBURG FALLS	VT	0100102	3-1234 002	SW OVERFLOW	MISSISQUOI RIVER				6	30	88
06-04-001	ENOSBURG FALLS	VT	0100102	3-1234 003	COMB O'FLOW	GIDDINGS BROOK				6	30	88
06-04-001	ENOSBURG FALLS	VT	0100102	3-1234 004	COMB O'FLOW	TROUT BROOK				6	30	88
06-04-013	FRANKLIN CTY CH	PT		3-1055 001	COMBINED	ENOSBURG F WWTF	.065	MGD	Y	5	1	80
06-04-014	ALDEX COMPANY	OT		3-0312 001	ION EXCHANGE	MISSISQUOI RIVER	.005	MGD	Y	8	31	83
06-04-015	ENOS FALLS VOC	SW		2-0839 001	CB,GS	MISSISQUOI RIVER				6	30	80
06-05-051	B PATTERSON	DR		1-0141 001	FO	LAMOILLE RIVER				2	1	81
06-05-059	FAIRFAX	VT	0101087	3-1194 001	WWTF	LAMOILLE RIVER	.078	MGD	Y	6	30	85
06-05-061	M BELIVEAU	SW		2-0801 001	SS	LAMOILLE RIVER				6	30	80
06-06-004	FAIRFIELD FD#1	VT	0101095	4-1114 001	EX DISCH PTS	BLACK CREEK				11	30	82
06-08-005	VT FORESTS&PARKS	OT		1-0254 001	FB	LAKE CARMI			Y	12	31	87
06-09-001	GEORGIA	DR		1-0321 001	UNPOLL GW	LAKE CHAMPLAIN				7	1	85
06-09-002	VT WHEY POLL	OT	0020702	3-1115 001	PROC WASTE	WELLS	.300	MGD	Y	12	31	80
06-09-003	RODNEY REYNOLDS	SW		2-0750 001	CULVERT	LAKE CHAMPLAIN				6	30	80
06-09-003	RODNEY REYNOLDS	SW		2-0750 002	CB	LAKE CHAMPLAIN				6	30	80
06-09-003	RODNEY REYNOLDS	SW		2-0750 003	CB	LAKE CHAMPLAIN				6	30	80
06-09-003	RODNEY REYNOLDS	SW		2-0750 004	CB	LAKE CHAMPLAIN				6	30	80
06-09-003	RODNEY REYNOLDS	SW		2-0750 005	CULVERT	LAKE CHAMPLAIN				6	30	80
06-09-004	EXPRESS FOODS IN	VT	0101117	3-1209 001	PERC PONDS	ARROWHEAD LAKE	.150	MGD	Y	3	1	87
06-09-004	EXPRESS FOODS	VT	0101125	4-1152 001	PERC PONDS	GROUND WATER	.300	MGD	Y	4	1	85
06-09-004	EXPRESS FOODS	VT	0101125	4-1152 002	PROC WASTE	ARROWHEAD LAKE	.360	MGD	Y	4	1	85
06-09-007	REGN'L DAIRY IND	SW		2-0958 001	SS	LAMOILLE RIVER				7	1	85
06-10-009	F LAROCQUE	SW		2-0764 001	FILT CLOTH	MISSISQUOI RIVER				7	30	80
06-10-010	MICHAEL JEDWARE	SW		2-0790 001	FILT CLOTH	MISSISQUOI RIVER				10	19	84
06-11-007	BERNARD GOODWIN	OT		2-0583 001	DOMEST(INV)	TROUT RIVER	100	GPD		7	1	76
06-11-008	KEVIN MALONEY	OT		1-0214 001	WAT WH DIVER	TROUT RIV, SO BR				12	1	81
06-12-002	RICHFORD	VT	0100790	3-1147 001	WWTF	MISSISQUOI RIVER	.380	MGD	Y	3	31	84
06-12-006	FRANKLIN GRAND	SW		2-0795 001	GS,OF	MISSISQUOI RIVER				7	1	80
06-13-001	ST ALBANS	VT	0100323	4-1132 001	WWTF	STEVENS BROOK	4.000	MGD	Y	12	1	86
06-13-001	ST ALBANS	VT	0100323	4-1132 002	BYPASS	STEVENS BROOK				12	1	86
06-13-001	ST ALBANS	VT	0100323	4-1132 003	LAGOON DISCH	STEVENS BROOK				12	1	86
06-13-001	ST ALBANS	VT	0100323	4-1132 004	COMB O'FLOW	STEVENS BROOK				12	1	86
06-13-002	ST ALBANS CDTF	VT	0020541	4-1155 001	WWTF	STEVENS BROOK	.0215	MGD	Y	9	30	84
06-13-003	H P HOOD & SONS	PT		3-0371 001	PROC & SAN	ST ALBANS WWTF	.250	MGD	Y	7	1	85
06-13-004	UNION CARBIDE	PT		3-0387 001	MP	ST ALBANS WWTF	.100	MGD	Y	12	31	87
06-13-006	ST ALBANS COOP	PT		4-0222 001	PROC & SAN	ST ALBANS WWTF			Y	1	1	80
06-13-007	FONDA/ROYAL LACE	PT		4-0233 001	PA	ST ALBANS WWFT			Y	8	31	80
06-13-008	EMILE J LEGERE	SW		2-0797 001	GS,CB	STEVENS BROOK				7	1	80
06-13-009	BURLINGTON GEN'L	SW		2-0847 001	DRY WELLS	STEVENS BROOK				6	30	80
06-13-010	ST ALBANS	OT		3-0374 001	FB	STEVENS BROOK				12	31	85
06-13-011	MYRON M HUNT	SW		2-0907 001	CB,FILT BED	STEVENS BROOK				7	1	85
06-13-012	ST ALBANS	SW		2-0921 001	CB	STEVENS BROOK				7	1	85
06-13-013	R & N CIOFFI	SW		2-0963 001	CB,ROOF&F DR	ST ALBANS SS				7	1	85
06-13-014	TARGET AREA DEV	SW		2-0142 001	CB	RUGG BROOK				7	1	85
06-13-016	ST ALBANS IND PK	SW		2-0147 001	CB	STEVENS BROOK				7	1	85
06-14-004	ST ALBANS	SW		1-0102 001	DR DITCH	RUGG BROOK				1	1	80
06-14-005	VT DEPT F,P,&REC	OT		1-0356 001	FB	ST ALBANS BAY	7200	GPD		9	30	88
06-15-001	BOISE-MISSISQUOI	VT	0000469	3-1118 001A	WATER POWER	MISSISQUOI RIVER			N	11	30	82
06-15-001	BOISE-MISSISQUOI	VT	0000469	3-1118 001B	WATER POWER	MISSISQUOI RIVER			N	11	30	82
06-15-001	BOISE-MISSISQUOI	VT	0000469	3-1118 002	CW	MISSISQUOI RIVER			Y	11	30	82
06-15-001	BOISE-MISSISQUOI	VT	0000469	3-1118 003	PA	MISSISQUOI RIVER	5.5	MGD	Y	11	30	82
06-15-002	SHELDON SPRINGS	VT	0100340	3-1108 001	WWTF	MISSISQUOI RIVER	.054	MGD	Y	12	1	86

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
06-15-006	ROGER H REED	OT		2-0581 001	DOMEST(INV)	BLACK CREEK	500	GPD		7	1	76
06-16-001	SWANTON	VT	0100501	4-1121 001	WWTF	MISSISQUOI RIVER	.900	MGD	Y	6	30	81
06-16-003	LUCILLE FARM PRO	PT		3-1059 001	DA	SWANTON WWTF	.016	MGD	Y	7	1	80
06-16-004	CHITTENDEN TRUST	SW		2-0143 001	DITCH	MISSISQUOI RIVER				7	1	85
06-16-005	SWANTON PACKING	PT		3-0327 001	ME	SWANTON WWTF	6000	GPD	Y	11	1	83
06-16-007	F BERTHIAUME	DR		1-0282 001	CURTAIN DR	MISSISQUOI RIVER				1	31	84
06-16-008	SWANTON VILLAGE	OT		3-0334 001	FB	LAKE CHAMPLAIN	15000	GPD	Y	12	31	84
06-16-009	GAMEBRIDGE USA	SW		2-0895 001	SA/FILT BED	MISSISQUOI RIVER				7	1	85
06-16-010	POMERLEAU REAL	SW		2-0910 001	SF	MISSISQUOI RIVER				7	1	85
06-16-011	VT MEAT PACKERS	PT		3-0399 001	ME	SWANTON WWTF	.030	MGD	Y	6	1	85
06-16-012	FITCH W BAXTER	DR		1-0334 001	GW	MISSISQUOI RIVER	75	GPD		10	1	81
06-16-013	CHITTENDEN TRUST	DR		1-0353 001	GW,GS	MISSISQUOI RIVER				3	1	88

65 records selected from 709 processed.

GRAND ISLE 07

Alburg - 07-01

Grand Isle - 07-02

Isle LaMotte - 07-03

North Hero - 07-04

South Hero - 07-05

GRAND ISLE COUNTY PERMITS

Date: 04/10/84 VT-AEC Report Generator Vers. 3.06

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
07-01-002	ALBURG	VT	0100005	3-1180 001	WWTF,SPRAY	LAKE CHAMPLAIN			Y	2	28	85
07-03-001	KEN HANNA	DR		1-0082 001	GW	LAKE CHAMPLAIN				9	1	79
07-03-003	VT MARBLE CO	DR		1-0354 001	GW	LAKE CHAMPLAIN				12	1	85
07-04-003	WILLIAM HEISE JR	DR		1-0281 001	HAYBALE FILT	CITY BAY	480000	GPD	Y	3	31	84
07-04-004	BAY HARBOR YACHT	SW		2-0846 001	OF	LAKE CHAMPLAIN				6	30	85
07-05-004	SO HERO FD#1	OT		3-0230 001	FB	KEELER BAY	1200	GPD		12	1	80
07-05-006	CAMP HOCHELACA	OT		4-0212 001	WASTEWATER	LAKE CHAMPLAIN				7	1	77

7 records selected from 918 processed.

LAMOILLE 08

Belvidere - 08-01

Cambridge - 08-02

Eden - 08-03

Elmore - 08-04

Hyde Park - 08-05

Johnson - 08-06

Morristown - 08-07

Stowe - 08-08

Waterville - 08-09

Wolcott - 08-10

LAMOILLE COUNTY PERMITS

VT-AEC Report Generator Vers. 3.06

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
08-01-001	KENNETH TALLMAN	DR		1-0124 001	GW	OTTER BROOK				11	1	80
08-02-003	CAMBRIDGE	OT		4-0153 001	DOMESTIC	SEYMOUR,LAMOILLE	24000	GPD		12	31	72
08-02-012	FRED J DIXON	OT		2-0554 001	DOMEST(INV)	LAMOILLE RIVER	200	GPD		7	1	76
08-02-019	GLENN COMO	OT		2-0523 001	DOMEST(INV)	LAMOILLE RIVER	200	GPD		11	1	74
08-02-028	HARLIE C TOBIN	OT		2-0515 001	DOMEST(INV)	LAMOILLE RIVER	200	GPD		9	1	74
08-02-032	MARCO S HOOPER	OT		2-0514 001	DOMEST(INV)	LAMOILLE RIVER	1000	GPD		9	1	74
08-02-033	CAMBRIDGE	OT		1-0252 001	SF,BACKWASH	LAMOILLE RIVER				12	1	82
08-02-034	JEFFERSONVILLE	OT		4-0239 001	EX INDIV SOU	BREWSTER,LAMOILL				10	1	82
08-06-001	EASTERN MAGNESIA	DR	0000523	3-1224 001	MINE DRAIN	BELL BROOK	.250	MGD	Y	10	1	88
08-06-010	JOHNSON	VT	0100901	3-1149 001	WWTF	GIHON RIVER	.200	MGD	Y	4	30	84
08-07-001	MORRISVILLE	VT	0100480	3-1155 001	WWTF	LAMOILLE RIVER	.425	MGD	Y	6	30	84
08-07-001	MORRISVILLE	VT	0100480	3-1155 002	SW/SAN	LAMOILLE RIVER				6	30	84
08-07-001	MORRISVILLE	VT	0100480	3-1155 003	SW/SAN	LAMOILLE RIVER				6	30	84
08-07-003	ALBA BOWEN	OT		4-0204 001	M H PK (INV)	LAMOILLE RIVER				7	1	74
08-07-007	WATER/LIGHT DEPT	DR		1-0326 001	WD	LAMOILLE RIVER				11	1	85
08-08-007	STOWE	VT	0100455	3-1232 001	WWTF	WTBY (LITTLE) R	.200	MGD	Y	8	31	88
08-08-015	VT PRECISION REG	OT		1-0059 001	CW	TRIB LITTLE RIV	480	GPD		1	1	79
08-08-018	TRAPP WATER CO	DR		1-0138 001	WD	MILLER BROOK	36000	GPD		10	1	80
08-08-019	G & D RIDBY	DR		1-0241 001	FD	WATERBURY RIVER				7	1	82
08-08-020	GRAND MOTOR INN	DR		1-0253 001	GW	LITTLE RIVER				1	1	83
08-08-021	MT MANSFIELD CO	OT		1-0291 001	CW	WATERBURY RIVER	300	GPM		8	31	84
08-08-022	SMUGGLERS NOTCH	DR		1-0296 001	WD	WATERBURY RIVER				11	1	84
08-08-023	VILLAGE GREEN	SW		2-0893 001	SF	WATERBURY RIVER				7	1	85
08-08-024	MT MANSFIELD CO	SW		2-0966 001	SS,SF	LITTLE RIVER				7	1	85
08-08-025	ANCHORAGE INN	SW		2-0964 001	OF,GS	W BRANCH RIVER				7	1	85
08-08-026	TRAPP FAMILY LDG	SW		2-0980 001	CB	BARROWS BROOK				7	1	85
08-08-027	VILLAGE GREEN	OT		1-0352 001	FB	WATERBURY RIVER	600	GPD		12	31	87
08-08-027	VILLAGE GREEN	DR		1-0352 002	HOT TUB	WATERBURY RIVER	1500	GPD		12	31	87
08-08-027	VILLAGE GREEN	DR		1-0352 003	SWIM POOL	WATERBURY RIVER	55000	GPD		12	31	87

29 records selected from 664 processed.

ORANGE 09

Bradford - 09-01

Braintree - 09-02

Brookfield - 09-03

Chelsea - 09-04

Corinth - 09-05

Fairlee - 09-06

Newbury - 09-07
(Wells River)

Orange - 09-08

Randolph - 09-09

Strafford - 09-10

Thetford - 09-11

Topsham - 09-12

Tunbridge - 09-13

Vershire - 09-14

West Fairlee - 09-16

Williamstown - 09-17

ORANGE COUNTY PERMITS

Date: 04/10/84 VT-AEC Report Generator Vers. 3.06

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
09-01-001	BRADFORD	VT	0100803	3-1157 001	WWTF	WAITS RIVER	.137	MGD	Y	4	30	84
09-01-008	UPPER VALLEY PR	VT	0020753	3-1226 001	PRINT WASTES	CONNECTICUT RIV	2000	GPD	Y	3	31	87
09-01-009	NEW ENGLAND IND	PT		3-0397 001	MP	BRADFORD WWTF	.003	MGD	Y	12	31	88
09-03-004	JOHN C SNYDER	OT		1-0285 001	CW	SUNSET LAKE				6	30	84
09-04-001	CHELSEA	VT	0100943	3-1197 001	WWTF	WHITE RIVER	.055	MGD	Y	6	30	85
09-05-016	ANNA MAGOON EST	OT		2-0696 001	DOMEST(INV)	COOKVILLE BROOK	100	GPD		7	1	77
09-07-003	WELLS RIVER	VT	0100421	4-1146 001	EX POINTS	CONNECTICUT RIV			Y	5	31	82
09-09-002	RANDOLPH	VT	0100285	3-1198 001	WWTF	THIRD BR, WH RIV	.400	MGD	Y	9	30	85
09-09-002	RANDOLPH	VT	0100285	3-1198 002	OVERFLOW	THIRD BR, WH RIV				9	30	85
09-09-005	JAMES HEYDER	DR		1-0240 001	SUBSURFACE	THIRD BR, WH RIV				7	1	82
09-09-006	ETHAN ALLEN INC	SW		2-0161 001	CB	THIRD BR, WH RIV				7	1	85
09-09-007	RANDOLPH HOUSING	DR		2-0738 001	ROOF DRAIN	THIRD BR, WH RIV				6	30	80
09-09-007	RANDOLPH HOUSING	DR		2-0738 002	GW	THIRD BR, WH RIV				6	30	80
09-09-007	RANDOLPH HOUSING	DR		2-0738 003	AREA DRAIN	THIRD BR, WH RIV				6	30	80
09-11-002	THETFORD SCHOOL	DR		2-0692 001	GW	ZEBEDEE BR				9	1	77
09-17-001	WILLIAMSTOWN	VT	0100727	3-1176 001	WWTF	STEVENS BRANCH	.150	MGD	Y	3	31	84
09-17-004	INTSTATE UNIFORM	PT		4-0218 001	LA	WMSTN WWTF			Y	8	31	78

17 records selected from 661 processed.

ORLEANS 10

Albany - 10-01

Barton - 10-02
(Orleans)

Brownington - 10-03

Charleston - 10-04

Coventry - 10-05

Craftsbury - 10-06

Derby - 10-07

Glover - 10-08

Greensboro - 10-09

Holland - 10-10

Irasburg - 10-11

Jay - 10-12

Lowell - 10-13

Morgan - 10-14

Newport City - 10-15

Newport Town - 10-16

Troy - 10-17

Westfield - 10-18

Westmore - 10-19

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
10-01-008	GORDON CLARKSON	DR		1-0104 001	WD	BLACK RIVER				1	1	80
10-02-001	BARTON	VT	0100641	3-1202 001	WWTF	BARTON RIVER	.265	MGD	Y	7	30	86
10-02-002	ORLEANS	VT	0100251	3-1201 001	WWTF	BARTON RIVER	.190	MGD	Y	6	30	86
10-02-014	JOSEPH CHOINFERE	OT		2-0544 001	DOMEST (INV)	WILLOUGHBY RIVER	200	GPD		11	1	79
10-02-027	J RAOUL CLOUTIER	OT		2-0550 001	DOMEST (INV)	BARTON RIVER	300	GPD		7	1	75
10-02-039	DAVID H WOOD	DR		1-0205 001	GW	BARTON RIVER				7	1	81
10-02-041	BARTON CHAMBERS	SW		2-0949 001	CB	BARTON BROOK				7	1	85
10-02-042	ETH ALLEN ORLEAN	SW	0000094	2-0178 001	CB	BARTON RIVER			Y	7	1	85
10-03-007	BARBARA POSTMAN	DR		1-0302 001	GW	WILLOUGHBY RIVER				2	1	85
10-04-005	BARTON	OT		3-0338 001	CW	CLYDE RIVER	250000	GPD	Y	11	1	85
10-04-020	EDWARD SMITH	OT		2-0603 001	SA	CLYDE BROOK				7	1	76
10-05-006	ANDREW H GALUSKA	OT		2-0505 001	DOMEST (INV)	BLACK RIVER	500	GPD		7	1	74
10-05-008	CHESTER TAYLOR	OT		2-0513 001	DOMEST (INV)	BLACK RIVER	600	GPD		11	1	74
10-07-002	FAIRMONT GRANITE	VT	0020583	3-0329 001	GRANITE PROC	JOHNS RIVER	.060	MGD	Y	12	31	88
10-07-007	KELLEY'S REST	OT		2-0193 001	SA	CRYSTALL BROOK				7	1	72
10-07-024	RICHARD FARRELL	OT		2-0607 001	DOMEST (INV)	CLYDE RIVER	400	GPD		7	1	76
10-07-026	LAWRENCE WARNER	OT		2-0589 001	DOMEST (INV)	JOHNS RIVER	600	GPD		7	1	76
10-07-028	S B COLLINS INC	SW		2-0137 001	FILTER BED	CLYDE RIVER				7	1	85
10-08-002	GLOVER	VT	0100773	3-1217 001	WWTF	ROARING BROOK	7000	GPD	Y	12	31	87
10-09-013	GREENSBORO HOSP	DR		1-0301 001	GW	GREENSBORO BROOK				1	1	85
10-10-001	D & E SHANNON	DR		1-0136 001	GW,FO	STEVENS BROOK				1	1	81
10-11-002	IRASBURG VILLAGE	OT		4-0177 001	SA	LORD'S CREEK				11	1	72
10-11-031	MYRON MCCORMICK	OT		2-0689 001	DOMEST (INV)	BRIGHTON BROOK	300	GPD		8	1	81
10-11-033	GERALD DAVIGNON	OT		2-0591 001	DOMEST (INV)	BARTON RIVER	400	GPD		7	1	76
10-11-034	PANSY B DHU	OT		2-0608 001	DOMEST (INV)	BARTON RIVER	100	GPD		5	1	80
10-12-002	PETER BAY	DR		1-0087 001	GW,FO	CROOK BROOK				9	1	79
10-13-001	VT ASBESTOS	SW	0000591	3-1175 001	GS	MISSISQUOI RIVER				4	1	85
10-13-006	A & A WARNER	DR		1-0309 001	GW	MISSISQUOI RIVER				3	1	85
10-15-004	NEWPORT CITY	VT	0100200	4-1080 001	BYPASS	CLYDE RIVER				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 001A	WWTF	CLYDE RIVER	.975	MGD	Y	6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 002	COMB O'FLOW	CLYDE RIVER				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 003	COMB O'FLOW	CLYDE RIVER				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 004	COMB O'FLOW	CLYDE RIVER				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 005	COMB O'FLOW	CLYDE RIVER				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 006	COMB O'FLOW	CLYDE RIVER				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 007	COMB O'FLOW	L MEMPHREMAGOG				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 008	COMB O'FLOW	L MEMPHREMAGOG				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 009	COMB O'FLOW	L MEMPHREMAGOG				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 010	COMB O'FLOW	L MEMPHREMAGOG				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 011	COMB O'FLOW	L MEMPHREMAGOG				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 012	COMB O'FLOW	SOUTH BAY				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 013	COMB O'FLOW	SOUTH BAY				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 014	COMB O'FLOW	SOUTH BAY				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 015	COMB O'FLOW	BLACK RIVER				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 016	COMB O'FLOW	L MEMPHREMAGOG				6	30	83
10-15-004	NEWPORT CITY	VT	0100200	4-1080 017	COMB O'FLOW	L MEMPHREMAGOG				6	30	83
10-15-006	CITIZENS UT NEWP	VT	0000329	3-1040 001	CW	CLYDE RIVER	.430	GPD	Y	5	31	84
10-15-011	LARRY CARBONNEAU	OT		2-0528 001	DOMEST (INV)	L MEMPHREMAGOG	200	GPD		12	1	74
10-15-013	H BRAINERD	OT		2-0529 001	DOMEST (INV)	L MEMPHREMAGOG	500	GPD		12	1	74
10-15-015	THOMAS HANDY	OT		2-0588 001	DOMEST (INV)	BLACK RIVER	1000	GPD		7	1	76
10-15-017	EARLE ODELL	OT		2-0602 001	DOMEST (INV)	BLACK RIVER	100	GPD		5	1	80
10-15-022	NEWPORT DAILY EX	SW		1-0280 001	OUTLET PIPE	CLYDE RIVER				6	30	80
10-15-025	L MEMPHREMAGOG	SW		2-0932 001	CB	L MEMPHREMAGOG				7	1	85

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
10-16-002	NEWPORT TOWN	VT	0101036	3-1236 001	WWTF	MUD CREEK	41500	GPD		9	30	88
10-17-001	NORTH TROY	VT	0100234	3-1139 001	WWTF	MISSISQUOI RIVER	.110	MGD	Y	5	31	88
10-17-002	TROY	VT	0100391	4-1141 001	EXIST POINTS	MISSIS,COBURN BR				9	1	82
10-17-006	AGRI-MARK INC	VT	0000710	4-1071 001	COMB WASH/SA	COBURN BROOK	.050	MGD	Y	7	1	77
10-17-007	TOWN OF TROY	OT		3-0391 001	WELL WATER	MISSISQUOI RIVER	4500	GPD		9	30	88
10-19-001	ELIZABETH BROWN	DR		1-0009 001	GW	LAKE WILLOUGHBY				7	1	75

59 records selected from 723 processed.

RUTLAND 11

Benson - 11-01

Brandon - 11-02

Castleton - 11-03

Chittenden - 11-04

Clarendon - 11-05

Danby - 11-06

Fair Haven - 11-07

Hubbardton - 11-08

Ira - 11-09

Mendon - 11-10

Middleton Springs - 11-11

Mount Holly/Healdville - 11-12

Mount Tabor - 11-13

Pawlet - 11-14

Pittsfield - 11-15

Pittsford - 11-16
(Florence)

Poultney - 11-17

Proctor - 11-18

Rutland City - 11-19

Rutland Town - 11-20

Sherburne - 11-21
(Killington)

Shrewsbury - 11-22

Sudbury - 11-23

Tinmouth - 11-24

Wallingford - 11-25

Wells - 11-26

West Haven - 11-27

West Rutland - 11-28

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
11-01-001	BENSON	VT	0100498	3-1166 001	WWTF	TRIB HUBBARDTON	.0177	MGD	Y	12	31	88
11-02-001	BRANDON	VT	0100056	3-1196 001	WWTF	NESHOBE RIVER	.700	MGD	Y	7	1	85
11-02-006	OTTER VALLEY UHS	OT		3-0293 001	SA	OTTER CREEK	43000	GPD	Y	7	1	81
11-02-007	OLD FOX CHEMICAL	VT	0020737	4-1131 001	RET POND SPG	OTTER CREEK				10	31	79
11-02-008	CYP THOMP WEIN	VT	0020567	3-0392 001	QUARRY WATER	NESHOBE RIVER	.108	MGD	Y	6	30	88
11-03-001	CASTLETON STATE	SW		2-0822 001	OF	POND HILL BROOK				6	30	80
11-03-002	CASTLETON	VT	0100897	3-1238 001	WWTF	CASTLETON RIVER	.360	MGD	Y	4	30	84
11-03-003	WILSON PHOTO	PT		3-0386 001	PF	CASTLETON WWTF			Y	3	31	88
11-03-004	SETH J WOLCOTT	DR		1-0297 001	WO	CASTLETON RIVER				1	1	85
11-03-005	CRANSTON H HOWE	DR		1-0355 001	CURT DR,GW	LAKE BOMOSEEN				3	31	88
11-04-001	BARTON MEMORIAL	SW		1-0096 001	GS	EAST CREEK			Y	12	1	79
11-05-003	RUT IND DEV CORP	SW		2-0197 001	GS	MILL RIVER				7	1	85
11-05-003	RUT IND DEV CORP	SW		2-0197 002	GS	MILL RIVER				7	1	85
11-05-004	VT AGENCY TRANSP	SW		2-0185 001	CB,GS,DP	OTTER CREEK				7	1	85
11-06-003	SMOKEY HOUSE	DR		1-0322 001	VIA PVC PIPE	MILL BROOK				9	1	85
11-07-002	FAIR HAVEN	VT	0100129	4-1008 001	WWTF	CASTLETON RIVER	.750	MGD	Y	7	1	77
11-07-011	FAIR HAV ELD HSG	SW		2-0818 001	CB	MUD BROOK				6	30	80
11-07-011	FAIR HAV ELD HSG	SW		2-0818 002	OF	MUD BROOK				6	30	80
11-07-012	GRAND UNION CO	SW		2-0883 001	GS	MUD BROOK				7	1	85
11-09-001	BIRD MT RESORT	SW		2-0776 001	DP	CASTLETON RIVER				6	30	80
11-10-001	CORTINA INN INC	DR		1-0258 001	GW	MENDON BROOK				2	28	83
11-12-004	RICH GASSENMEYER	DR		1-0290 001	WO	MILL RIVER				8	31	83
11-12-006	CHARLES KNAPP JR	OT		2-0775 001	DOMEST (INV)	BELMONT BROOK	400	GPD		12	15	79
11-12-008	JAMES G POTTER	DR		1-0289 001	GW	MILL RIVER				8	31	84
11-12-009	MALCOLM PATTEN	DR		1-0287 001	WO	MILL RIVER				8	31	84
11-14-002	WEST PAWLET	VT	0101192	3-1220 001	WWTF	INDIAN RIVER	.040	MGD	Y	9	30	88
11-16-006	WH PIGMENT PITTS	VT	0000434	3-1124 001	PROC WASTE	OTTER CREEK	.150	MGD	Y	2	28	83
11-16-009	PITTSFORD	VT	0100692	3-1189 001	WWTF	FURNACE BROOK	.0700	MGD	Y	9	30	85
11-16-017	PITTS NAT FISH	VT	0000451	3-1188 001	HATCHERY	FURNACE BROOK			Y	5	1	85
11-16-019	OMYA INC	VT	0020770	3-0395 001	MARBLE CRUSH	OTTER CREEK	.500	MGD	Y	9	30	88
11-16-020	PITTS NAT'L CHUR	SW		2-0186 001	OF,SS	SUGAR HOLLOW				7	1	85
11-16-020	PITTS NAT'L CHUR	SW		2-0186 002	GS	SUGAR HOLLOW				7	1	85
11-17-001	L ST CATHERINE	OT		1-0348 001	SA	L ST CATHERINE			Y	7	1	84
11-17-002	POULTNEY	VT	0100269	3-1231 001	WWTF	POULTNEY RIVER	.350	MGD	Y	9	30	88
11-18-002	PROCTOR	VT	0100528	4-1032 001	BYPASS	OTTER CREEK				8	31	79
11-18-002	PROCTOR	VT	0100528	4-1032 001A	WWTF	OTTER CREEK	.325	MGD	Y	8	31	79
11-18-002	PROCTOR	VT	0100528	4-1032 002	SAN	OTTER CREEK				8	31	79
11-18-002	PROCTOR	VT	0100528	4-1032 003	SAN	OTTER CREEK				8	31	79
11-18-002	PROCTOR	VT	0100528	4-1032 004	SAN	OTTER CREEK				8	31	79
11-18-002	PROCTOR	VT	0100528	4-1032 005	SAN	OTTER CREEK				8	31	79
11-18-002	PROCTOR	VT	0100528	4-1032 006	SAN	OTTER CREEK				8	31	79
11-19-002	VT PLATING	PT		3-1109 001	SA	RUTLAND WWTF			Y	5	1	82
11-19-003	CVPSC RUTLAND	VT	0000655	3-1169 001	CW	OTTER CREEK	5.620	MGD	Y	1	1	85
11-19-005	RUTLAND CITY	VT	0100871	4-1054 001	BYPASS	OTTER CREEK				7	1	77
11-19-005	RUTLAND CITY	VT	0100871	4-1054 001A	WWTF	OTTER CREEK	6.600	MGD	Y	7	1	77
11-19-005	RUTLAND CITY	VT	0100871	4-1054 002	SAN/SW	OTTER CREEK				7	1	77
11-19-005	RUTLAND CITY	VT	0100871	4-1054 003	SAN/SW	EAST CREEK				7	1	77
11-19-005	RUTLAND CITY	VT	0100871	4-1054 004	SAN/SW	EAST CREEK				7	1	77
11-19-005	RUTLAND CITY	VT	0100871	4-1054 005	SAN/SW	EAST CREEK				7	1	77
11-19-005	RUTLAND CITY	VT	0100871	4-1054 006	SAN/SW	OTTER CREEK				7	1	77
11-19-005	RUTLAND CITY	VT	0100871	4-1054 007	SAN/SW	OTTER CREEK				7	1	77
11-19-005	RUTLAND CITY	VT	0100871	4-1054 008	SAN/SW	MOON BROOK				7	1	77
11-19-005	RUTLAND CITY	VT	0100871	4-1054 009	SAN/SW	OTTER CREEK				7	1	77

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
11-19-009	RUTLAND PUBLIC	SW		2-0891 001	CB	TENNEY BROOK				7	1	85
11-19-011	STRATTON ESTATES	SW		1-0238 001	CB	MOON BROOK				6	1	82
11-19-013	R & C FUCCI	SW		1-0248 001	CB	MOON BROOK				11	1	82
11-19-014	GE-COLUMBIAN AVE	PT		3-0306 001	MP	RUTLAND WWTF	.500	MGD	Y	5	31	83
11-19-015	BO-MAC CORP	SW		2-0731 001	CB	MOON BROOK				6	30	80
11-19-015	BO-MAC CORP	SW		2-0731 002	OUTFALL	PAINT MINE STRM				6	30	80
11-19-015	BO-MAC CORP	SW		2-0731 003	OUTFALL	PAINT MINE STRM				6	30	80
11-19-016	RUTLAND COMM CC	SW		1-0277 001	CB	EAST CREEK				6	30	80
11-19-016	RUTLAND COMM CC	SW		1-0277 002	CB	EAST CREEK				6	30	80
11-19-017	STATE BLDGS DIV	SW		2-0758 001	RUNOFF	RUTLAND WWTF				6	30	80
11-19-018	MOORE BUSINESS	SW		1-0295 001	ROOF DRAINS	OTTER CREEK				11	1	84
11-19-018	MOORE BUSINESS	SW		1-0295 002	ROOF DRAINS	OTTER CREEK				11	1	84
11-19-018	MOORE BUSINESS	SW		1-0295 003	ROOF DRAINS	OTTER CREEK				11	1	84
11-19-018	MOORE BUSINESS	SW		1-0295 004	ROOF DRAINS	OTTER CREEK				11	1	84
11-19-018	MOORE BUSINESS	SW		1-0295 005	ROOF DRAINS	OTTER CREEK				11	1	84
11-19-018	MOORE BUSINESS	SW		1-0295 006	ROOF DRAINS	OTTER CREEK				11	1	84
11-19-018	MOORE BUSINESS	SW		1-0295 007	ROOF DRAINS	OTTER CREEK				11	1	84
11-19-018	MOORE BUSINESS	DR		1-0295 008	WO	OTTER CREEK				11	1	84
11-19-018	MOORE BUSINESS	DR		1-0295 009	WO	OTTER CREEK				11	1	84
11-19-018	MOORE BUSINESS	DR		1-0295 010	WO	OTTER CREEK				11	1	84
11-19-019	MCDONALDS CORP	SW		2-0116 001	SF	TENNEY BROOK				7	1	85
11-19-020	VICON RECOVERY	SW		2-0201 001	CB,GS,DP	OTTER CREEK				7	1	85
11-19-020	VICON RECOVERY	SW		2-0201 002	GS,CB	RUTLAND STORM DR				7	1	85
11-19-021	NAT'L CHURCH RES	SW		2-0211 001	CB	RUTLAND WWTF			N	7	1	85
11-20-002	U S SAMICA	VT	0000442	3-0017 001	OT	COLD RIVER	.850	MGD	Y	12	31	83
11-20-003	RUTLAND FD#1	VT	0100315	4-1051 001	WWTF	OTTER CREEK	.027	MGD	Y	7	1	77
11-20-003	RUTLAND FD#1	VT	0100315	4-1051 002	COMB O'FLOW	OTTER CREEK				7	1	77
11-20-003	RUTLAND FD#1	VT	0100315	4-1051 003	COMB O'FLOW	OTTER CREEK				7	1	77
11-20-004	JUST GOLD HOLD'G	SW		2-0867 001	OF	OTTER CREEK				6	30	85
11-20-005	J & R ROMANO	OT		2-0437 001	DOMEST (INV)	OTTER CREEK	200	GPD		9	1	73
11-20-008	TRI-PHOENIX DEV	DR		1-0070 001	GW	TENNEY BROOK				1	1	79
11-20-010	GE-WINDCREST RD	PT		3-0307 001	MP	RUTLAND WWTF	.125	MGD	Y	5	31	83
11-20-011	GEORGE CORSONES	OT		4-0211 001	DOMEST(INV)	OTTER CREEK	5000	GPD		9	1	76
11-20-014	RUTLAND PLYWOOD	SW		1-0292 001	OF	OTTER CREEK			Y	9	30	84
11-20-017	VT ELEC POWER CO	SW		2-0853 001	DP	OTTER CREEK				6	30	80
11-20-018	RUTLAND GROUP	SW		2-0899 001	FILT POND	TENNEY BROOK				7	1	85
11-20-018	RUTLAND GROUP	SW		2-0899 002	OF	TENNEY BROOK				7	1	85
11-20-019	LOUIS ESPOSITO	SW		2-0967 001	GS	TENNEY BROOK				7	1	85
11-21-001	EDGEMONT CONDOS	OT		4-0188 001	SA	ROARING BROOK	20000	GPD		11	1	73
11-21-002	KILLINGTON VILL	DR		1-0313 001	CURTAIN DR	ROARING BROOK				4	1	85
11-21-004	CHALET KILLINGTO	OT		2-0780 001	SA	ROARING BROOK				10	1	79
11-21-006	SUMMIT REALTY CO	DR		1-0058 001	GW	KENT BROOK				1	1	79
11-21-022	RAYMOND GIGUERE	OT		4-0223 001	FAILED SYST	ROARING BROOK	4440	GPD	Y	9	1	78
11-21-055	R GIGUERE	DR		1-0261 001	FO,GW	ROARING BROOK				3	31	83
11-21-083	WILLIAM JOHNSON	DR		1-0262 001	GW	KENT POND BROOK				3	31	83
11-21-088	H BIATHROW	OT		1-0269 001	SA	OTTAUQUECHEE RIV				9	1	78
11-21-090	K BUDZYNA	OT		2-0724 001	SA	ROARING BROOK				9	1	78
11-21-091	R REININGER	DR		1-0274 001	GW	ROARING BROOK				9	30	83
11-21-095	JAY NUSSBAUM	DR		1-0267 001	GW,FO	OTTAUQUECHEE RIV				3	31	83
11-21-099	MILDRED HOADLEY	DR		1-0271 001	FO	ROARING BROOK				9	30	83
11-21-099	MILDRED HOADLEY	DR		1-0271 002	FO	ROARING BROOK				9	30	83
11-21-103	MT MEADOWS LODGE	OT		2-0152 001	SA	TRIB KENT BROOK				9	1	83

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
11-21-104	MOON RIDGE CORP	SW		2-0190 001	GS,CB,OF	OTTAUQUECHEE RIV				7	1	85
11-21-106	RICHARD DYBVIG	DR		1-0357 004	POOL,WO	TRIB ROARING BRK	50	GPM	Y	9	30	88
11-21-107	SUNRISE GROUP	SW		2-0208 001	CB,SS	FALLS BROOK				7	1	85
11-21-107	SUNRISE GROUP	SW		2-0208 002	CB,SS	FALLS BROOK				7	1	85
11-21-107	SUNRISE GROUP	SW		2-0208 003	CB,SS	FALLS BROOK				7	1	85
11-22-001	CUTTINGSVILLE SC	OT		2-0493 001	SA	MILL RIVER	400	GPD		9	1	74
11-25-001	VALLEY VIEW CRMY	OT		3-0239 001	SA	OTTER CREEK	20000	GPD		1	1	81
11-25-003	WH PIGMENT S WAL	DR	0020141	3-0363 001	GW	OTTER CREEK	240000	GPD	Y	5	1	85
11-25-005	WALLINGFORD FD#1	VT	0100552	3-0365 001	WWTF	OTTER CREEK	.120	MGD	Y	6	30	85
11-25-006	TRUE TEMPER CORP	VT	0000507	3-1152 002	LOG PILER	OTTER CREEK			Y	7	31	84
11-26-002	EDWIN TREAT	DR		1-0011 001	GW	L ST CATHERINE				11	1	73
11-28-001	WEST RUTLAND	VT	0100714	3-1237 001	WWTF	CLARENDON RIVER	.325	MGD	Y	12	31	88

117 records selected from 856 processed.

WASHINGTON 12

Barre City - 12-01

Barre Town - 12-02
(Websterville)

Berlin - 12-03
(Riverton)

Cabot - 12-04

Calais - 12-05

Duxbury - 12-06

East Montpelier - 12-07

Fayston - 12-08

Marshfield - 12-09

Middlesex - 12-10

Montpelier City - 12-11

Moretown - 12-12

Northfield - 12-13

Plainfield - 12-14

Roxbury - 12-15

Waitsfield - 12-16

Warren - 12-17

Waterbury - 12-18

Woodbury - 2-19

Worcester - 12-20

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
12-01-002	BARRE CITY	VT	0100889	3-1145 001	WWTF	STEVENS BRANCH	3.800	MGD	Y	3	31	84
12-01-002	BARRE CITY	VT	0100889	3-1145 002	BYPASS	STEVENS BRANCH				3	31	84
12-01-010	NO BARRE GRANITE	VT	0020052	3-0326 001	GRANITE PROC	STEVENS BRANCH	10000	GPD	Y	12	31	83
12-01-013	LACROSS MEM	VT	0020028	3-0342 001	CW	JAIL BRANCH	7000	GPD	N	1	1	85
12-01-015	CONSOLIDATED MEM	VT	0020044	3-0340 001	GRANITE PROC	JAIL BRANCH	25000	GPD	Y	1	1	85
12-01-020	NATIVI & SON INC	OT		3-0346 001	GRANITE PROD	STEVENS BRANCH	.014	MGD	Y	1	1	85
12-01-021	GRANITE IND VT	OT		3-0366 001	GRANITE PROC	STEVENS BRANCH	10000	GPD	Y	5	1	85
12-01-024	COOK WATKINS PAT	VT	0020061	3-0328 001	GRANITE PROC	STEVENS BRANCH	25000	GPD	Y	12	31	83
12-01-028	SPRAGUE ELECTRIC	VT	0000418	3-1171 001	CW	STEVENS BRANCH	.086	MGD	Y	3	1	85
12-01-028	SPRAGUE ELECTRIC	VT	0000418	3-1171 002	CW	JAIL BRANCH	.082	MGD	Y	3	1	85
12-01-028	SPRAGUE ELECTRIC	VT	0000418	3-1171 003	CW	JAIL BRANCH	.013	MGD	Y	3	1	85
12-01-028	SPRAGUE ELECTRIC	VT	0000418	3-1171 005	CW	JAIL BRANCH	.094	MGD	Y	3	1	85
12-01-028	SPRAGUE ELECTRIC	VT	0000418	3-1171 008	CW	JAIL BRANCH	.072	MGD	Y	3	1	85
12-01-028	SPRAGUE ELECTRIC	VT	0000418	3-1171 009	CW	JAIL BRANCH	.029	MGD	Y	3	1	85
12-01-028	SPRAGUE ELECTRIC	VT	0000418	3-1171 010	CW	JAIL BRANCH	.029	MGD	Y	3	1	85
12-01-028	SPRAGUE ELECTRIC	VT	0000418	3-1171 011	CW	JAIL BRANCH	.072	MGD	Y	3	1	85
12-01-036	MERRIAM-GRAVES	OT		1-0308 001	CITY WATER	STEVENS BRANCH	500	GPD		3	1	85
12-01-037	JSGC BLDG LTD	SW		2-0993 001	DBL MANHOLE	STEVENS BRANCH				7	1	85
12-01-038	VT AGENCY TRANSP	SW		2-0917 001	CB	POTASH BROOK				7	1	85
12-01-039	VIATEUR FECTEAU	SW		2-0192 001	FILT,DP	JAIL BRANCH				7	1	85
12-01-040	O VALSANGIACOMO	SW		2-0139 001	GS,CB	STEVENS BRANCH				7	1	85
12-02-002	EAST BARRE	VT	0100099	4-1025 000	BYPASS	JAIL BRANCH				7	1	77
12-02-002	EAST BARRE	VT	0100099	4-1025 001A	WWTF	JAIL BRANCH	.200	MGD	Y	7	1	77
12-02-002	WEBSTERVILLE	VT	0100412	4-1057 001	WWTF	JAIL BRANCH BRK	.010	MGD	Y	2	1	77
12-02-005	WELLS-LAMSON	OT		3-0347 001	GRANITE PROC	JAIL BRANCH	9000	GPD	Y	1	1	85
12-02-006	COOLEY ASPHALT	OT		3-0339 001	GRAVEL	STEVENS BROOK	15000	GPD	Y	1	1	85
12-02-008	R OF A SAW PLANT	VT	0020613	3-0353 001	GRANITE	TRIB STEVENS BR	200000	GPD	Y	12	31	82
12-02-008	R OF A BARRE	VT	0020605	3-0354 001	GRANITE	TRIB STEVENS BR	450000	GPD	Y	12	31	82
12-02-008	R OF A REILLY PD	VT	0020648	3-0355 001	GRANITE	TRIB STEVENS BR	400000	GPD	Y	12	31	82
12-02-008	R OF A SMITH	VT	0020630	3-0356 001	GRANITE	TRIB STEVENS BR	250000	GPD	Y	12	31	82
12-02-008	R OF A #5 QUARRY	VT	0020621	3-0357 001	GRANITE	TRIB STEVENS BR	720000	GPD	Y	12	31	82
12-02-008	WETMORE & MORRIS	VT	0020656	3-0358 001	GRANITE	TRIB STEVENS BR	500000	GPD	Y	12	31	82
12-02-008	R OF A MFG PLANT	VT	0020591	3-0359 001	GRANITE	STEVENS BRANCH	250000	GPD	Y	12	31	82
12-02-009	MALDEN MILLS INC	SW		2-0991 001	CB	STEVENS BRANCH				7	1	85
12-02-010	R & B LASH	SW		1-0235 001	CB	POTASH BROOK				5	1	82
12-02-011	GEN'L BATTERY CO	PT		3-0331 001	PROC/SA	BARRE CITY WWTF	29.500	MGD	Y	5	31	85
12-02-012	BOMBARDIER	SW		2-0927 001	CB,SF,FILT P	STEVENS BRANCH				7	1	85
12-02-013	WILLIAMSON POLIS	VT	0020109	3-0377 001	GRANITE	STEVENS BRANCH			Y	7	1	86
12-02-014	BARRE HOUSING	SW		2-0163 001	CB	STEVENS BRANCH				7	1	85
12-03-002	BERLIN	VT	0100030	4-1168 001	WWTF	STEVENS BRANCH	.250	MGD	Y	12	1	84
12-03-002	BERLIN	VT	0100030	4-1168 002	OVERFLOW	STEVENS BRANCH				12	1	84
12-03-002	BERLIN	VT	0100030	4-1168 003	OVERFLOW	STEVENS BRANCH				12	1	84
12-03-002	BERLIN	VT	0100030	4-1168 004	CHLOR CONTAC	STEVENS BRANCH				12	1	84
12-03-006	VT AGENCY TRANSP	OT		3-0351 001	LAB WASH	BENJAMIN FALLS	3750	GPD	Y	3	1	85
12-03-008	PEARL BOYCE	OT		2-0410 001	DOMEST(INV)	DOG RIVER	200	GPD		9	1	73
12-03-010	THE ASSOCIATES	SW		2-0888 001	CB	STEVENS BROOK				7	1	85
12-03-011	CARL BARTEAU	DR		1-0303 001	GW	DOG RIVER				1	1	85
12-03-016	CENTRAL VT MEDIC	SW		1-0200 001	SS	STEVENS BRANCH				2	1	81
12-03-019	FASSETTS BAKERY	SW		2-0132 001	GS,SS	STEVENS BRANCH				7	1	85
12-03-020	GENE R COHEN	SW		2-0199 001	CB	STEVENS BRANCH			N	7	1	85
12-03-021	PIZZA HUT	SW		2-0200 001	GS,SS	STEVENS BRANCH				7	1	85
12-03-021	PIZZA HUT	SW		2-0200 002	STONE DITCH	STEVENS BRANCH				7	1	85
12-04-001	CABOT SCHOOL	OT		3-0376 001	SA	WINOOSKI RIVER	6000	GPD	Y	9	1	85

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
12-04-002	CABOT FARM COOP	VT	0000621	3-1187 001	CW	WINOOSKI RIVER	.016	MGD	Y	4	30	84
12-04-002	CABOT FARM COOP	VT	0000621	3-1187 003	CW	WINOOSKI RIVER	.010	MGD	Y	4	30	84
12-08-001	MAD HATTER LTD	DR		1-0053 001	GW	MILL BROOK				7	1	78
12-08-002	BROWN & VANLOON	DR		1-0056 001	GW	MILL BROOK				7	1	78
12-08-003	INN CONDOS	DR		1-0226 001	CURTAIN	CHASE BROOK				3	1	82
12-08-004	BATTLEGROUND	SW		2-0916 001	SS	MILL BROOK				7	1	85
12-08-005	SUGARBUSH VALLEY	DR		1-0283 001	POND O'FLOW	CHASE BROOK	60000	GPD		6	30	84
12-09-002	MARSHFIELD	VT	0100471	3-1195 001	WWTF	WINOOSKI RIVER	.045	MGD	Y	6	30	85
12-11-010	EVERLASTING MEM	VT	0020362	1-0304 001	CW	WINOOSKI RIVER	1000	GPD		3	1	85
12-11-011	MONTPELIER	VT	0100196	3-1207 001	WWTF	WINOOSKI RIVER	3.970	MGD	Y	12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 002	SAN/SW	WINOOSKI RIVER				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 003	SAN/SW	WINOOSKI RIVER				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 004	SAN/SW	WINOOSKI RIVER				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 005	SAN/SW	WINOOSKI RIVER				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 006	SAN/SW	NO BRANCH, W'SKI				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 007	SAN/SW	NO BRANCH, W'SKI				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 008	SAN/SW	NO BRANCH, W'SKI				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 009	SAN/SW	NO BRANCH, W'SKI				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 010	SAN/SW	NO BRANCH, W'SKI				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 011	SAN/SW	NO BRANCH, W'SKI				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 012	SAN/SW	NO BRANCH, W'SKI				12	1	86
12-11-011	MONTPELIER	VT	0100196	3-1207 013	SAN/SW	WINOOSKI RIVER				12	1	86
12-11-025	HERITAGE CORP	SW		2-0836 001	CB	WINOOSKI RIVER				7	1	80
12-11-026	PETER GIACHERIO	SW		2-0992 001	CB	STEVENS BRANCH				7	1	85
12-11-028	VT DEPT ADMINIST	SW		1-0266 001	GRIT CHAMBER	WINOOSKI RIVER				3	31	83
12-11-028	VT DEPT ADMINIST	SW		1-0266 002	GRIT CHAMBER	WINOOSKI RIVER				3	31	83
12-11-029	WASHINGTON CTY	SW		2-0739 001	CB	WINOOSKI RIVER				6	30	80
12-11-034	VT AGENCY TRANSP	SW		2-0915 001	CB	WINOOSKI RIVER				7	1	85
12-11-035	DAVID DUBRUL	SW		2-0913 001	CB	WINOOSKI RIVER				7	1	85
12-11-036	D BUTTERFIELD	OT		1-0346 001	HT PMP RTN	WINOOSKI RIVER				11	1	87
12-11-037	K & J SENECAL	SW		2-0175 001	GS,SS	WINOOSKI RIVER				7	1	85
12-11-037	K & J SENECAL	SW		2-0175 002	GS,SS	BLANCHARD BROOK				7	1	85
12-12-006	JOHN SCHULTZ	DR		1-0314 001	GW	DOCTOR BROOK				4	1	85
12-12-008	WATERBURY EXPR	SW		2-0875 001	GS	CROSSETT BROOK				6	30	85
12-12-009	DUXTOWN IND PARK	SW		2-0938 001	DP,GS	WINOOSKI RIVER				7	1	85
12-12-010	ALINE WARD	DR		1-0341 001	WO	MAD RIVER				7	1	87
12-12-011	ROBERT SIMONDS	DR		1-0432 001	WO	MAD RIVER				8	1	87
12-13-002	NORTHFIELD	VT	0100242	3-1158 001	WWTF	DOG RIVER	1.630	MGD	Y	5	31	84
12-14-001	PLAINFIELD	VT	0100781	3-0381 001	WWTF	WINOOSKI RIVER	.100	MGD	Y	8	1	86
12-15-002	FISH & GAME DEPT	OT		3-0362 001	HATCHERY	THIRD BR, WH R				4	1	85
12-16-002	D & P SLINGLUFF	DR		1-0105 001	GW	MAD RIVER				2	1	80
12-16-003	MAD RIVER GREEN	DR		1-0224 001	GW	MAD RIVER				2	1	82
12-16-004	ROBERT J BLAIR	SW		2-0778 001	GS	MAD RIVER				8	31	84
12-16-005	JAMES HENDERSHOT	SW		2-0951 001	OF	MILL BROOK				7	1	85
12-16-006	GRAND UNION	SW		2-0959 001	GS	MAD RIVER				7	1	85
12-16-007	ROBERT BLAIR	SW		2-0215 001	GS	MAD RIVER			N	7	1	85
12-17-003	THE WINDBEAM	OT		4-0195 001	SA	MAD RIVER				12	1	73
12-17-004	TRAILS END LODGE	OT		4-0216 001	SA	MAD RIVER				9	1	78
12-17-008	THOMAS ROGERS	DR		1-0284 001	GW	BRADLEY BROOK	8			6	30	84
12-17-009	MAD RIVER VALLEY	SW		2-0119 001	OF	CLAY BROOK				3	28	85
12-17-010	VILLAGE GATE	SW		2-0809 001	CB,OF	RICE BROOK				6	30	80
12-17-011	DOME CORPORATION	SW		2-0856 001	SF,RET BASIN	CLAY BROOK				6	30	80

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
12-17-011	DOME CORPORATION	SW		2-0856 002	GS,CB	CLAY BROOK				6	30	80
12-17-011	DOME CORPORATION	SW		2-0856 003	GS,CB	CLAY BROOK				6	30	80
12-17-013	SNOW CREEK ASSOC	SW		2-0914 001	SS	CLAY CREEK				7	1	85
12-17-013	SNOW CREEK ASSOC	SW		2-0914 002	GS,CB	CLAY CREEK				7	1	85
12-17-013	SNOW CREEK ASSOC	SW		2-0914 003	SS	CLAY CREEK				7	1	85
12-17-014	JOHN MEIER	SW		2-0948 001	GS	MAD RIVER				7	1	85
12-17-015	SNOW CREEK	SW		2-0995 001	SS,GS	CLAY BROOK				7	1	85
12-17-016	MAD RIVER VALLEY	SW		2-0118 001	SF,CB	CLAY BROOK				7	1	85
12-18-014	S G PHILLIPS	SW		2-0808 001	CB/FR DRAIN	THATCHER BROOK				7	1	80
12-18-016	H HUNTINGTON	SW		2-0929 001	CB	THATCHER BROOK				7	1	85
12-18-017	WILLIAM MASON	DR		1-0331 001	GW	THATCHER BROOK				7	1	86
12-18-018	HOLIDAY INN	SW		2-0213 001	OF,GS,SS	TRIB THATCHER BK			N	7	1	85
12-18-018	HOLIDAY INN	SW		2-0213 002	OF,GS,SS	TRIB THATCHER BK			N	7	1	85
12-20-001	WORCESTER FD#1	OT		3-0324 001	FB	WINOOSKI RIVER	2000	GPD		6	30	84

119 records selected from 958 processed.

WINDHAM 13

Athens - 13-01

Brattleboro - 13-02

Brookline - 13-03

Dover - 13-04

Dummerston - 13-05

Grafton - 13-06

Guilford - 13-07

Halifax - 13-08

Jamaica - 13-09

Londonderry - 13-10

Marlboro - 13-11

Newfane - 13-12

Putney - 13-13

Rockingham - 13-14
(Bellows Falls)
(Saxtons River)

Stratton - 13-15

Townshend - 13-16

Vernon - 13-17

Wardsboro - 13-18

Westminster - 13-19

Whitingham - 13-20

Wilmington - 13-21

Windham - 13-22

Unorganized - 13-23

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
13-02-001	BRATTLEBORO	VT	0100064	4-1085 001	BYPASS	CONNECTICUT RIV				11	1	83
13-02-001	BRATTLEBORO	VT	0100064	4-1085 001A	WWTF	CONNECTICUT	2.500	MGD	Y	11	1	83
13-02-001	BRATTLEBORO	VT	0100064	4-1085 002	EMGCY O'FLOW	CONNECTICUT RIV				11	1	83
13-02-001	BRATTLEBORO	VT	0100064	4-1085 003	SAN/SW	RETREAT MEADOW				11	1	83
13-02-001	BRATTLEBORO	VT	0100064	4-1085 003A	SAN/SW	RETREAT MEADOW				11	1	83
13-02-001	BRATTLEBORO	VT	0100064	4-1085 004	EMGCY O'FLOW	WEST RIVER				11	1	83
13-02-001	BRATTLEBORO	VT	0100064	4-1085 005	EMGCY O'FLOW	BLACK MT BROOK				11	1	83
13-02-002	BOISE CASCADE	VT	0000248	4-0158 001	PA	CONNECTICUT RIV	1.500	MGD	Y	10	1	72
13-02-004	ERVING PAPER MIL	VT	0000281	3-1038 001	CW	CONNECTICUT RIV	.300	MGD	Y	10	30	84
13-02-006	WEST GATE ASSOC	SW		2-0998 001	OUTFALL PIPE	WHETSTONE BROOK				7	1	85
13-02-008	BARROWS COAL	VT	0000311	3-1223 001	TREATED SW	CONNECTICUT RIV			Y	6	30	88
13-02-009	FAIRFIELD ASSOC	SW		2-0849 001	CB	WEST RIVER				6	30	80
13-02-017	BRATTLEBORO	SW		2-0148 001	CB	CONNECTICUT RIV				7	1	85
13-02-018	BRATT RETREAT	OT		2-0545 001	BOIL B'DOWN	WEST RIVER	100	GPD		7	1	75
13-02-019	CERSOSIMO LUMBER	OT		1-0333 001	CW	CONNECTICUT RIV	1000	GPD		9	1	86
13-02-026	WOODBINE CORP	SW		2-0815 001	OF	BROAD BROOK				7	1	80
13-02-028	C E BRADLEY LABS	DR		1-0310 001	GW	CONNECTICUT RIV				4	1	85
13-02-029	BURL SAVINGS	SW		2-0859 001	CB	CONNECTICUT RIV				6	30	81
13-02-030	C&S WH'SALE GROC	SW		2-0876 001	SF,DP	CONNECTICUT RIV				7	31	85
13-02-031	CHASE REALTY CO	SW		2-0887 001	GS	WHETSTONE BROOK				7	1	85
13-02-031	CHASE REALTY CO	SW		2-0887 002	CB	WHETSTONE BROOK				7	1	85
13-02-033	BRATTLEBORO DEV	SW		2-0996 001	OF	WEST RIVER				7	1	85
13-02-034	MOORE ASSOC	VT	0020745	3-1251 001	CW	BLACK MT BROOK	.800	MGD	Y	4	1	87
13-02-034	MOORE ASSOC	VT	0020745	3-1251 002	FB	BLACK MT BROOK	3000	GPD	Y	4	1	87
13-02-035	S G PHILLIPS	DR		1-0340 001	GW	CONNECTICUT RIV				5	1	84
13-02-036	ELSO CORPORATION	SW		2-0165 001	GS	WEST RIVER				7	1	85
13-02-036	ELECTRO-SONICS	PT		3-1227 001	MP	BRATTLEBORO WWTF	.0035	MGD	Y	6	30	88
13-02-039	LANCE SHADER	SW		2-0194 001	CB	WEST RIVER				7	1	85
13-02-041	BRATT DEV CREDIT	SW		2-0209 001	GS	CONNECTICUT RIV				7	1	85
13-04-001	NO BRANCH FD#1	VT	0100218	1-0203 001	GW -WWTF SPR	ELLIS BROOK				3	1	81
13-04-022	THOMAS F MEADE	OT		2-0489 001	DOMEST(INV)	DEERFIELD RIVER	500	GPD		11	1	74
13-04-025	T C CONST CORP	SW		2-0130 001	GS,SS	DEERFIELD RIVER				7	1	85
13-04-026	PROGRESSIVE PROP	SW		2-0105 001	GS	ELLIS BROOK				7	1	85
13-04-027	ENVIRONMENTAL CO	SW		2-0125 001	GS	DEERFIELD RIVER				7	1	85
13-04-028	T C CONSTRUCTION	SW		2-0150 001	GS	NORTH BRANCH				7	1	85
13-04-029	MT GREEN ASSOC	SW		2-0160 001	GS	NORTH BRANCH				7	1	85
13-04-029	MT GREEN ASSOC	SW		2-0160 002	GS	NORTH BRANCH				7	1	85
13-04-030	CALLAHAN OIL CO	SW		2-0177 001	SS,GS	NORTH BRANCH				7	1	85
13-04-030	CALLAHAN OIL CO	SW		2-0177 002	GS	NORTH BRANCH				7	1	85
13-08-001	HOMER M SUMMER	OT		2-0452 001	DOMEST(INV)	BRANCH BROOK	400	GPD		9	1	73
13-08-005	JOSEPH GERTLER	OT		2-0601 001	DOMEST(INV)	HALIFAX BR	200	GPD		10	1	76
13-09-001	JAMAICA HOUSE	OT		4-0199 001	SA	WEST RIVER	1000	GPD		10	1	73
13-09-002	RAYMOND NAFTALI	DR		1-0306 001	WO	MILL BROOK				2	1	85
13-09-004	J H MCFARLANE	DR		1-0317 001	GW	RED BROOK				7	1	85
13-09-005	WILLIAM ANDRUS	DR		1-0126 001	WO	WEST BROOK				12	1	80
13-10-001	CHALET SWISS	OT		4-0132 001	SA	WEST RIVER			Y	12	1	72
13-10-002	MAGIC MT CORP	OT		4-0240 001	SA	MAGIC MT LAKE	14000	GPD	Y	7	1	82
13-10-005	BLUE GENTIAN LDG	OT		4-0198 001	SA	WEST RIVER	2400	GPD		8	1	82
13-10-006	FLOOD BROOK UN	OT		4-0241 001	SA	FLOOD BROOK	9000	GPD	Y	11	15	84
13-10-014	DOSTALS RES LDG	OT		4-0235 001	SA	WEST RIVER	6800	GPD		8	1	82
13-10-015	IMPI LUNDIN	DR		1-0099 001	GW	WEST ROVER				1	1	80
13-10-016	SNOW DRIFT CONDO	OT		4-0189 001	SA	WEST RIVER	11000	GPD	Y	8	1	82
13-10-025	IRWIN MATTES	DR		1-0114 001	CW	FLOOD BROOK				7	1	80

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
13-10-031	DORIS GABLE	OT		2-0495 001	DOMEST(INV)	WEST RIVER	500	GPD		7	1	74
13-10-038	SMITH INC	OT		2-0533 001	SA	COOK BROOK				11	1	74
13-10-042	FORREST LANE	OT		2-0695 001	DOMEST(INV)	WEST RIVER	1000	GPD		7	1	77
13-10-052	BERTRAM FABER	OT		2-0697 001	DOMEST(INV)	WEST RIVER	1000	GPD		7	1	77
13-10-054	TRASK&WAITE RLTY	SW		2-0141 001	CB	WEST RIVER				7	1	85
13-10-060	ELLIS H SPEATH	SW		2-0987 001	SS	WEST BROOK				7	1	85
13-10-061	GRAN'MA FRISBY'S	OT		1-0350 001	CW	LOWELL BROOK				2	15	88
13-12-003	BARRETT BUSH	DR		1-0307 001	WD	ROCK BROOK				4	1	85
13-12-004	MAUDE D WEIR	DR		1-0072 001	WD	SMITH BROOK				7	1	79
13-12-006	ERNEST M COLE	OT		2-0509 001	DOMEST(INV)	SMITH BROOK	250	GPD		7	1	74
13-12-008	HAYNES BROS	SW		2-0821 001	SP	BAKER BROOK				7	1	80
13-13-001	WINDHAM COLL COR	VT	0020371	4-1101 001	WWTF	CONNECTICUT RIV	.065	MGD	Y	9	1	80
13-13-006	PUTNEY PAPER	VT	0000108	3-1128 001	PA	CONNECTICUT RIV	.275	MGD	Y	12	31	82
13-13-006	PUTNEY PAPER	VT	0000108	3-1128 002	INTAKE O'FLO	SACKETTS BROOK				12	31	82
13-13-006	PUTNEY PAPER	VT	0000108	3-1128 003	EMGCY L'FLOW	SACKETTS BROOK			Y	12	31	82
13-13-011	PUTNEY	VT	0100277	3-1211 001	WWTF	SACKETTS BROOK	.080	MGD	Y	3	31	87
13-14-001	MT PAPER PROD	PT		3-0308 001	PA	BELLS FALLS WWTF	.100	MGD	Y	6	30	83
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 001	WWTF	CONNECTICUT RIV	1.500	MGD	Y	7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 002	BYPASS	CONNECTICUT RIV			Y	7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 003	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 004	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 005	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 006	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 007	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 008	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 009	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 010	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 011	COMB O'FLOW	POWER CANAL				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 012	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 013	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 014	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 015	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-003	BELLOWS FALLS	VT	0100013	4-1028 016	COMB O'FLOW	CONNECTICUT RIV				7	1	77
13-14-004	SAXTONS RIVER	VT	0100609	3-1167 001	WWTF	SAXTONS RIVER	.105	MGD	Y	5	1	84
13-14-022	MARY J WYNNE	OT		2-0450 001	DOMEST(INV)	SAXTONS RIVER	100	GPD		9	1	73
13-14-024	HOUSING ASSOC	DR		1-0324 001	GW	CONNECTICUT RIV				10	1	85
13-15-001	STRATTON CORP	OT		4-0098 001	WWTF	NO BRANCH BROOK	.175	MGD		7	1	75
13-15-002	STRATTON VILLAGE	SW		2-0970 001	CB	STRATTON LAKE				7	1	85
13-15-003	STRATTON CORP	SW		2-0196 001	GS,SS,CB	NO BRANCH BROOK				7	1	85
13-15-003	STRATTON CORP	SW		2-0196 002	GS,SS,CB	NO BRANCH BROOK				7	1	85
13-16-004	HARMONYVILLE ST	OT		2-0512 001	SEP TK O'FLO	TRIB MILL BROOK	600	GPD	Y	7	1	74
13-16-005	ELSO DEHAAS	DR		1-0300 001	WD	MILL BROOK				1	1	85
13-16-007	HARRY MCINTOSH	DR		1-0319 001	WD	MILL BROOK				6	1	85
13-17-002	VT YANKEE NUCL	VT	0000264	3-1199 001	CIRC/COND CW	CONNECTICUT RIV	9.7	MGD	Y	1	19	86
13-17-002	VT YANKEE NUCL	VT	0000264	3-1199 001A	BOIL BLOWDN	CONNECTICUT RIV	.0006	MGD	Y	1	19	86
13-17-002	VT YANKEE NUCL	VT	0000264	3-1199 001C	SAND FB	CONNECTICUT RIV	.001	MGD	Y	1	19	86
13-17-002	VT YANKEE NUCL	VT	0000264	3-1199 001D	OPEN CYCLE	CONNECTICUT RIV	543	MGD	Y	1	19	86
13-17-002	VT YANKEE NUCL	VT	0000264	3-1199 002	RADIOACTIVE	CONNECTICUT RIV	9.6	MGD	Y	1	19	86
13-17-002	VT YANKEE NUCL	VT	0000264	3-1199 006	SW	CONNECTICUT RIV			N	1	19	86
13-17-002	VT YANKEE NUCL	VT	0000264	3-1199 007	SW	CONNECTICUT RIV			N	1	19	86
13-17-002	VT YANKEE NUCL	VT	0000264	3-1199 008	SW	CONNECTICUT RIV			N	1	19	86
13-19-011	ERNEST VIVAN	OT		2-0451 001	DOMEST(INV)	EAST PUTNEY BK	800	GPD		9	1	73

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
13-19-015	C & A FRANKLIN	OT		2-0592 001	DOMEST(INV)	SAXTONS RIVER	200	GPD		7	1	76
13-19-017	DWIGHT PUTNAM	OT		2-0593 001	DOMEST(INV)	SAXTONS RIVER	800	GPD		7	1	76
13-19-020	EDWIN L MOORE	OT		2-0582 001	DOMEST(INV)	SAXTONS RIVER	200	GPD		9	1	76
13-19-025	GREGORY HOLTON	OT		2-0597 001	DOMEST(INV)	SAXTONS RIVER	200	GPD		7	1	76
13-19-026	JOHN F KENNEDY	OT		2-0587 001	DOMEST(INV)	SAXTONS RIVER	200	GPD		7	1	76
13-19-030	MARY BRANDT	OT		2-0595 001	DOMEST(INV)	SAXTONS RIVER	400	GPD		7	1	76
13-19-039	KINGDOM HALL	OT		2-0594 001	DOMEST(INV)	SAXTONS RIVER	1000	GPD		7	1	76
13-20-005	O & E KINGSLEY	OT		2-0598 001	DOMEST(INV)	NORTH RIVER	100	GPD		7	1	76
13-20-007	WHITINGHAM	VT	0101109	3-1229 001	WWTF	HARRIMAN RES	.0123	MGD	Y	9	30	88
13-20-007	JACKSONVILLE	VT	0101044	3-1230 001	WWTF	EAST BR,NO RIVER	.0501	MGD	Y	9	30	88
13-21-001	HAYSTACK CORP	OT		3-0177 001	DOMESTIC	DEERFIELD RIVER				8	1	82
13-21-002	WILMINGTON	VT	0100706	4-1056 001	WWTF	DEERFIELD RIVER	.070	MGD	Y	7	1	77
13-21-002	WILMINGTON	VT	0100706	4-1056 002	COMB O'FLOW	DEERFIELD RIVER				7	1	77
13-21-002	WILMINGTON	VT	0100706	4-1056 003	COMB O'FLOW	DEERFIELD RIVER				7	1	77
13-21-002	WILMINGTON	VT	0100706	4-1056 004	COMB O'FLOW	DEERFIELD RIVER				7	1	77
13-21-002	WILMINGTON	VT	0100706	4-1056 005	COMB O'FLOW	DEERFIELD RIVER				7	1	77
13-21-007	WM H MORAN	OT		2-0203 001	DOMEST(INV)	WHITINGHAM LAKE	200	GPD		7	1	72
13-21-012	CARL E MANGS	OT		2-0485 001	DOMEST(INV)	DEERFIELD RIVER	200	GPD		12	1	73
13-21-014	THOMAS M MITRO	OT		2-0773 001	DOMEST(INV)	DEERFIELD RIVER	1000	GPD		12	31	83
13-21-022	JOHN L MORGAN	OT		2-0575 001	DOMEST(INV)	DEERFIELD RIVER				7	1	76
13-21-023	GRAND UNION	DR		1-0256 001	POND O'FLOW	BEAVER BROOK				1	31	83
13-21-023	GRAND UNION	DR		1-0256 001A	POND O'FLOW	BEAVER BROOK				1	31	83
13-21-023	GRAND UNION	DR		1-0256 002	CULVERT	BEAVER BROOK				1	31	83
13-21-023	GRAND UNION	DR		1-0256 003	CULVERT	BEAVER BROOK				1	31	83
13-22-002	VT TALC	SW		2-0121 001	GS	SAXTONS RIVER				7	1	85
13-22-003	WINDHAM SKI ASSO	OT		1-0345 001	SNOWMKG POND	TRIB SAXTONS RIV	550	GPM		5	31	88
13-22-003	WINDHAM SKI ASSO	OT		1-0345 002	RETURN FLOWS	TRIB SAXTONS RIV	850	GPM		5	31	88

132 records selected from 1100 processed.

WINDSOR 14

Andover - 14-01

Baltimore - 14-02

Barnard - 14-03

Bethel - 14-04

Bridgewater - 14-05

Cavendish - 14-06

Chester - 14-07

Hartford - 14-08
(White River Junction)
(Quechee)

Hartland - 14-09

Ludlow - 14-10

Norwich - 14-11

Plymouth - 14-12

Pomfret - 14-13

Reading - 14-14

Rochester - 14-15

Royalton - 14-16

Sharon - 14-17

Springfield - 14-18

Stockbridge - 14-19

Weathersfield - 14-20

Weston - 14-21

West Windsor - 14-22

Windsor - 14-23

Woodstock - 14-24
(Taftsville)

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
14-01-001	EDWARD SHANAHAN	DR		1-0210 001	WD	WILLIAMS RIVER				10	1	81
14-03-001	SILVER LAKE STAT	DR		1-0338 001	FO,CURTAIN	SILVER LAKE				3	1	87
14-04-001	BETHEL	VT	0100048	4-1159 001	EXIST POINTS	THIRD BR, WH RIV			N	6	30	83
14-04-005	WH RIV NAT FISH	VT	0020711	3-1142 001	HATCHERY	WHITE RIVER	17.75	MGD	Y	10	31	83
14-05-001	JOHN C HIBBERT	DR		1-0005 001	WD	OTTAUQUECHEE RIV	30000	GPD		6	1	73
14-05-003	BRIDGEWATER	VT	0100846	3-1156 001	WWTF	OTTAUQUECHEE RIV	.043	MGD	Y	6	30	84
14-05-004	BRIDGEWATER WOOL	OT	0000299	4-0180 001	PROC	OTTAUQUECHEE RIV				9	1	75
14-05-005	R & B GEYER	DR		1-0343 001	GW	OTTAUQUECHEE RIV				10	30	87
14-05-006	PUTNAM CONST CO	OT		4-0517 001	DOMESTIC	OTTAUQUECHEE RIV	1500	GPD		9	1	75
14-05-008	BRIDGEWATER MILL	DR		1-0327 001	GW	OTTAUQUECHEE RIV				10	1	85
14-05-012	SIMPSON PTNRSHP	SW		2-0905 001	CULVERT	WETLAND				7	1	85
14-06-001	CAVENDISH	VT	0100862	3-1205 001	WWTF	BLACK RIVER			Y	6	1	86
14-07-001	CHESTER	VT	0100081	3-1177 001	WWTF	WILLIAMS RIVER	.175	MGD	Y	6	1	84
14-07-006	WIND MIN CLIFTON	VT	0020249	3-0314 001	TALC MINE DR	TRIB WILLIAMS RI	.020	MGD	Y	12	31	88
14-07-009	PHILIP FISCHER	OT		2-0906 001	DOMEST(INV)	ANDOVER BRANCH	1000	GPD		8	1	81
14-07-010	H P KILN CORP	SW		2-0890 001	OF	WILLIAMS RIVER				7	1	85
14-07-011	CHESTER	DR		3-0372 001	GW	WILLIAMS RIVER				9	1	81
14-07-012	VT TALC DIV OMYA	SW		2-0936 001	DP	WILLIAMS RIVER				7	1	85
14-07-013	WOODEN INDIAN	SW		2-0973 001	CB	WILLIAMS RIVER				7	1	85
14-08-001	BILLINGS DAIRY	PT		4-1123 001	DA	WILDER WWTF	.007	MGD	Y	8	31	79
14-08-002	QUECHEE	VT	0100978	3-1185 001	WWTF	OTTAUQUECHEE RIV	.300	MGD	Y	10	1	85
14-08-002	HARTFORD WRJ	VT	0101010	3-1225 001	WWTF	CONNECTICUT RIV	.970	MGD	Y	3	31	88
14-08-002	HARTFORD WRJ	VT	0101010	3-1225 002	COMB O'FLOW	WHITE RIVER				3	31	88
14-08-002	HARTFORD WRJ	VT	0101010	3-1225 003	COMB O'FLOW	CONNECTICUT RIV				3	31	88
14-08-002	HARTFORD WILDER	VT	0101001	4-1073 001	BYPASS	CONNECTICUT RIV				1	1	77
14-08-002	HARTFORD WILDER	VT	0101001	4-1073 001A	WWTF	CONNECTICUT RIV	.400	MGD	Y	1	1	77
14-08-002	HARTFORD WILDER	VT	0101001	4-1073 002	COMB O'FLOW	CONNECTICUT RIV				1	1	77
14-08-002	HARTFORD WILDER	VT	0101001	4-1073 003	COMB O'FLOW	CONNECTICUT RIV				1	1	77
14-08-008	PIPPIN/CLIFFORD	SW		1-0244 001	CB	WHITE RIVER				8	1	82
14-08-009	PIPPEN ENT INC	SW		1-0251 001	CB	CONNECTICUT RIV				12	1	82
14-08-011	WH RIVER HOUSING	SW		2-0745 001	CB	WHITE RIVER				6	30	80
14-08-011	WH RIVER HOUSING	SW		2-0745 002	CB	WHITE RIVER				6	30	80
14-08-012	WM F PIPPIN	SW		2-0791 001	OF,CB	DOTHAN BROOK				7	1	80
14-08-013	MOTEL SIX INC	SW		2-0937 001	SF	CONNECTICUT RIV				7	1	85
14-08-014	UPSTICK RESOURCE	SW		2-0151 001	FILT	OTTAUQUECHEE RIV				7	1	85
14-08-015	QUECHEE LAKES	SW		2-0173 001	OF,GS,SS	OTTAUQUECHEE RIV				7	1	85
14-08-015	QUECHEE LAKES	SW		2-0173 002	OF,GS,SS	OTTAUQUECHEE RIV				7	1	85
14-08-016	KENNETH H PARKER	SW		2-0202 001	OF,GS	DOTHAN BROOK			N	7	1	85
14-08-017	KENNETH H PARKER	SW		2-0207 001	CB,GS,DP	DOTHAN BROOK				7	1	85
14-08-017	KENNETH H PARKER	SW		2-0207 002	GS	DOTHAN BROOK				7	1	85
14-09-005	ALFRED BUGBEE	DR		1-0279 001	WD	UNNAMED BROOK				12	31	83
14-10-001	LUDLOW	VT	0100145	3-1208 001	WWTF	BLACK RIVER	.600	MGD	Y	12	31	86
14-10-004	OLIVER F TUCKER	DR		1-0219 001	WD	JEWELL BROOK				1	1	82
14-10-009	WINDSOR MINERALS	VT	0020176	3-0348 001	DEWATER MINE	TRIB SOAPSTONE B			Y	1	1	85
14-10-011	WIND MIN FROSTBI	VT	0020231	3-0316 001	TALC MINE DR	TRIB SOAPSTONE B	.075	MGD	Y	12	31	88
14-10-012	WIND MIN COLUMBI	VT	0020222	3-1164 001	PROC WASTE	BLACK RIVER	1.5	MGD	Y	9	30	84
14-10-014	LEO TOFFERI	DR		1-0216 001	GW	JEWELL BROOK				1	1	82
14-10-015	T A ELECTRONICS	PT		3-0360 001	MP	LUDLOW WWTF	.00035	MGD	Y	5	31	85
14-10-016	RAINBOW PROPERTY	SW		2-0864 001	CB	BLACK RIVER				6	30	81
14-10-016	RAINBOW PROPERTY	SW		2-0864 002	SUMP PUMP	BLACK RIVER				6	30	81
14-11-001	RICHMOND CHEESE	PT		3-0396 001	DA	RICHMOND WWTF	.075	MGD	Y	12	31	88
14-11-015	ELLEN DEFOREST	OT		2-0699 001	DOMEST(INV)	AVERY BROOK	300	GPD		7	1	77
14-11-019	NORTHERN ENERGY	DR		1-0351 001	WD	BRAGG BROOK	1000	GPD		2	1	88

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
14-11-019	NORTHERN ENERGY	DR		1-0351 002	GW	BRAGG BROOK	1000	GPD		2	1	88
14-12-002	SAILER BROS CONS	DR		1-0278 001	OF	OTTAUQUECHEE RIV	10000	GPD		10	30	83
14-12-003	TYSON GEN'L STOR	DT		2-0901 001	DOMESTIC	PATCH BROOK	400	GPD	Y	6	30	81
14-12-004	HAWK MT CORP	SW		2-0157 001	GS	BLACK RIVER				7	1	85
14-14-001	WIND MIN HAMMOND	VT	0000141	3-1131 001	PROC WASTE	MILL BROOK	.140	MGD	Y	6	30	83
14-14-001	WIND MIN HAMMOND	VT	0000141	3-1221 001	DR	MILL BROOK	.140	MGD	Y	6	30	88
14-14-007	RYANS OF READING	DR		2-0726 001	OUTFALL PIPE	BLACK RIVER			Y	8	1	78
14-15-001	ROCHESTER	VT	0100293	4-1109 001		WHITE RIVER			N	8	31	81
14-16-002	ROYALTON	VT	0100854	3-1165 001	WWTF	WHITE RIVER	.070	MGD	Y	11	30	84
14-17-007	HAROLD JACOBS	DT		2-0720 001	DOMEST(INV)	FAY BROOK	300	GPD	Y	7	1	78
14-17-008	JAMES E PAUL	DR		1-0140 001	WD	WHITEWATER BR				1	1	81
14-18-001	SPRINGFIELD	VT	0100374	3-1154 001	WWTF	BLACK RIVER	2.200	MGD	Y	9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 002	BYPASS	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 003	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 004	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 005	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 006	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 007	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 008	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 009	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 010	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 011	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 012	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 013	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 014	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 015	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 016	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 017	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 018	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 019	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 020	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-001	SPRINGFIELD	VT	0100374	3-1154 021	COMB O'FLOW	BLACK RIVER				9	30	88
14-18-002	SPRING ELECTRO	VT	0000272	3-1126 001	MP	BLACK RIVER			Y	2	28	83
14-18-004	SPRINGFIELD FUEL	SW		1-0265 001	OUTFALL PIPE	BLACK RIVER				3	31	83
14-18-008	JONES & LAMSON	PT		3-0369 001	CO	SPRINGFIELD WWTF	.00006	MGD	Y	8	31	85
14-18-009	IDLENOT FARM	PT		3-0388 001	DA	SPRINGFIELD WWTF	.040	MGD		3	31	88
14-18-022	SPRINGFIELD	DR		3-0313 001	POOL O'FLOW	BLACK RIVER	4800	GPD	N	9	30	88
14-18-034	SPRINGFIELD SCHO	DR		1-0311 001	GW	BLACK RIVER				4	1	85
14-18-037	FLORENCE GIDDING	DR		1-0293 001	GW,FO	GREAT BROOK				9	1	84
14-18-039	FELLOWS CORP	DR		3-0344 001	CW	GREAT BROOK	3000	GPD	Y	5	1	85
14-18-039	FELLOWS CORP	DR		3-0345 001	CW,HT RINSE	GREAT BROOK	80000	GPD	Y	5	1	85
14-18-039	FELLOWS CORP	PT		3-0382 001	CO	SPRINGFIELD WWTF	.005	MGD	Y	12	31	86
14-18-039	FELLOWS CORP	PT		3-0382 002	CO	SPRINGFIELD WWTF	.012	MGD		12	31	86
14-18-042	BRYANT GRINDER	PT		3-0383 001	CO	SPRINGFIELD WWTF	2000	GPD	Y	12	31	87
14-18-045	DEBORAH LARAMIE	DT		2-0700 001	DOMEST(INV)	BLACK RIVER	500	GPD		7	1	77
14-18-046	JAMES NEUHAUS	DT		2-0701 001	DOMEST(INV)	BLACK RIVER	500	GPD		6	1	77
14-18-047	VT RESEARCH CORP	PT		3-0325 001	FINAL RINSE	SPRINGFIELD WWTF	.00285	MGD	Y	12	31	86
14-18-048	SPRINGFIELD ELEC	DT		3-0310 001	CW	BLACK RIVER	22000	GPD		7	31	83
14-18-049	EMILE J LAGERE	SW		2-0751 001	CR	BLACK RIVER				6	30	80
14-18-050	SPRINGFIELD	DR		3-0320 001	GW	BLACK RIVER				6	30	79
14-18-052	SPRINGFIELD ASSO	SW		2-0922 001	SF,GS	BEAVER BROOK				7	1	85
14-18-055	SPRFLD PRINTING	DR		1-0358 001	HT PUMP RETN	GREAT BROOK	15	GPM	Y	9	30	88

FILE NO	PERMITTEE	TYPE	NPDES	PERMIT S/N	DESCRIPTION	RECEIVING WATER	FLOW	UNITS	REPORT?	MM	DD	YY
14-20-005	OPEN BIBLE CHURC	SW		2-0827 001	OF	MILL BROOK				7	1	80
14-21-001	VREST ORTON	DR		1-0221 001	GW	WEST RIVER				1	1	82
14-21-005	MARTHA WILLIS	OT		2-0609 001	DOMEST(INV)	WEST RIVER	400	GPD		1	1	80
14-22-001	WIND MIN W WIND	VT	0000132	3-1132 001	PROC WASTE	MILL BROOK	.300	MGD	Y	6	30	83
14-22-001	WIND MIN W WIND	VT	0000132	3-1222 001	DR	MILL BROOK	.300	MGD	Y	6	30	88
14-22-006	D & P KNOWLES	DR		1-0325 001	WO	BEAVER BROOK				10	1	85
14-22-010	MT ASCUTNEY CORP	OT		1-0335 001	RIVER WATER	MILL BROOK	20000	GPW		11	1	86
14-23-001	GOODYEAR TIRE	VT	0000060	3-1121 001	CW	CONNECTICUT RIV	1.900	MGD	Y	12	31	82
14-23-002	WESTON HEIGHTS	VT	0100447	3-1168 001	BYPASS	CONNECTICUT				8	1	84
14-23-002	WESTON HEIGHTS	VT	0100447	3-1168 001A	WWTF	CONNECTICUT RIV	.015	MGD	Y	8	1	84
14-23-002	WINDSOR	VT	0100919	4-1133 001	BYPASS	CONNECTICUT				7	1	83
14-23-002	WINDSOR MAIN	VT	0100919	4-1133 001A	WWTF	CONNECTICUT RIV			Y	7	1	83
14-23-002	WINDSOR	VT	0100919	4-1133 002	COMB O'FLOW	MILL BROOK				7	1	83
14-23-002	WINDSOR	VT	0100919	4-1133 003	COMB O'FLOW	MILL BROOK				7	1	83
14-23-002	WINDSOR	VT	0100919	4-1133 004	COMB O'FLOW	CONNECTICUT RIV				7	1	83
14-23-002	WINDSOR	VT	0100919	4-1133 005	COMB O'FLOW	CONNECTICUT RIV				7	1	83
14-23-002	WINDSOR	VT	0100919	4-1133 006	COMB O'FLOW	CONNECTICUT RIV				7	1	83
14-23-002	WINDSOR	VT	0100919	4-1133 007	COMB O'FLOW	CONNECTICUT RIV				7	1	83
14-23-002	WINDSOR	VT	0100919	4-1133 008	COMB O'FLOW	CONNECTICUT RIV				7	1	83
14-23-002	WINDSOR	VT	0100919	4-1133 009	COMB O'FLOW	CONNECTICUT RIV				7	1	83
14-23-002	WINDSOR	VT	0100919	4-1133 010	COMB O'FLOW	MILL BROOK				7	1	83
14-23-009	CLAYTON PARONTO	OT		2-0097 001	DOMEST(INV)	CONNECTICUT RIV				6	1	72
14-23-010	L & L HOOD	OT		2-0096 001	DOMEST(INV)	CONNECTICUT RIV	300	GPD		7	1	73
14-23-013	CONE-BLANCHARD	SW	0020681	3-1174 001	OF	CONNECTICUT RIV				11	30	84
14-23-013	CONE-BLANCHARD	SW	0020681	3-1174 002	CW	CONNECTICUT RIV			Y	11	30	84
14-23-017	WINDSOR HOUSING	SW		1-0263 001	DRAINAGE	MILL BROOK				2	28	83
14-23-018	WINDSOR IMPR CO	SW		2-0812 001	CB	MILL POND				1	1	85
14-23-018	WINDSOR IMPR CO	SW		2-0812 002	CB	MILL POND				1	1	85
14-24-001	CENTRAL ST CORP	SW		1-0255 001	OUTFALL PIPE	KEDRON BROOK				1	31	83
14-24-002	SO WOODSTOCK	VT	0100749	3-1178 001	WWTF	KEDRON BROOK	.050	MGD	Y	12	31	84
14-24-002	TAFTSVILLE	VT	0100765	3-1179 001	WWTF	OTTAUQUECHEE RIV	.010	MGD	Y	12	31	84
14-24-002	WOODSTOCK	VT	0100757	3-1228 001	WWTF	OTTAUQUECHEE RIV	.450	MGD	Y	6	30	88
14-24-002	WOODSTOCK	VT	0100757	3-1228 001A	BYPASS	OTTAUQUECHEE RIV				6	30	88
14-24-002	WOODSTOCK	VT	0100757	3-1228 002	OVERFLOW	OTTAUQUECHEE RIV				6	30	88
14-24-002	WOODSTOCK	VT	0100757	3-1228 003	OVERFLOW	KEDRON BROOK				6	30	88
14-24-002	WOODSTOCK	VT	0100757	3-1228 004	OVERFLOW	OTTAUQUECHEE RIV				6	30	88
14-24-002	WOODSTOCK	VT	0100757	3-1228 005	OVERFLOW	KEDRON BROOK				6	30	88
14-24-003	WOODSTOCK CNTRY	DR		2-0095 001	WO	KEDRON BROOK				7	1	73
14-24-004	C & J DAWSON	OT		1-0046 001	DOMEST(INV)	OTTAUQUECHEE RIV	1200	GPD		7	1	78
14-24-007	WOODSTOCK RESORT	SW		1-0008 001	OW	KEDRON BROOK				11	1	73
14-24-008	WOODSTOCK GOLF	DR		1-0212 001	FL	KEDRON BROOK	150	GPD		1	1	82
14-24-011	WOODSTOCK VILL	DR		1-0249 001	GW	KEDRON BROOK				10	1	82
14-24-014	WOODSTOCK HERIT	SW		2-0110 001	GS,CB	VONDELL BROOK				7	1	85
14-24-015	R JAYNES&L BERGE	SW		2-0969 001	CB	OTTAUQUECHEE RIV				7	1	85
14-24-015	R JAYNES&L BERGE	SW		2-0969 002	GS	OTTAUQUECHEE RIV				7	1	85

150 records selected from 1217 processed.

APPENDIX B

APPENDIX B

PROPOSED DISINFECTION POLICY
MARCH, 1984

Based on the scientific data available, it is evident that the discharge of chlorine and chlorinated compounds to waters of the state adversely affects the composition of the aquatic biota and the propagation of fish. It is therefore the determination of the Secretary of the Vermont Agency of Environmental Conservation that the discharge of chlorine and chlorinated compounds to waters of the state can and does constitute a violation of the Vermont Water Quality Standards, Rule 5: B.10. and C.8.

In order to obtain and maintain the duly established classifications of the waters of the state and still provide protection to the public from increased risk of disease it is the policy of the Vermont Agency of Environmental Conservation to manage the discharge of chlorine in accord with the following provisions.

1. All existing wastewater treatment facilities with existing chlorination/dechlorination disinfection systems (Barton, Hardwick, Orleans and Stowe) are directed to maintain and operate the dechlorination equipment on a full-time basis. If seasonal disinfection is approved as recommended in this document and these facilities are allowed to disinfect on a seasonal basis, the dechlorinating equipment would be required to be operated only during the period required for disinfection. The Permits Division should assume the primary role on this issue.

2. All existing wastewater discharges (municipal, industrial, and private) discharging chlorine and calculated to yield a resultant instream total residual chlorine level in excess of 0.014 mg/l at 7Q10 based upon a 1.0 mg/l maximum allowable total residual chlorine in the effluent flow are directed to begin planning, design, and construction of dechlorination facilities or an alternative disinfection system. Where chlorination/dechlorination is chosen as the method of disinfection the maximum allowable total residual chlorine in an effluent flow shall not exceed 0.1 mg/l at any time.

   This requirement may be waived by the Secretary of the Vermont Agency of Environmental Conservation when it is determined that no environmental benefit shall be realized by this activity. In such a case, the maximum allowable total residual chlorine limit shall be determined on a case by case basis but shall not exceed 1.0 mg/l.

Compliance for this activity shall be accomplished by September 1, 1985 unless otherwise directed by the Department of Water Resources and Environmental Engineering. The Permits Division of the Department shall assume the primary role on this issue with the Environmental Engineering and Water Quality Divisions providing technical assistance.

A listing of municipal facilities presently calculated to be unable to achieve the instream 0.014 mg/l total residual chlorine level at 7Q10 based upon 1.0 maximum allowable total residual chlorine in the effluent is attached as Attachment I to this document.

3. All remaining wastewater discharges (municipal, industrial, and private) discharging chlorine are directed to lower their effluent maximum allowable total residual chlorine to 1.0 mg/l. Attachment II lists all remaining municipal facilities, presently utilizing chlorination as their means of disinfection. Where discharges at 1.0 mg/l total residual chlorine are calculated to result in continued "environmental risk", instream total residual chlorine levels in excess of 0.0083 mg/l, the Secretary of the Agency of Environmental Conservation may order additional reduction in the maximum total residual level on a case by case basis. Compliance for this activity shall be accomplished by September 1, 1985 unless otherwise directed by the Department of Water Resources and Environmental Engineering. The Permits Division of the Department shall assume the primary role on this issue with technical assistance being provided by the Environmental Engineering and Water Quality Divisions.

4. All new discharges containing chlorine will be required to achieve a 1.0 mg/l maximum allowable total residual chlorine level in the effluent flow. Where new discharges containing chlorine are calculated to yield an excess of 0.014 mg/l total residual chlorine instream at 7Q10 based on 1.0 mg/l in the effluent, dechlorinating facilities will be required to be incorporated into the facility design or an alternative method of disinfection (other than chlorine) will be required. In all other new discharges containing chlorine, the Secretary of the Agency of Environmental Conservation may require further reduction of chlorine residual where calculation of instream conditions reflect an "environmental risk" to the aquatic biota, that is instream total chlorine residual levels in excess of 0.0083 mg/l. The Permits and Environmental Engineering Divisions will assume dual responsibility on this issue with assistance from the Water Quality Division.

5. All new facilities allowed to discharge at a 1.0 mg/l maximum total residual chlorine level should incorporate a streambank outfall structure into the facilities design.

6. Seasonal disinfection of wastewater effluents should be implemented at the earliest possible time at those facilities where it is deemed appropriate. Seasonal disinfection is recommended to take place from April 1 through October 31. Concurrence is required from both the Department of Water Resources and Environmental Engineering and the Department of Health prior to a facilities institution of seasonal disinfection. Those facilities required to operate dechlorinating facilities will be required to operate this equipment only during those times of the year when disinfection is required.

7. Vermont's Water Quality Standards - Regulations Governing Water Classification and Control of Quality adopted March 1978 require revisions to provide for seasonal disinfection. At present, seasonal disinfection is incompatible with the existing standards for bacterial quality.

8. Implementation of this policy shall be through the administration of the permit program as authorized by Title 10 V.S.A., chapter 47, paragraph 1258b and shall follow the due process of public review and participation as specified in state and federal permit regulations.

Recommended for Approval: _____
John R. Ponsetto, Commissioner
Department of Water Resources &
Environmental Engineering

Date: _____

Signed: _____
Brendan J. Whittaker, Secretary
Agency of Environmental
Conservation

Date: _____

ATTACHMENT I

Municipality	Discharge Point	Calculated Instream TRC level at 1.0 mg/l at 7Q10
Barre City	Stevens Branch (Winooski River)	0.405
Bennington	Walloomsac River	0.166
Benson	Hubbardton River (trib)	0.200
Berlin	Stevens Branch (Winooski River)	0.023
Bradford	Waits River	0.037
Brandon	Neshobe River	0.166
Brighton (Island Pond)	Pherrins River	0.017
Burlington (North)	Winooski River	0.020
Castleton	Castleton River	0.195
Cavendish	Black River	0.017
Chelsea	1st Branch White River	0.095
Chester	Williams River	0.085
East Barre	Jail Branch	0.279
Essex Village	Winooski River	0.030
Fair Haven	Castleton River	0.058
Hinesburg	LaPlatte River	0.186
Johnson	Lamoille River	0.020
Ludlow	Black River	0.118
Lyndonville	Passumpsic River	0.027
Manchester	Battenkill River	0.046
Montpelier	Winooski River	0.054
Newport	Clyde River	0.053
Northfield	Dog River	0.312
Orwell	East Creek	0.143
Putney	Sacketts Brook	0.076
Poultney	Poultney River	0.180
Randolph	3rd Branch White River	0.181
Readsboro	Deerfield River	0.024
Rutland City	Otter Creek	0.088
Saxtons River	Saxtons River	0.059
Shelburne FD #2		0.333*
Springfield	Black River	0.128

ATTACHMENT I (Continued)

Municipality	Discharge Point	Calculated Instream TRC level at 1.0 mg/l at 7Q10
St. Albans	Stevens Brook	0.912
St. Johnsbury	Passumpsic River	0.095
Swanton	Missisquoi River	0.018
West Rutland	Clarendon River	0.031
Williamstown	Stevens Branch Trib.	0.600
Wilmington	No. Branch Deerfield River	0.109
Woodstock (South)	Kedron Brook	0.092

*Based upon an October mean discharge into McCabes Brook of 1.4 cfs.

ATTACHMENT II

Municipality	Discharge Point	Calculated Instream TRC level at 1.0 mg/l at 7Q10
Alburg	Lake Champlain	--
Barre (Websterville)	Jail Branch (Winooski River)	0.012
*Bellows Falls	Connecticut River	0.002
*Bethel	White River	0.003
*Brattleboro	Connecticut River	0.004
*Bridgewater	Ottauquechee River	0.007
Burlington (Main)	Lake Champlain	--
Burl. (Riverside)	Winooski River	0.010
Canaan	Connecticut River	0.008
*Colchester FD #1	Winooski River	0.003
*Enosburg	Missisquoi River	0.006
*Fairfax FD #1	Lamoille River	0.007
*Hartford (Wilder)	Connecticut River	0.002
*Hartford (White River)	Connecticut River	0.002
*Lunenburg FD #1	Connecticut River	0.0003
Marshfield	Winooski River	0.008
Middlebury	Otter Creek	0.010
*Milton	Lamoille River	0.002
Morrisville	Lamoille River	0.013
North Troy	Missisquoi River	0.010
Pittsford	Furnace Brook	0.008
Plainfield	Winooski River	0.010
*Proctor	Otter Creek	0.004
*Richford	Missisquoi River	0.007
*Richmond	Winooski River	0.003
Rutland Center	Otter Creek	0.0005
Shelburne FD #1	Lake Champlain	--
*Sheldon	Missisquoi River	0.002
*South Burlington A. Pkwy.	Winooski River	0.007

ATTACHMENT II (Continued)

Municipality	Discharge Point	Calculated Instream TRC level at 1.0 mg/l at 7Q10
South Burlington B. Bay	Lake Champlain	--
*South Royalton	White River	0.002
*Vergennes	Otter Creek	0.003
*Wallingford	Otter Creek	0.005
*Waterbury	Winooski River	0.006
*Windsor, Main	Connecticut River	0.002
*Windsor, Weston Heights	Connecticut River	0.00002
Winooski	Winooski River	0.012
Woodstock, Main	Ottauquechee River	0.013
*Woodstock, Taftsville	Ottauquechee River	0.0008

* No further action anticipated at this time.

APPENDIX D

APPENDIX D

PROPOSED HYDROELECTRIC PROJECTS

PROJECT	APPLICANT	STREAM	TOWN	EST. CAPACITY (MINOR IF 1500 KW)	EXISTING OR NEW DAM
Green River** Hydro and relicense	Morrisville Water & Light Dept.	Green River	Hyde Park	1.7 MW	Existing- 2 operating
Cadys Falls & Morrisville (3 sites)		Lamoille River	Morristown	3.1 MW	
Chace Mill	City of Burlington & GMP	Winooski River	Winooski Burlington	13 MW	New
East Georgia	CVPSC	Lamoille River	Georgia Fairfax	14.0 MW	New
White Current Corp.**	Roger Lamson	Ottauquechee River	Hartland	432 MW	Existing
North Hartland Dam*	Vermont Electric Co-op	Ottauquechee River	Hartland	4 MW	Existing
Union Village Dam	Union Village Hydro Company	Ompompanoosuc River	Thetford	2.3 MW	Existing
Great Falls	Lyndonville Electric Dept.	Passumpsic River	Lyndon	1.9 MW	Operating
No. Springfield Dam	Town of Springfield	Black River	Springfield	3.0 MW	Existing
Bolton Falls	GMPC	Winooski River	Duxbury	7.3 MW	Existing

*Under construction
**Recently completed

PROJECT	APPLICANT	STREAM	TOWN	EST. CAPACITY (MINOR IF 1500 KW)	EXISTING OR NEW DAM
Saxtons River Project	BSR Co., Inc. (David Buckley)	Saxtons River	Rockingham	1.5-2.0 MW	New
Frog Hollow Hydro	CVPSC & Townscape, Inc.	Otter Creek	Middlebury	1.5 MW	New
Moretown #8	Pocantico Development Associates, Inc. (Hungerford-Dyrland)	Mad River	Moretown	0.8 MW	Existing
East Barnet Dam*	CVPSC	Passumpsic River	Barnet	2.2 MW	Existing
Ryegate Hydro (C.P.M. Dam-Dodge Falls)	Dodge Falls Hydro Associates	Connecticut River	Ryegate	5.0 MW	Existing
Brockways Mills	Williams River Electric Corp. (D. Buckley)	Williams River	Rockingham	710 KW	New
Lane Shops **	David DeBrul	North Branch Winooski River	Montpelier	190 KW	Existing
Bradford Dam**	CVPSC	Waits River	Bradford	0.93 MW	Existing
Murphy Dam** (Lake Francis)	N.H. Water Resources Board & P.S.B. of NH	Connecticut River	Pittsburg, N.H.	2.25 MW	Existing
Pownal Tanning Co.** Dam	Pownal Tanning Co.	Hoosic River	Pownal	400 KW	Existing

PROJECT	APPLICANT	STREAM	TOWN	EST. CAPACITY (MINOR IF 1500 KW)	EXISTING OR NEW DAM
Highgate Falls	Swanton	Missisquoi River	Highgate	9.4 MW	Existing
Ruhl Dam	Dr. Robert Ruhl	Cold Brook	Wilmington	7 KW	New
No. Montpelier Pond**	Porter/Stuwe	Kingsbury Branch	East Montpelier	200 KW	Existing
Proctor Station*	Vt. Marble	Otter Creek	Proctor	7 MW	Existing
Richford	Vt. Public Power Supply Authority	Missisquoi River	Richford	1.5 MW	New
Wells River*	Wells River Hydro Associates	Wells River	Newbury (Boltonville)	1.04 MW	Existing
Comtu Falls**	Comtu Falls Corp.	Black River	Springfield	-	Existing
Crossett Brook Hydro	Jack & Peter Tourin	Crossett Brook	Duxbury	30 KW	Operating
North Branch #3	Washington Electric Co-op	North Branch	Montpelier	0.7 MW	Existing
Dewey Mills	Hydro Energies Corp. John Davidson	Ottauquechee River	Hartford	2.18 MW	Existing
Downers Mill** (Emery Mills)	Simon Pierce (U.S.), Inc.	Ottauquechee River	Hartford	645 KW	Existing
Vermont Tissue (Paper Mill Village)	Heller & Usdan, Inc.	Walloomsac River	Bennington	-	Existing
Swanson-Eames**	L. Macrae Rood	Coaticook River	Norton	115 KW	Existing

PROJECT	APPLICANT	STREAM	TOWN	EST. CAPACITY (MINOR IF 1500 KW)	EXISTING OR NEW DAM
Enosburg Falls	Vt. Public Power Supply Authority	Missisquoi River	Enosburg	2.75 MW	Existing
Battell	Middlebury College	Otter Creek	Weybridge New Haven	1.5 MW	New
Moretown	L. Macrae Rood	Mad River	Moretown	350 KW	Existing
Barnet	L. Macrae Rood	Stevens River	Barnet	370 KW	New
Newbury Hydro*	Newbury Hydro Co. (Rood)	Wells River	Newbury	312 KW	Existing
North Troy	Vt. Public Power Supply Authority	Missisquoi River	Troy	600 KW	Existing
North Sheldon	Vt. Public Power Supply Authority	Missisquoi River	Sheldon	-	New
Sheldon Springs	Missisquoi Associates	Missisquoi River	Sheldon	-	Existing
Garfield	Morrisville Water & Light Dept.	Green River	Hyde Park	1.8 MW	New
Baldin Brook Hydro**	Bruce Taylor	Baldin Brook	Wolcott	-	New
Leveille**	Leveille, Inc.	Little River	Stowe (Moscow)	93 KW	Existing
Big Branch	Fairview Orchards Assoc.	Big Branch/Otter Creek	Mt. Tabor	1 MW	New

PROJECT	APPLICANT	STREAM	TOWN	EST. CAPACITY (MINOR IF 1500 KW)	EXISTING OR NEW DAM
Halls Brook*	S.R. Thanhauser White Oak Water Power	Halls Brook	Newbury	20 KW	Existing
Warren**	Mad River Hydro (L. Macrae Rood)	Mad River	Warren	40 KW	Existing
Chase Island	Seaward Development-Chase Island, Inc.	Connecticut River	Windsor	5-8 MW	New
Grist Mill Project	Stephen E. & George S. Austin	Moose River	Concord	80 KW	New
College Town Industrial Plaza	E.F. Wall/R.P. Lord	Dog River	Northfield	150 KW	Existing
Peak Shaver #1	Washington Electric Co-op	Winooski River	East Montpelier	0.233 MW	New
Jay Brook	Thomas Gregg (Gregg's T.V.)	Jay Brook	Montgomery	35 KW	New
Fairbanks Mill**	Robert Desrochers	Sleepers River	Danville	18 KW	Existing
Winooski 8	Winooski Hydroelectric Co.	Winooski River	East Montpelier	555 KW	Existing
Iroquois Project	Iroquois Manufacturing Co., Inc.	Patrick Brook	Hinesburg	75 KW	Existing

PROJECT	APPLICANT	STREAM	TOWN	EST. CAPACITY (MINOR IF 1500 KW)	EXISTING OR NEW DAM
Flower Brook**	Flowerbrook Hydro, Inc. Gilbert Mach, Jr.	Flower Brook	Pawlet	16 KW	Existing
Ball Mountain	West River Basin Energy Committee	West River	Jamaica	-	Existing
Townshend	West River Basin Energy Committee	West River	Townshend	2.85 MW	Existing
Red Mill Dam	Barbara James Williams	Browns River	Jericho	130-160 KW	New
Bethel Mills	Bethel Mills, Inc. (John B. Durfee)	Third Branch White River	Bethel	500 KW	Existing
Woodside Hydro-electric Project	Robert M. Woodside	Gihon River	Hyde Park	300 KW	Existing
Union Village Dam	Union Village Hydroelectric Co.	Ompompanoosuc River	Thetford	-	Existing
Geer Dam	Howard Geer,Jr.	Ompompanoosuc River	West Fairlee	-	New (1982)
Norton Mill	Charles H. Eames	Coaticook River	Norton	150 KW	New
Jamaica Hydro-electric Project	Jamaica Water-power Co. (David Buckley)	West River	Jamaica	4.74 MW	Existing

PROJECT	APPLICANT	STREAM	TOWN	EST. CAPACITY (MINOR IF 1500 KW)	EXISTING OR NEW DAM
Lyman Water Power Project	Seward Const. Co., Zoes Dimos, James Katsekas	Connecticut River	Bloomfield	4.2 MW	New
Barton Village Dam	Barton Village Electric Dept.	Clyde River	Charlestown	1.4 MW	Operating
Martinsville	John L. "Jay" Boeri, Jr.	Lulls Brook	Hartland	155 KW 70 KW	New Existing
Warner Hydro**	Arlon Warner	Potters Brook	Lowell	25-35 KW	Existing
Pike Dam	Robert Hartt	Little River	Stowe	-	Existing
Canaan	Public Service Board, N.H.	Connecticut River	Canaan, Vt. W. Stewartstown, N.H.	1100 KW	Operating
Gilman Dam (Factory Falls)	Factory Falls	Black River	Springfield	115 KW	Existing
Wyoming Valley Hydro		Connecticut River	Guidhall, Vt. Northumberland, N.H.	-	Existing
Marshfield Brook	Marshfield Brook Hydroelectric Company	Marshfield Brook	Marshfield	300 KW	New
Emerson Falls	Emerson Falls Hydro Assoc.	Sleepers River	St. Johnsbury	200 KW	Existing
Stevens Branch	Geoffrey Shadroui	Stevens Branch	Barre	125 KW	Existing

APPENDIX E

APPENDIX E

Assimilative Capacity Screening Methodology

Introduction

This methodology was developed to aid in the statewide identification of assimilative capacity problem areas. The screening process was applied to 86 existing and 6 newly constructed or proposed municipal plants within the State. The method used was a stepwise sorting process that grouped plants based on the potential for assimilative capacity overloading of their receiving waters.

All assimilative capacity predictions used for this screening process were developed through the use of a mathematical water quality simulator. This relatively simple, steady-state model is derived from three basic governing equations. The analytical solutions to the three equations are:

(1) $$L_{(x)} = L_o \, e^{\frac{-K_d x}{u}}$$

(2) $$N_{(x)} = N_o \, e^{\frac{-K_n x}{u}}$$

(3) $$C_{(x)} = C_o \, e^{\frac{-K_2 x}{u}} + C_s \left(1 - e^{\frac{-K_2 x}{u}}\right) - \left[\frac{K_d}{K_2 - K_d}\left(e^{\frac{-K_d x}{u}} - e^{\frac{-K_2 x}{u}}\right)\right] L_o$$

$$\left[\frac{K_n}{K_2 - K_n}\left(e^{\frac{-K_n x}{u}} - e^{\frac{-K_2 x}{u}}\right)\right] N_o$$

Where: $L_{(x)}$, $N_{(x)}$, $C_{(x)}$ = concentrations at any river distance X (where X 0), of BOD_5, TKN or D.O. respectively

L_o, N_o, C_o = instream concentration at x=0 of BOD_5, TKN and D.O. respectively

K_d, K_n, K_2 = decay rates for BOD_5, TKN and D.O. deficit respectively

C_s = Saturation concentration of D.O. for any given temperature

These equations assume temporal steady state conditions, with no distributed sources or sinks of dissolved oxygen. For the purpose of this screening process, the effects of net algal respiration and benthic oxygen demand are also assumed to be negligible.

The model was solved to yield the requisite instream concentrations of BOD_5 and TKN necessary to maintain a minimum D.O. concentration of 6 mg/l at the sag point . Once these initial concentrations were determined, the mixed ratio of wastewater effluent to streamwater was calculated. For modeling purposes, instantaneous mixing at the wastewater outfall, a stream temperature of 26°C and background concentrations of BOD_5 = 1 mg/l, TKN = 0.5 mg/l were assumed. The remaining model parameters were varied as described in the stepwise breakdown of the screening process, to yield progressively less conservative estimates of assimilative capacity. Finally, actual stream to effluent mixing ratios at the various municipal facilities were calucated, using NPDES maximum permitted effluent flows and 7Q10 stream flows. Assimilative capacity overload potential was determined through comparison of these dilution ratios with the following stepwise predicted ratios.

Step #1 - Municipalities Not Considered

An initial review of the municipal facilities yielded several groups that did not need to be considered by this process: (1) facilities discharging to the Connecticut River, Lake Champlain or other large waterbodies which were assumed to be infinite sinks; (2) facilities where ASCAP studies have been, or are being performed; (3) facilities which utilize land discharge of effluent; and (4) facilities discharging to naturally substandard receiving waters. These muncipalities and their corresponding reason for elimination are listed as Group #1.

Step #2 - Conservative Model

For the initial modeling step, relatively conservative values for the various parameters were chosen. An upstream D.O. deficit of 1 mg/l, K_c and K_n rates of 1/day, and an atmospheric reaeration rate $(K_2)^c$ of 2/day were used. Treatment plant discharge was assumed to contain BOD_5=50 mg/l, TKN=25 mg/l. The resulting maximum allowable instream concentrations were BOD_5=1.75 mg/l, TKN=.87 mg/l. Subtracting background concentration, this yielded a mixed concentration of 0.75 and 0.37 for BOD_5 and TKN respectively. This would result from a 66:1 dilution factor at the assumed WWTF concentrations. All municipal plants discharging to streams where the ratio was equal to or greater than this factor were eliminated, and are listed under Group #2.

Step #3 - Adjustment of K_2 Rate

The model described in Step #2 was slightly modified for this step, by increasing the reaeration rate to 4/day. All other parameters remained the same. The model predicted a maximum allowable instream concentration of BOD_5=2.8 mg/l, TKN=1.4 mg/l. At the assumed background and WWTF effluent concentrations, these concentrations would be produced by a 28:1 mix. All plants meeting or exceeding this ratio are listed in Group #3.

Step #4 - Site Visits

In order to keep within the bounds of a conservative modeling effort, it was felt that further general adjustments of the model should not be attempted. Therefore, all facilities remaining at this stage of the screening process (Group #4) will require individual site inspections. The primary function of these visits will be to develop better estimates of actual instream reaeration rates. This will be accomplished through measurement of various stream physical characteristics, such as velocity, depth and turbulence.

Based on the findings of these site specific visits, assimilative capacity estimates were adjusted, and the model rerun. Facilities discharging to streams whose assimilative capacity was thus determined to be inadequate are listed as Group #5. Recommendations for further review and study are listed as comments for each municipality.

Group #1

Municipality	Reason
Alburg	L. Champlain
Barre City	ASCAP
Bellows Falls	Conn. R.
Bennington	ASCAP
Berlin	ASCAP
Brattleboro	Conn. R.
Burlington, Main	L. Champlain
Burlington, North	ASCAP
Burlington, Riverside	ASCAP
Canaan	Conn. R.
Colchester F.D.#1	ASCAP
Danville	ASCAP
Dover	Spray Irrigation
Essex Town	ASCAP
Essex Village	ASCAP
Hartford, Wilder	Conn. R.
Hartford, White River	Conn. R.
Hinesburg	ASCAP
Lunenburg	Conn. R.
Pittsford	ASCAP
Proctor	ASCAP
Rutland	ASCAP
Rutland Center	ASCAP
Shelburne F.D.#1	ASCAP
S. Burlington, Airport Parkway	ASCAP
S. Burlington, B. Bay	L. Champlain
St. Albans	ASCAP
Stowe	ASCAP
West Rutland	ASCAP

Windsor, Main	Conn. R.
Windsor, Weston Heights	Conn. R.
Winooski	ASCAP
Ryegate	Land Discharge
W. Pawlet	ASCAP
Shelburne F.D. #2	Substandard R.W.
Orwell	Substandard R.W.
Newport	L. Memphremagog
Whitingham	Harriman Reservoir
Wilmington	Land Discharge

Group #2

Bridgewater
Enosburg
Fairfax
Marshfield
Milton
Plainfield
Richmond
Sheldon
Vergennes
Wallingford
Waterbury
Woodstock,Taftsville
Morrisville
N. Troy
Richford

Group #3

Barre, Websterville
Bradford
Brighton
Cavendish
Hardwick
Johnson
Lyndonville
Middlebury
Readsboro
South Royalton
Swanton
Woodstock, Main

Group #4

Barre, East
Barton
Benson
Brandon
Castleton
Chelsea
Chester

Fair Haven	
Jacksonville	
Ludlow	
Manchester	
Montpelier	
Northfield	
Orleans	
Poultney	
Putney	
Randolph	
Saxtons River	
Springfield	
St. Johnsbury	
South Woodstock	
Williamstown	
	Group #5
Benson	Discharge is to an intermittent stream, whose lack of aquatic continuity probably precludes the maintenance of a community which would be adversely affected by substandard D.O. levels.
Brandon	Available data indicates that actual effluent concentrations achieved by this facility are substantially lower than those assumed in the modeling. Lowering permit limits could place this facility in compliance with Water Quality Standards without further capital construction or further water quality investigations.
Castleton Fair Haven Poultney	An assimilative capacity study should be performed on the Castleton and Poultney Rivers to determine the separate and combined effects of these facilities.
Jacksonville	Permitted effluent concentrations should be lowered. Lower permit levels would place this facility in compliance with Water Quality Standards without further capital construction or further water quality investigations.

Northfield	Available data indicates the permitted flow used in the modeling is substantially higher than actual effluent discharge. Adjustment of the permit could place this facility in compliance with Water Quality Standards.
Randolph	Further study to evaluate actual instream reaeration rates and travel times are recommended.
Springfield	Available data shows that permitted effluent concentrations for this facility are substantially higher than those actually achieved. Based on time of travel data, the permit could be changed to place the facility in compliance with Water Quality Standards.
St. Johnsbury	A habitat suitability study should be performed to determine management type for the river, and actual instream reaeration rates should be obtained. Possible permit or design modifications should be based on these findings.
Williamstown	An amended permit which based allowable effluent discharge on stream flow could be used to reduce the magnitude of impact. Capital construction might be required.