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FINANCIAL REPORT AND PROGRESS REPORT

ON

SPRUCE BUDWORM PROGRAMS

December, 1979

CONTENTS

This report reviews Maine Forest Service Spruce Budworm Programs, authorized by the 1976 Spruce Budworm Suppression Act, from September, 1978 to October, 1979. It provides the annual financial report required by law.

Full reports on the 1979 spray project, and on the research program from 1976-1979, are in preparation.

A. FINANCIAL REPORT

This section presents preliminary program funding data for the Spruce Budworm Program as of October 31, 1979.

Funding sources for the 1979 spray project are shown in Table 1.

The 1.5 mill levy noted in the table is now repealed and did not become available in fall, 1979. The 1979 project funding process was made easier by the funds provided in the two-year budget process and by the carry-over of insecticide from 1978.

The financial status of the project, in summary is:

Total 1979 Outlays (through October 31, 1979)	$10,689,000
Total Unliquidated Obligations	311,000
TOTAL	$11,000,000

Spray project costs rose once again from 1978 to 1979 largely due to rising aircraft costs.

	Cost/Acre
1976	$2.43
1977	3.21
1978	3.28
1979	3.88

A more detailed breakdown of cost trends is given in Table 2. A comparison of budget and actual data is shown in Table 3.

The acreage data employed in deriving the excise tax are shown in Table 4.

Table 1. Sources of Funds

1979 Project

Source	Amount	Remarks
Previously appropriated and available winter, 1979	$2,036,810	Committed
1.5 mills, October, 1979	464,985	Repealed 1979 will not be available in future
Carry over from 1978 project, cash	67,745	
Value of insecticide stored from 1978	262,500	Sevin-4-Oil
1979 emergency appropriation	3,256,275	Signed by Governor April 3, L.D. 1169 P.L. ch. 69
Fiscal year 1980 appropriation, Part I	1,271,685	Available July, 1979
Federal funds @ 36%	3,960,000	Available July, 1979
	$11,320,000*	

*The $320,000 above project requirements covers costs of research and program overhead.

This table shows planned project funding. The actual expenditures are less due to the surplus left over at the completion of the project.

SUMMARY:

	$ Million
Landowners	6.6
Genral Fund	0.4
Federal	4.0
	11.0

TABLE 2

PER ACRE COST TRENDS

BY COMPONENT, 1976 - 79*

	1976	1977	1978	1979*
Aircraft	$ .68	$ .98	$1.01	$1.28
Insecticide	1.59	1.70	1.86	1.99
Fuel Oil	.02	.02	.02	.04
Food and Lodging	.01	.08	.07	.07
Temporary Labor	.01	.12	.05	.19
Environmental Monitoring	---	.05	.04	.06
Mixing	.09	.14	.14	.08
Miscellaneous	.02	.12	.09	.16
TOTAL	$2.43	$3.21	$3.28	$3.88**

*Minor changes in definition of cost categories have occurred, so that smaller items are not strictly comparable over time.

**Figures do not add up due to rounding off.

Table 3.

Budgeted vs. Actual Costs, 1979 Budworm Project

(In $1,000 except Actual Costs/A.)

ITEM	BUDGET	ACTUAL	BUDGET VS. ACTUAL	ACTUAL PER ACRE[2]
	In thousands	In thousands	In thousands	In dollars
Aircraft[1]	$4,077	$3,499	$578	$1.28
Insecticide	6,063	5,544	519	1.99
Fuel Oil	125	108	17	.04
Mixing	250	229	21	.08
Food & Lodging	100	198	- 98	.07
Temp. Labor	75	511	- 436	.19
Env. Monitoring	160	157	3	.06
Misc.	150	449	- 299	.16
TOTAL	$11,000	$10,795	$305	3.88[3]

NOTES:

1. Fixed Wing Spray, Helicopter, Monitor & Administrative, and Medivac.
2. Based upon 2,791,962 acres sprayed.
3. Figures do not add up due to rounding off .

Table 4.

BUDWORM EXCISE TAX, 1979

	Unorganized			Organized		
	Acres	Tax/Acre	TOTAL	Acres	Tax/Acre	TOTAL
Softwood	3,354,620	$1.24	$4,159,728.80	701,086	$1.24	869,346.64
Mixed Wood	1,863,655	.62	1,155,466.10	721,401	.62	447,268.62
				1,422,487		
TOTALS	5,218,275		$5,315,194.90			$1,316,615.26

TOTALS - UNORGANIZED AND ORGANIZED

Acres	Totals
4,055.706	$5,029,075.44
2,585,056	1,602,734.74
6,640,762	$6,631,810.16

In summer of 1979, the State contracted for research projects totalling $96,508 using the FY 1980 funds. This brings the accumulated surplus in the research account to above $92,000, due largely to the sizable carry-over of funds in 1978 (Table 5).

Table 5. Research Expenditures, 1973 - 1980

	Authorization	Commitments	Surplus
1973-4	N/A	$58,139	---
1974-5	N/A	34,860	---
1976	$100,000	80,472	$19,528
1977	100,000	95,000	24,528
1978	100,000	100,000*	24,528
1979	100,000	36,100**	88,428 3,492
1980(FY)	100,000	96,508	91,920

* 63,900 contracted in FY 1979

** Only $36,000 of FY 78 funds used in FY 79.

B. THE 1979 SPRAY PROJECT

The 1979 spray project was planned for 3.5 million acres. Refined spray block planning reduced the acreage to 3.25 million acres by mid-May. During the project, a change in the no-spray buffer zone policy was made at the request of the Environmental Protection Agency (EPA), resulting in a further reduction in the number of acres eligible for treatment. Limited spray periods, caused by poor weather, also lessened the number of acres treated. When the project ended, 2.7 million acres had been sprayed with four insecticides:

Sevin-4-Oil	2,543,160 Acres
Dylox	96,902
Orthene	110,417
Bt	41,483
TOTAL	2,791,962

Unlike 1978, biological and developmental factors in 1979 were generally very favorable for a successful spray treatment. Helpful factors were as follows: 1) In 1979 bud elongation and flare was far in advance of insect development. This resulted in small insects feeding on a large food source, thus lessening the chances of severe defoliation. 2) Even severely damaged trees seemed to have high numbers of large buds. 3) A prolonged rainy period in early June, 1979 caused population reductions of 5 to 25 percent in some areas and generally reduced the vigor of survivors.

In other areas the following conditions were less conducive to spray success in 1979:

1. There was no population reduction from 1978 spray stress in the northeast, southwest and southeast coastal areas.
2. Rain and wind delayed spraying in the northeast.
3. Logistics delayed spray in the southwest.
4. Dylox and Bt treatments in the Penobscot Valley were followed closely by prolonged rain.

The most critical areas near Telos and in the northwest were scheduled for split applications of Sevin to preserve more foliage. These areas were given priority for treatment. However, rain in early June delayed the first application on much of the area to a point that advanced insect development and bud flare negated the advantage of split application. The decision was made to drop the split application in most of the northwest and revert to a single application at the 3/4 lb. Active Ingredient (A.I.) per acre. About 440,000 acres were treated with split applications which were highly successful. Preliminary results show excellent spray efficacy in all areas sprayed with Sevin at the proper development stage.

The results of Bt applications with Thrush aircraft were mixed. A sizable helicopter operation applied Bt in the scientific Forest Management Area of Baxter Park with some success.

As in the past, Dylox and Orthene failed to provide the same level of insect mortality and foliage protection as Sevin. The properly timed application of Dylox was adversely effected by a long rainy period following application. Detailed reports on spray efficiency and prospects for 1980 are in preparation.

The 1979 project employed small aircraft extensively for the first time, treating about 600,000 acres with helicopters and Thrushes. This allowed the use of remote airstrips to spray regions at long distances from Presque Isle and Millinocket. It also allowed the treatment of most areas near settlements with small aircraft, resulting in more careful application with less noise disturbance of nearby residents and their livestock. The preliminary indication ssuggest the small aircraft performed well, with thorough evaluations underway.

The twin-engine and 4-engine aircraft used guidance systems based on the Loran net of navigational aids. The guidance system performed well. An intensive evaluation was conducted of the guidance alternatives available for use with helicopters and aircraft (Steve Oliveri, MFS open file report, 1979).

The aircraft employed sprayed the following acreages:

TABLE 6

ACRES SPRAYED BY AIRCRAFT TYPE - BW 1979

TYPE	NUMBER	ACRES
Helicopter (Bell 47)	8	46,500
Thrush Commander	14	557,900
TBM	6	309,100
PV-2	8	409,600
B-17	2	147,500
C-54	12*	1,188,900
L-749 (Constellation)	1	176,000
TOTALS	51	2,827,500**

*Lost one after completing about 2/3's of the project because of mechanical problems. No injuries were involved.

**The difference between the total number of acres treated by aircraft type and total number of acres treated is due to summation methods for split applications.

Although it was hindered by limited amounts of suitable spray weather, by the almost simultaneous development of the insect across the state, and by increased public protests in limited areas, those woodlands most needing protection were successfully treated during the 1979 project. Evaluations of damage conducted in unsprayed areas support the view that the spraying has effectively reduced timber mortality over large areas.

As of 1978, data were available from the following sources (Devine and Trial, unpublished MFS paper, 1979):

--MFS Survey of Moosehorn NWR (Ent. Div. Tech. Bulletin #4, 1978).

--USFS Survey of Budworm Damage, 1978 and 1979 reports in preparation.

--Evaluation of area planned for 1975 but not treated. MFS paper.

--Assessment of damage, Big 20 area, MFS paper.

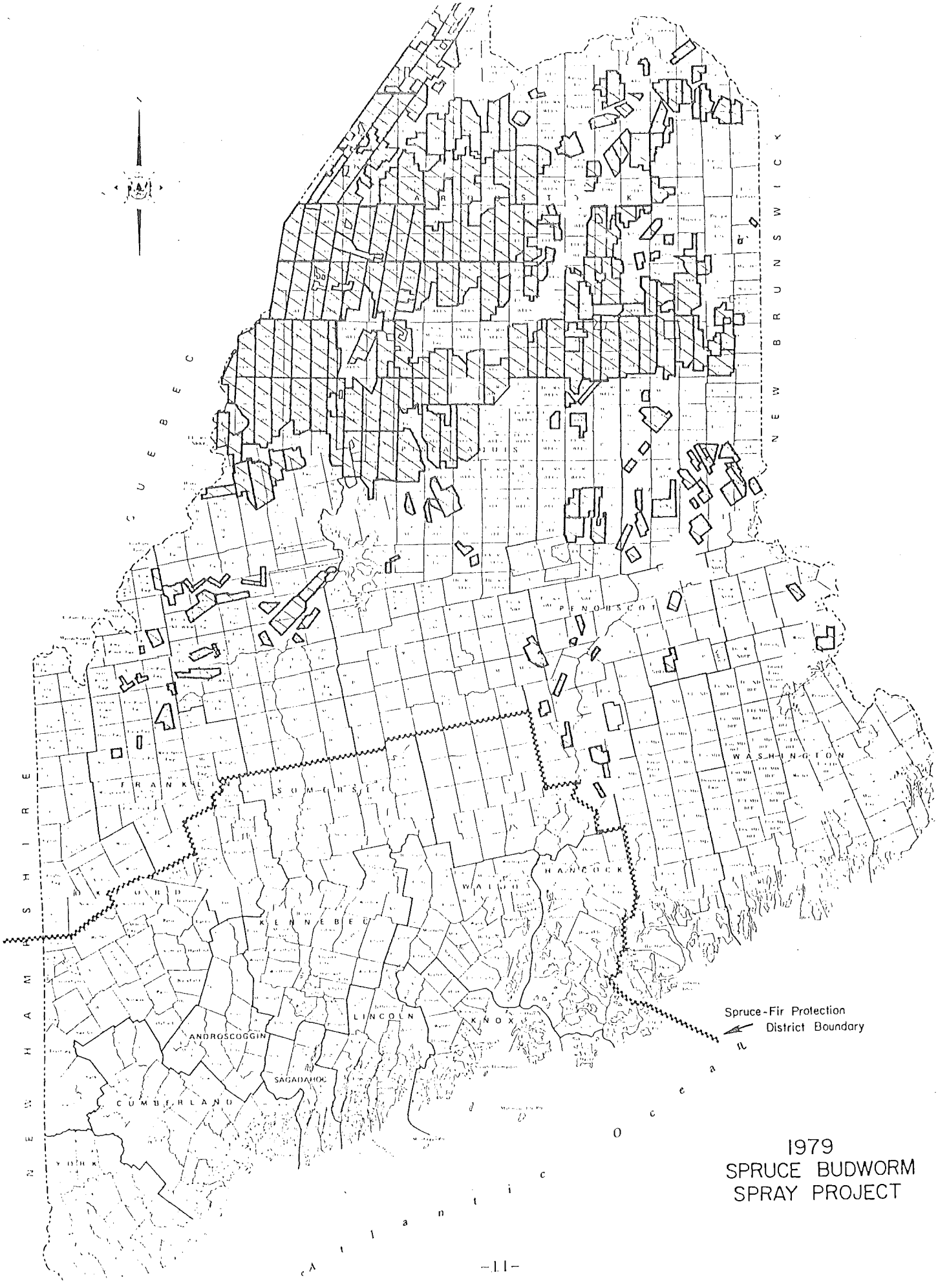
--Budworm Impact Survey, Mark Houseweart, UMO. ongoing.

--Mortality Research, Baxter Park, Dr. Gordon Mott et al., USFS, on going.

--Aerial Surveys in Landowner Assistance Project, H. Trefts, MFS, ongoing.

--Assessment of Conditions, Great Northern Paper Company Land, Dr. Corcoran, GNP Co.

These studies, taken together, indicate that severe growth loss has been sustained. Mortality studies in unsprayed areas indicate 30% of fir is dead or dying, compared with 10% or less in the sprayed areas.


QUEBEC
NEW BRUNSWICK
PENOBSCOT
WASHINGTON
FRANKLIN
SOMERSET
HANCOCK
WALDO
KENNEBEC
LINCOLN
KNOX
ANDROSCOGGIN
SAGADAHOC
CUMBERLAND
YORK
NEW HAMPSHIRE
Spruce-Fir Protection
District Boundary
1979
SPRUCE BUDWORM
SPRAY PROJECT

Insecticide Use Practices

For the 1979 spray project the MFS adopted a more refined no-spray buffer policy, which reflected differences in insecticides and aircraft types. The buffers were based on past practices and on experience with different aircraft. The buffers of 1/2 mile for individual dwellings and 1 mile for concentrated settlements for large aircraft were used as in 1978.

In early May, the MFS reviewed its operational practices, in particular the controls on wind, with the Board of Pesticides Control. As the project got underway, citizen protests in the Dennysville area led the Environmental Protection Agency (EPA) to visit the area to determine if label language could be complied with for the planned application of Dylox. The EPA representatives ruled that under the extreme wet conditions of this spring, the Dylox could not be applied consistent with label precautions against application into water. The MFS thereupon cancelled planned application of Dylox to 33,000 acres in the area. The Dylox was later applied in areas of somewhat better drainage in northern Aroostook after a period of time dry weather.

Further protests and appeals to the EPA, and Board of Pesticides Control to halt the use of Sevin led to several Board meetings in early June. At those meetings, several spray incidents were discussed, the meaning of EPA labels for Sevin was debated, and the Board was urged to halt the project, which was then 1/3 complete. The Board adopted a resolution to ask that the MFS conduct its operations with extreme care, and that it apply a 300" buffer to all streams showing as a single line on USGS 1:62,500 scale maps. The previous practice had been to cut off booms for such streams, with the 300" buffer applied only to streams showing as a double line. Implementation of this buffer policy removed approximately 200,000 acres from the project.

The EPA, in an unprecedented move, conducted aerial surveillance of the

spray program after the Board meetings, using videotap camera-equipped aircraft. EPA enforcement personnel investigated incidents and complaints during and after the project. Two complaints, one involving the alleged spraying and subsequent health complaints of a citizen, and the other involving a bee kill due to an aircraft spraying off course, are pending further investigation by EPA and possible court action.

The intolerable situation brought about the ambiguity in label language led to contacts by MFS with the EPA to seek assistance in developing detailed operating practices which would be in accord with label language. In one case, a manufacturer submitted a revised label to the EPA.

EPA scrutiny of Sevin and Dylox continues with no change in their status on the candidate list for RPAR (Rebuttable Presumption Against Registration) review. The review, mandated by the re-registration regulations of the EPA, considers the risks and benefits involved in the use of an insecticide. In view of the widespread agricultural and forestry use of Sevin and Dylox, and possible health hazards, the EPA believes that both insecticides deserve careful study.

C. SILVICULTURE PROGRAM

By fall 1979, a total of 1.7 million acres had been withdrawn from spraying by landowners under automatic and silvicultural options (12 MRSA c. 803 (§ 8408 and § 8409 respectively)).

	Softwood	Mixed Wood	Total
Silviculture	640,557	926,036	1,566,593
Automatic	88,296	25,450	113,746
TOTAL	728,853	951,486	1,680,339

General program description is found in the Financial and Progress Report issued in 1977. At the time of this writing, (early December, 1979), several applications for silvicultural and automatic withdrawals are being considered.

D. BUDWORM RESEARCH PROGRAM

Maine Program

Under the 1976 Act, a broad ranging research program has been conducted. Its major themes have been to accelerate basic research on new biological insecticides, to assess possible improvements in spray technology, and to improve survey and detection, economic assessment, and marketing. The overall results of this effort are reviewed in the recent publication Spruce Budworm Research in Maine, 1979, published by the Maine Forest Service.

In the Budworm Policy Review this fall, the Review Committee considered whether to redirect the state research program now that the Federal CANUSA program is under way in the East.

Research activities for 1979-1980 were funded by a $96,508 contract with the University of Maine at Orono. Funded by this contract were:

-- A study of small-scale logging systems. Jon Falk and John Dimond, UMO. This study will appraise small logging machinery for low volume per acre cuts for budworm hazard reduction. It will produce proposals for the next steps in promoting the commercial use of such machinery ($9,692).

-- Continued development of a budworm management information system by Dr. Tom Brann of the School of Forest Resources. Based on a digitizing system jointly sponsored by the MFS and UMO, this system will provide a major increase in our ability to analyze existing budworm infestation data. The system will be compatible with data systems operated by major landowners, ($33,238).

-- A small additional amount is provided to assist CANUSA - funded investigators Jeff Brushwein, John Dimond, and Jeff Granett to complete work on insect growth regulators ($2,993).

-- An exploratory study of antifeedants in budworm - resistant spruces by Dave Leonard and Michael Bentley, of UMO and Gordon Mott of USFS.

This is a basic study designed to shed light on the reasons for variability in damage suffered by spruce trees in the same infested stand. ($30,000).

-- Continued support is provided for the ongoing budworm damage survey by Dr. Mark Houseweart of the School of Forest Resources. This important study is now providing our best indicator of the overall impact of budworm on the spruce-fir resource ($11,635).

-- A study of the environmental and health impacts of matacil, by Sarah Leonard of the Entomology Department, UMO. This study will help us assess the future of a promising insecticide which is now widely used in Canada ($8,950).

Studies funded by previous contracts continue, most notably an extension for a second year of Dr. Dimond's work on relative control effectiveness of Sevin on spruce and fir.

The CANUSA Program

In spring 1979, the U.S. Forest Service funded an important series of studies under its CANUSA program. These are listed in Appendix I. The work funded includes a major series of demonstration projects which will test out the best available methods of integrating harvesting and management for budworm control. Several landowners have committed sizable acreages and personnel support to make this work succeed.

In summer 1979, the Canadian Forestry Service issued a major review of its own budworm reserach program, a part of its CANUSA program planning work. This report provides a valuable analysis of spruce budworm research needs and is of general interest:

> C.F.S., Report of the Task Force for Review of C.F.S. Research Program on the Eastern Spruce Budworm. Ottawa, June 1979.

The research, demonstration, and technology transfer programs undertaken under the CANUSA program offer the most important opportunity for developing better ways of managing the spruce budworm in the Maine forests.

Research at UMO

Through the Cooperative Forest Research Unit and the Entomology Department,

the University is making the key contribution to research progress under the State and CANUSA programs.

Research by Landowners

Landowner research and development activities continue to grow. The landowners have expanded in-house progams, are testing new silvicultural and logging systems, and are cooperating in the CANUSA demonstration projects. International Paper Company is a direct contractor of one of the demonstration projects. Landowner staff are continuing past projects on improved planting and regeneration needs.

Research Coordination

The MFS has a number of methods of maintaining effective coordination in its research program. These include attendance at major regional research meetings, membership on Canadian and CANUSA Committees, and intensive monitoring of current literature. A major library of technical information has been developed at Augusta, including a guide to current research in Maine and a complete budworm bibliography at the University of Maine at Orono.

Anon., Spruce Budworm Research in Maine: A User's Guide, MFS, 1979.

Jennings, D, F. Knight, et al, Spruce Budworm Bibliography School of Forest Resources, UMO, Orono, Maine; Miscellaneous Report # 213, 1979; (is being updated, December, 1979).

In January, 1979 the third annual Eastern Spruce Budworm Research Work Conference was held at the University of Maine at Orono. State and federal officials, land managers and scientists from the eastern U.S. and Canada met to discuss new developments in research and methods for improving manager/scientist communications. The conference continues to be an invaluable forum on the most recent developments of all aspects of spruce budworm management.

E. POLICY REVIEWS

In the emergency appropriation for the 1979 budworm program, the Legislature asked for the Commissioner of Conservation to study several specific aspects of budworm policy and to report to the Legislature with draft legislation by January 1, 1980.

The Commissioner invited a number of representatives of interested organizations to assist the Department of Conservation in this policy review. The Budworm Policy Review Committee, chaired by the Commissioner, met frequently during the summer and fall of 1979 to consider options for budworm management, and how they might best be administered and financed to meet the Legislature's stated policy objectives. These include a significant reduction in pesticide use in the Maine forest; maximum landowner freedom to choose whether or not to participate in any future spray projects; a more equitable distribution of budworm protection program costs among affected landowners; and reduction of the tax burden on owners not being sprayed in a given year. Throughout its deliberations, the Committee received assistance from the staffs of the Green Woods Project, the Maine Forest Service, and the U.S. Forest Service.

The findings and recommendations which follow are the result of the Committee's deliberations. Together with the public comments made at a public hearing on November 20, 1979, and reactions to them, they will be considered by the Commissioner in making his final recommendations to the Legislature.

1) Re-examine spruce-fir protection district boundaries.

2) Carry out a wood supply/demand analysis to determine how much acreage must be protected to meet future wood needs.

3) Encourage increased utilization of fir for 1980 project.

4) Produce a more detailed stand classification map indicating age and site class, and proportion and location of spurce, fir and non host species. This information would allow for greater precision spraying.

5) Change the funding mechanism so that a substantial portion of each year's spray cost are levied on acres actually sprayed.

6) Make spray program participation voluntary. Once landowners opted into the program they would be in it for 3-5 years and would share a portion of the spray costs through a shared spray tax.

7) Define a settlement region of 2 miles on each side of publicly maintained roads. Lands within this 4 mile corridor will only be sprayed when landowners request inclusion. Residents of organized towns and plantations would be authorized to veto chemical spray within the corridor within their municipality.

8) Intensive budworm protection management should be adopted for the Settlement Region.

9) An independent agency should be responsible for the regulatory review of environmental and health impacts of the spray project. This agency would be asked to strengthen environmental and health monitoring and determine acceptable levels for drift and contamination.

10) Strengthen staff at MFS to more adequately administer the spray project.

11) Develop, acquire, and utilize spray guidance systems capable of allowing greater precision spraying.

In March, 1979 the MFS retained the firm of Lund, Wilk, Scott, and Goodall to study the legal aspects of the operation of a privately organized spray entity which might conduct spraying against budworm. This study proceeded from the policy recommendations issued by the Department in winter 1978. The study included a detailed case analysis of Forest Protection Limited, the spray organization for New Brunswick. It reviewed experience with spray-co-ops elsewhere and pest control laws of other states. It recommended the creation of a privately funded spray company to carry out spraying operations in close cooperation with the MFS and under the general oversight of the Pesticides Control Board.

Funding Recommendations

For the 1979 spray project, the initial estimate of total cost was 12 million. The refined estimate used for budget purposes by midwinter was 11 million.

At the fall cost-sharing hearing and in the recommendation to the Legislature, the Department recommended a 6.3% share of non-federal cost to be funded by the State. This recommendation was accepted by the Legislature. Application was made for 36% federal funding, or almost 4 million dollars. Because the status of federal funding was uncertain, budget deliberations were made on the emergency appropriation (LD PL 1979, ch. 69). The Legislature, therefore,

applied an innovative solution to the uncertainty. It provided for a supplementary tax which would be levied on the landowners if the federal funds were not available by August 1. Despite the continuing status of Fitzgerald vs. USDA (see p.21) the federal funds were received and certified by the State Budget Officer by August 1, so the supplementary tax did not have to be used. (Letter Buker to Ray Halperin, State Tax Assessor, August 1, 1979, Appendix #2).

The tax rate provided was $1.24 per acre for softwood and $.62 per acre for mixed wood, unprecedented levels of tax.

In the emergency appropriation for 1979, the Legislature also repealed the 1.5 mill Tree Growth Tax levy provided for in the 1976 Act, Chapter 69 of the Public Laws of 1979.

Local Objections to Spraying

In 1978 and 1979, several localities expressed formal opposition to the conduct of spraying within their coporate limits:

1978	Princeton Board of Selectmen
	Wytopitlock Petition, most of town residents
	Greenbush Health Officer
1979	Northfield town meeting
	Westmanland town meeting

In additon, several communities in the Dennysville area expressed unofficial opposition through a series of well-attended meetings.

In part because of heightened public awareness and of operations closer to settlements than in previous years, several incidents of spraying property against landowner intentions and of bee kills occurred in the 1979 project. All known complaints were investigated by the Maine Forest Service, and major complaints were investigated by the Pesticides Board and the EPA.

Because of this heightened concern, the issue of spray policy in the settled areas of the state was given high priority in the work of the Budworm Policy Review Committee. The Committee recommended a new "settlement zone policy" for the 1980 spray project which has since been adopted by the Department of Conservation. A settlement zone is defined as a region extending two miles on both sides of all publicly maintained roads within the Spruce-Fir Protection District. Forest land in these settlement regions will not be sprayed in the 1980 State Spruce Budworm Suppression Program unless the landowner specifically requests its inclusion in the program. Eligible parcels must be within a proposed designated spray area as appears on the map, and are subject to the Department of Conservation's approval. In addition, a recommendation will be presented to the Legislature in January, 1980 to allow residents of each organized town and plantation containing part of a corridor to vote to disallow the chemical spray project within a settlement corridor in their municipality.

Boundary of Spruce-Fir Protection District

In the First Regular Session, 109th Legislature, a bill was introduced to remove 14 towns from the Spruce-Fir Protection District. The bill, LD 950, was neither supported nor opposed by the Department at the hearing. The Natural Resources Committee amended LD 950 by deleting it entirely and replacing it with those portions of the text of LD 2095 of the previous year which had addressed the Protection District boundary. (Filing S-92, April 6, 1979, Committee Amendment "A" to S.P. 320, LD 950). That bill had been introduced by the Department in 1978 to remove more than 100 towns around the fringes of the District, based on economic or forest type conditions not favorable for the use of spraying. Neither LD 950 nor its amended version passed.

Litigation

In May 1979, Charles Fitzgerald of Atkinson and 13 other plaintiffs filed suit in Federal Court in Portland seeking to bar the federal government from funding the 1979 spray project and the State from carrying it out. Defendants

were the U.S. Department of Agriculture, and the State of Maine. A group of landowners was allowed to intervene as defendants.

The plaintiffs claimed that the federal funding decision was based on an inadequate environmental impact statement. Further, they claimed that the State could not apply the insecticides in a manner consistent with label instructions and hence should be barred from proceeding with the project.

At a hearing on May 18, Judge Edward Gignoux announced that he would grant the State's motion to dismiss all claims against the State, thereby, allowing the spray project to move forward. The first spraying began the following evening, May 19, as Thrushes sprayed Bt near Old Town. Federal funds were withheld pending a hearing on claims against the federal government.

In August, the State filed to reenter the case, and Judge Gignoux dismissed the case against all defendants. Plaintiffs immediately petitioned him for a temporary stay of his order, which was denied. They filed an appeal with the First Circuit Court of Appeals in Boston, again being denied in their request for a stay of the payment of federal funds. In early August the federal funds were transferred to the State, which disbursed part to Great Northern Paper Company to cover its pre-funding contributions and applied the remainder to other bills.

Judge Gignoux made plain to all parties that he intended, if plaintiffs file in a timely manner, to fully review the case on its merits in 1980. This placed the federal and state agencies on notice to prepare an environmental statement earlier and to significantly upgrade its treatment of points raised in the original complaint.

On November 15, 1979, the Superior Court dismissed the State of Maine as a defendant in the case Troy Ramage et al. vs. Hillcrest Aircraft and the State of Maine. The action was taken on the grounds that the court lacked jurisdiction because of all times relevant to the complaint the Defendant, State of Maine, was a governmental entity not subject to suit because of the doctrine of sovereign immunity.

F. PROGRAM ADMINISTRATION

In 1978-1979, program administration was handled by the Forest Insect Manager, (FIM) Lloyd C. Irland and Director of Operations, Ancyl Thurston. A seasonal group of technicians assisted with drafting, mapwork, I & E functions and spray project implementation. The addition of project clerk and bookkeeper allowed improved processing of project-related contracts, invoices, and similar work.

Major contracts were again pre-funded by Great Northern Paper Company acting for a group of landowners.

For the 1979 project, project manager's handbook was prepared, which is now in revision for 1980.

In September, 1979, Lloyd C. Irland left his postion as FIM to become Director of Public Lands, Department of Conservation. Dr. Irland had filled the position of FIM since May, 1976. A. Temple Bowen, Jr. was appointed to the FIM position in November, 1979. He has been employed by the Department of Conservation since 1965, and left the position of Acting Director of the Bureau of Forestry to take overall responsibility for the management of the Forest Service's spruce budworm control program.

Other new employees include Research Associate, Tom Rumpf, hired in May, 1979. He supervised several project employees who worked the summer after serving on the spray project, and coordinated background research work for the Budworm Policy Review Committee. Because of the increased workload and in order to be better prepared for the proposed 1980 spray project, several project employees have been retained into 1980.

G. INFORMATION & EDUCATION

The spruce budworm program conducts information activities in regard to ongoing spraying operations, to its surveys of forest conditions. and to its programs of research and coordination.

For the spray program in 1979, an upgraded effort at public information was undertaken. Two information officers worked on distributing spray program information, advising landowners who requested notification, answering press and public inquiries, and investigating complaints.

The 1979 project occurred in an unprecedented atmosphere of press interest. A major press conference at Millinocket was visited by local and national media, and editorials appeared as far away as San Francisco. A NBC team visited for several days and produced a major feature report. A number of lessons were learned which will allow for better preparation for such interest in the future.

In our ongoing information efforts, several new publications appeared (see also the list in last year's FIM report):

1. Anon., Findings and Recommendations for Public Review and Comment of the Budworm Policy Review Committee, MFS, November, 1979.
2. Anon., Spruce Budworm Research in Maine: A User's Guide. MFS, 1979.
3. Bourassa, G., Accelerated Fir Utilization MFS, Sept., 1979.
4. Burke, R., Effectiveness of Spraying MFS, August, 1979.
5. Dimond, J., et al,. Bacillus thuringiensis, Operational project-spruce budworm control in Maine, 1978. MFS Entomology Div. Tech. Report #11, 1978.
6. Irland, L., Not any green thing, notes on the economics of forest pest management. R.D. Gale, editor, in Proceeding for Integrated Pest Management Colloquium, USDA Forest Service Gen. Tech. Report # 14, March, 1978.
7. Lunk, Wilk, Scott and Goodall, Alternatives to State Management of Spruce Budworm Spraying (Lund Report), Dept. of Conservation, 1979.
8. Oliveri, A Technical Review of Planning and Guidance Procedures in Maine's Spruce Budwrom Spray Operations, MFS, Sept., 1979.

9. Pistell and Harshberger, The Spruce Budworm in Maine: A History of Forest Conditions, Forest Industries and Policy from 1800-1981. MFS, October, 1979.

10. Trial, 1979 Project Results and 1980 Spruce Budworm Forecast for Maine, MFS, November. 1979.

11. Trial and Thurston, Spruce Budworm in Maine, 1978 Cooperative Spruce Budworm Suppression Project and Expected Infestation Conditions for 1979. MFS, Entomology Div. Tech. Report #8, December, 1978.

TABLE 7 U.S. FOREST SERVICE STUDIES UNDER CANUSA PROGRAM 1979 FUNDING

A. FUNDED STUDIES

	TITLE	INVESTIGATOR ADDRESS
1.	Environmental Monitoring of the 1979 Field Test of Matacil.	Harold L. Brown Eco-Analysts, Inc. Bath, Maine (207) 443-2761 or (207) 371-2176
2.	Pheromone Chemistry and Development of Pheromone Sampling Systems for Eastern Spruce Budworm.	Ring T. Carde Michigan State University East Lansing, Michigan (517) 353-0672
3.	Bacillus Thuringiensis: Field Test of Alternative Formulations.	John B. Dimond Dept. of Entomology University of Maine Orono, Maine 04469 (207) 581-7703
4.	Insect Growth Regulators for Management of Eastern Spruce Budworm Populations.	Jeffrey Granett Dept. of Entomology University of Maine Orono, Maine 04469 (207) 581-2209
5.	Microclimatic and Phenological Differences on Balsam Fir and White Spruce in Relation to the Development of the Spruce Budworm.	Yvan Hardy Faculty of Forestry and Geodesy Laval University Quebec, Canada G1K 7P4 (418) 656-2116
6.	Delineation of Selected Variables which Affect the Loss of Bacillus Thuringiensis Crystals from Aerial Sprays.	F. D. Harris Agricultural Engineering Dept. University of Missouri Columbia, Missouri 65211 (314) 882-6610
7.	Efficient Aerial Sprays from New Analytical Biophysical Systems for Mass and Droplet Transport.	Chester M. Himel Dept. of Entomology University of Georgia Athens, Georgia 30602 (404) 542-2816

A. FUNDED STUDIES

	TITLE	INVESTIGATOR ADDRESS
8.	The Significance of Non-host and Alternative-host Tree Species on Populations of Larval Spruce Budworm, with Emphasis on Improving Sampling Techniques.	William P. Kemp Environmental Associates, Inc. Box 30 Orono, Maine 04473 (207) 827-6260
9.	A Sunshine Ultraviolet Simulator for Microbial Insecticide Testing.	Conrad J. Mason Aeromatrix, Inc. 3640 E. Huron Drive Ann Arbor, Michigan 48104 (313) 971-2244
10.	Wind Tunnel Evaluation of Aerodynamic Drag Coefficients of Spruce Foliage Elements.	Donald F. Potts Dept. of Silviculture & Forest Influences SUNY, College of Environmental Science & For. Syracuse, New York 13210 (315) 473-8642
11.	Analysis of the Integrated Management of Spruce Budworm: Phase I	Christine A. Shoemaker Dept. of Environmental Engineering Cornell University Ithaca, New York 14853 (607) 256-4897
12.	Use of Light Trap Data to Assess Changes in Endemic Spruce Budworm Populations.	Gary A. Simmons Dept. of Entomology Michigan State University East Lansing, Michigan 48824 (517) 353-8132
13.	Improvement of Spruce Budworm Population Sampling for Low and Moderate Population Levels.	Gary A. Simmons Dept. of Entomology Michigan State University East Lansing, Michigan 48824 (517) 353-8132
14.	Economic Potential of Marketing and Utilizing Spruce-Fir Timber from Budworm Threatened or Damaged Forests.	Steven A. Sinclair Dept. of Forest Products University of Minnesota St. Paul, Minnesota 55108 (612) 373-1299

A. FUNDED STUDIES

	TITLE	INVESTIGATOR ADDRESS
15.	Entomophthora Fungi as Myco-insecticides for Spruce Budworm Control.	Richard S. Soper Insect Pathology Resource Center Boyce Thompson Institute Tower Road Ithaca, New York 14853 (607) 257-2030
16.	Production of Spruce Budworm Baculovirus in Larva of the Cabbage Looper, Trichoplusia ni.	Gordon R. Stairs Dept. of Entomology Ohio State University 1735 Neil Avenue Columbus, Ohio 43210 (614) 422-1953
17.	Photometric Derivation of Analytical Parameters for Large Area Forest Mgt.	John E. Walker Calspan Corp. P.O. Box 400 Buffalo, New York 14225 (716) 632-7500 Ext. 8109
18.	Development of a Rapid and Sensitive Bioassay Technique to Determine Toxicity of Pesticides, Solvents & Emulsifyers.	Pearl Weinberger Biology Dept. University of Ottawa Ottawa, Ontario, Canada K1N 6N5 (613) 213-2334 or 2337
19.	Evaluation of the Environmental Impact of Matacil using Aquatic Microcosms.	Pearl Weinberger Biology Dept. University of Ottawa Ottawa, Ontario, Canada K1N 6N5 (613) 213-2334 or 2337
20.	Matacil and Long-term Microbiological Side Effects in Fresh Water Ponds.	David J. Wildish Fisheries and Oceans Canada Fisheries and Marine Service Resource Branch Biological Station St. Andrews, New Brunswick, Canada E0G 2X0
21.	Spruce Budworm: Techniques and Plot Establishment for Forest Damage Assessment.	John A. Witter School of Natural Resources University of Michigan Ann Arbor, Michigan 48109 (313) 764-1432

A. FUNDED STUDIES

	TITLE	INVESTIGATOR ADDRESS
22.	Controlled Drop Size Atomizer for Aerial Applications in Forests.	Wesley E. Yates Dept. of Agricultural Engineering University of California Davis, California 95616 (916) 752-0474

TITLE	INVESTIGATOR ADDRESS
Determination of the Potency of Selected B. Thuringiensis Strains against Choristoneura fumiferana (Clem.).	Normand R. Dubois Northeastern Forest Exp. Sta. Forest Insect & Disease Laboratory Hamden, CT. 06514 (203) 432-8026
Early Detection of Nucleopolyherrosis (NPU), Cytoplasmic (CPV) and Entomopox (EPV) Virus Infections in Choristoneura fumiferana (Clem) Larvae.	Same
Effect of Spray Delivery System on the Potency of B. Thuringiensis Tank Mixes against Choristoneura fumiferana.	Same
Forest Succession following a Spruce Budworm Outbreak in Minnesota.	Harold O. Batzer North Central Forest Exp. Sta. 1992 Folwell Avenue St. Paul, Minnesota 55108 (612) 645-0841
Spruce Budworm Outbreak in Relation to Population Quality and Genetics.	Nancy Lorimer North Central Forest Exp. Sta. 1992 Folwell Avenue St. Paul Minnesota 55108 (612) 645-0841
Effects of Moisture Stress on Foliar Chemistry of Balsam Fir and Survival and Growth of Spruce Budworm.	William J. Mattson, Jr. North Central Forest Exp. Sta. 1992 Folwell Avenue St. Paul, Minnesota 55108 (612) 645-0841
The Effect of Continued Spruce Budworm Defoliation on the Volume Growth of Spruce-Fir Stands-Study Area No. 3.	Dale S. Solomon Northeastern Forest Exp. Sta. USDA Bldg.-University of Maine Orono, Maine 04469 (207) 866-4140

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B. FOREST SERVICE ACCELARATED RESEARCH

	TITLE	INVESTIGATOR ADDRESS
8.	Plant Composition and Production following Fire and Clear Cutting for Salvage in Budworm-defoliated Stands.	Hewlette S. Crawford Northeastern Forest Exp. Sta. USDA Bldg.-University of Maine Orono, Maine 04469 (207) 866-4140
9.	Nutritional Values of Spruce and Fir Foliage Related to Spruce Budworm Infestation and State Conditions.	Miroslaw M. Czapowskyj Northeastern Forest Exp. Sta. USDA Bldg.-University of Maine Orono, Maine 04469 (207) 866-4140
10.	A Bole-Volume Growth Model for Spruce-Fir Stands - Study Area No. 4.	Dale S. Solomon Northeastern Forest Experiment Sta. USDA Bldg. - University of Maine Orono, Maine 04473 (207) 866-4140

C. DEMONSTRATION AREAS

	TITLE	INVESTIGATOR ADDRESS
1.	The Integration of Target Harvesting of Balsam Fir with Precision Direct Protection of Fir-Spruce Forests.	John B. Dimond Dept. of Entomology University of Maine Orono, Maine 04469 (207) 581-7704
2.	Demonstration of Pre-Salvage in High Risk Balsam Fir Stands.	Robert P. Ford Northeastern Area, S&PF, FIDM 1992 Folwell Avenue St. Paul, Minnesota 55108 (612) 642-5334
3.	The Economics of Pre-Salvage Alternatives as a Method of Minimizing Spruce Budworm Losses.	Gary A. Simmons Dept. of Entomology Michigan State University East Lansing, Michigan 48824 (517) 353-8132
4.	Silvicultural Practices to Minimize Spruce Budworm Impact.	Suzanne E. Goldman International Paper Co. 39 Florida Avenue Bangor, Maine 04401 (207) 945-6417
5.	Evaluating Spruce Budworm Caused Impacts on Forest Land Values and Management.	Robert J. Marty Greentree Consultants, Inc. P.O. Box 27125 Lansing, Michigan 48909 (517) 485-5183

Appendix 2

STATE OF MAINE
DEPARTMENT OF FINANCE AND ADMINISTRATION
BUREAU OF THE BUDGET
AUGUSTA, MAINE 04333

August 1, 1979

Raymond L. Halperin
State Tax Assessor
State House
Augusta, Maine 04333

Re: Spruce Budworm Supplementary Excise Tax

Dear Mr. Halperin:

Reference is made to section 1015-A of the Spruce Budworm Suppression Act, 12 M.R.S.A. §1010, as amended by P.L. 1979, Ch. 69 (the "Act") which provides for the assessment of a supplementary excise tax on forest landowners to finance a portion of the cost of the 1979 spruce budworm spray project. The amount to be raised pursuant to the supplementary tax is "the difference, if any, between $3,960,000 and the amount of federal funds committed to the State, prior to August 1, 1979 . . . ." Section 1015-A (2) of the Act [Emphasis added]. The same subsection of the Act further provides that "[t]he amount of federal funds so committed will be certified by the State Budget Officer to the State Tax Assessor by August 1, 1979."

For the reasons explained below, I have determined and hereby certify that the State has received a "commitment", within the meaning of that term as used by the Act, of federal funds for the 1979 spruce budworm project in the amount of $3,960,000.

In the absence of any information to the contrary, it is appropriate to conclude that the Legislature intended the word "commitment" to have its ordinary and usual meaning in the context of this legislation.

According to Webster's New World Dictionary one of the customary definitions of the word "commitment" is "a financial liability undertaken".

This is precisely what the federal government did when it agreed to pay for a portion of the 1979 program.

Moreover, that commitment was not only made, it has already been honored.

I have been informed that the State of Maine, Bureau of Forestry, (the "State") applied to the United States Department of Agriculture, Forest Service ("USDA Forest Service") for federal funding of a portion

of the cost of the 1979 spruce budworm project in the amount of $3,960,000. Yesterday, July 31, 1979, the State received the full amount requested by way of a credit to its account at the Bank of Maine. These funds are unencumbered at this time and may be disbursed by the State Treasurer in accordance with applicable state laws.

It is now too late for the federal government to reverse the present commitment, however, there remains a possibility that the State could in the future be liable to return the moneys paid over by the Federal government. This contingency would arise if the unsuccessful plaintiffs in Charles Fitzgerald, et al. v. United States Department of Agriculture, et al., U.S. District Court Docket No. 79-57B were to prevail in their apparent efforts to appeal the decision of the U.S. District Court. In the event such an appeal were ultimately successful, future Legislative action would be necessary. It is impracticable to certify to the possible results of such uncertain future events. However, this certification does include full consideration of all known and determinable events and circumstances.

Accordingly, I certify that a commitment of federal funds has been made in the amount of $3,960,000.

Sincerely,

G. William Buker

G. William Buker authorized agent for
Otto W. Siebert, State Budget Officer
in accordance with the provisions of
5 M.R.S.A. 283

GWB/dr

cc: David Flanagan, Legal Counsel to the Governor
S. Kirk Studstrup, Administrative Assistant to the Governor
Richard S. Cohen, Attorney General
Jerrold V. Speers, State Treasurer
Rodney L. Scribner, Commissioner of Finance and Administration
Richard A. Dieffenbach, State Controller
Ronald H. Lord, Legislative Finance Officer
Herbert W. Hartman, Acting Commissioner of Conservation