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**TENTH
ANNUAL
REPORT**

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**ON ACTIVITIES UNDER THE
MARITIME MARSHLAND
REHABILITATION ACT
FOR THE FISCAL YEAR
ENDED MARCH 31, 1959**

MARITIME MARSHLAND REHABILITATION ADMINISTRATION
CANADA DEPARTMENT OF AGRICULTURE

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TENTH ANNUAL REPORT ON ACTIVITIES UNDER THE MARITIME MARSHLAND REHABILITATION ACT 1958/59

INTRODUCTION

The Maritime Marshland Rehabilitation Act, passed by Parliament in 1948, provides for the reclamation and development of marshland areas in the Provinces of Nova Scotia, New Brunswick and Prince Edward Island. The Act and subsequent agreements permit Canada, at the request of the Provinces, to protect lands against tidal flooding, provided the Province will undertake the installation of fresh-water drainage facilities, acquire rights-of-way, develop land-use programs, and when requested maintain the protective structures.

Protective structures include a combination of dykes, aboiteaux or dams, and breakwaters or other forms of stream-bank stabilization. The original reclamation of certain areas was done as long ago as 300 to 325 years. These areas became integral parts of farms; the type and scale of agriculture practised became dependent on the marshland protected, and therefore on the protective structures. The early structures were hand-built using simple tools and equipment. Assistance is needed to maintain protection for these areas, without it the farms involved could not continue as units.

Administration and Organization

Activities are administered by a Director who is responsible to the Deputy Minister of Agriculture in Ottawa. The administration and operation headquarters are located at Amherst, Nova Scotia, and includes an Engineering Branch.

The Engineering Branch, directed by a Chief Engineer consists of the following main units:

- (1) Surveys and design -- field surveys, drafting, soil mechanics investigations, hydraulic studies and design of structures.
- (2) Construction -- District Offices are maintained at Moncton, New Brunswick and Windsor, Nova Scotia; other temporary construction or sub-district offices are established as required.
- (3) Workshop and Equipment -- a limited amount of construction equipment is maintained and operated.

Maritime Marshland Rehabilitation Advisory Committee

The Maritime Marshland Rehabilitation Act provides "No work shall be undertaken in any province pursuant to this Act unless (a) the work has been recommended by an Advisory Committee established under Section 8, and"

The Advisory Committee has met on thirty occasions, once during the current year, to consider and study the possible reclamation of various areas at the request of the Provinces, or the reconstruction of protective works.

To date the Committee has made the following recommendations in respect to the reclamation of specific areas:

	Nova Scotia	New Brunswick	Prince Edward Island
Recommended -- complete reclamation	58 *	29	1
Recommended -- partial reclamation	20	5	-
Recommended -- no reclamation	5	7	-
Recommended -- no reclamation other than temporary mainten- ance	-	1	-

* one of which is subject to confirmation by the Province that the reclamation is required and that the area will be developed following reclamation.

In addition to these recommendations that no work be done on some projects, the Provinces have withdrawn requests for the reclamation of certain areas as follows:

Nova Scotia -- 4
New Brunswick -- 2

Accomplishments to Date

(a) Projects and Acreages

No project or area is considered for reclamation unless it has been properly recommended by the Province concerned. No formal requests were received during the past year. Nova Scotia requested a study be made of one area. Active and Non-Active Projects, with acreages, which have been or are being considered as of March 31 1959 are listed in Appendix I.

Of the approximately 100,000 acres or more of marshland in the Maritime Provinces, it has been requested that consideration be given to reclaiming 94,252 acres. Of the reclaimable portion of this area, 75,704 acres are protected against salt water flooding; work that will result in the reclamation of additional areas is under way. In some cases, structures protecting portions of the above acreage are subject to repair or replacement. The protected acreage, by Provinces, is:

Nova Scotia	--	39,475 acres
New Brunswick	--	35,954 acres
Prince Edward Island	--	<u>275 acres</u>
Total	<u>75,704 acres.</u>

This acreage forms portions of more than 3,300 farms comprising an estimated 500,000 acres.

(b) Construction of Works -

General

Nineteen fifty-eight was the first half of a two-year period forming the peak of an 18.04-year tide cycle. Tides were extremely high during April, May,

September, October and November. The high tides were sometimes increased in height as a result of storms and increased fresh water flow in rivers. Some dykes were overtopped, and breaks occurred in others. These incidents usually took place along those tidal rivers where dykes and other structures had not yet been reconstructed; the Gaspereaux River, Kings County, the Annapolis River, Annapolis County, the Nappan River, Cumberland County, all in Nova Scotia, and the Tantramar River, Westmorland County, New Brunswick. Flood damage by tide water was not unduly severe, and emergency repairs were made to structures as required and as rapidly as was physically possible.

No serious damage was inflicted by the tides on structures constructed or reconstructed during the past ten years under the current rehabilitation program. Dykes and other structures that were damaged had not been reconstructed prior to 1958, except where work was necessary to continue protection; some were not reconstructed since they will no longer be required after completion of dams on the Annapolis and Nappan Rivers in Nova Scotia, and the Tantramar River in New Brunswick.

Throughout the winter months advantage was taken of the availability of men, trucks and equipment to quarry and haul rock for dyke protection and stream bank control. This was in addition to the winter works program undertaken on the Annapolis River, Nappan River and Tantramar River dams (mentioned later in this report). This work is often easiest when frost conditions permit easier hauling of materials over normally soft ground. Approximately 90,000 tons of quarried rock were delivered to 34 projects in Nova Scotia and New Brunswick.

More than 250 miles of dyke, 400 aboiteaux (dams with fresh-water outlets) and 28 miles of special dyke facing have been constructed or reconstructed to date, as part of works required to protect some 78,000 acres of marshland. These structures also protect sections of highways, roads, railroad grades, some urban areas and a variety of other properties. Some aboiteaux, in addition to protecting land, serve as river crossings for highway traffic.

Apart from work on special structures reported below, major construction work was done on 17 projects in Nova Scotia and on 8 in New Brunswick. One project, Burntcoat Marsh, was a joint effort with the Nova Scotia Department of Highways, involving the construction of a single aboiteau, or causeway structure, to protect the marsh and serve as a road crossing replacing a steel bridge. Maintenance work, occasionally involving heavy improvements, was continued when needed on other projects in both provinces.

Special Structures

Progress in the construction of three special projects has been of particular interest during the current year. Each was undertaken in co-operation with a Provincial Department of Highways or Department of Public Works. These structures will dam tidal rivers and serve as highway crossings. They will protect large areas of marshland that would otherwise remain unprotected unless several miles of dyke and many aboiteaux were rebuilt, and the stream-bank control structures installed. They will also provide more positive fresh-water drainage and eliminate the present or future need to rebuild highway bridges at these locations. These projects are:

Annapolis River Dam, Annapolis County, Nova Scotia

In 1957 an agreement was entered into with the Province of Nova Scotia to co-operate in the construction of a dam across the Annapolis River. The design and construction of the main portion of the structure was undertaken by the Department and Canada and Nova Scotia are sharing the cost in the ratio of 1,75 to 1.0.

The dam will protect 4,300 acres of marshland, eliminating the need for reconstruction of miles of dyke and many aboiteaux, and will provide a desirable highway crossing to replace an existing and out-of-date bridge.

Construction began in March 1958, and continued throughout the current fiscal year. Excavation required to permit the placing of control structures in the river diversion was completed. These will include fresh-water control sluices and gates, a fish-way and temporary river by-pass facilities. Forty per cent of the structural steel, reinforcing steel and concrete was placed. Special arrangements were made to continue the pouring of concrete throughout the winter months, and this increased employment opportunities in the area. A quarry was developed and some rock fill, required to dam the main river channel, has been placed. Completion of the main contract is scheduled for September, 1960.

The overall structure is to consist of the following:

- . Two fresh-water discharge sluices with vertical lift gates, each gate 24 ft. x 30 ft. in size.
- . One 8-foot fish way.
- . Seven temporary concrete piers to serve as river by-pass structures, with provision for the installation of stop logs to control river flow and permit placement of rock fill.
- . One major rock fill dam, length -- 1,220 ft., top width -- 60 ft., maximum height -- 84 ft., with 44 ft. below low water, the rise and fall of the tide being approximately 32 ft.
- . Highway approaches as required.

During the design stage, consideration was given to the possibility of adding power-generating facilities to use the energy created by the rise and fall of the tide at this location. The scheme developed was a single basin type, to make use only of the incoming tide. Estimates provided for a two-turbine, 11,000 h.p. generating plant, with an energy output of at least 42 million k.w. hours a year and a probable energy output of 76.5 million k.w. hours a year. The daily generating period was established at 12 hours a day.

Details of the power studies were submitted to the Nova Scotia Power Commission. Although the studies indicated that tidal power could be developed, the Commission felt the cost was too high to warrant development.

Nappan River Dam, Cumberland County, Nova Scotia

For a number of years consideration had been given to damming the Nappan River, and thus with a single structure do away with the need for dykes and aboiteaux above its proposed location. This appeared particularly desirable in view of the tidal silting and fresh-water flow characteristics of the river. During periods of low runoff heavy deposits of silt collected in the river channel which interfered with the discharge of fresh water through conventional aboiteaux; this in turn prevented proper drainage of marshland.

The obvious advantages of reclaiming marshland by a single structure, coupled with the urgent need to replace a condemned highway bridge, resulted in an agreement with the Province of Nova Scotia. Under the agreement the Department is to design and construct the structure excluding subgrade and surface. Cost is to be shared by Canada and Nova Scotia in the ratio of 7.0 to 1.

Work began late in the year. Excavation for the discharge sluice was completed and certain foundation and other preparatory work was started before the fiscal year ended. The wet conditions encountered in the excavation made it particularly desirable that this work be carried out during the period when frost could be expected.

The fresh-water discharge sluice is to consist of one two-barrel-type concrete sluice set on steel H piles, with spillway, and with two-swing-type steel gates, each gate 11 ft. x 13.5 ft. in size.

Tantramar River Dam, Westmorland County, New Brunswick

A special agreement was entered into with the Province of New Brunswick previously, for the construction of a dam across the Tantramar River. Such a structure would form the final link in works required to protect approximately 17,500 acres of marshland, and would serve as a river crossing for the Trans-Canada Highway system, replacing a timber bridge. The cost of works, excluding highway subgrade and surface, is to be borne by Canada and New Brunswick in the ratio of 7.75 to 2.25.

The Department is responsible for the design and construction of the main structure, and work was initiated by contract in May 1958. By the end of the year the major excavation for the relocated river channel was almost completed, as well as the base for the culvert-type sluice.

The structure, when completed, will consist of:

- . One two-barrel-type concrete culvert and spillway with two vertical lift gates, each gate 15 ft. x 16 ft., and the required rock back fill.
- . One major rock fill dam, top width 60 ft., maximum height 46 ft., 1100 ft. in length, the rise and fall of the tide being approximately 40 ft.
- . Connecting dyke as required.

Major construction is scheduled for completion in January, 1960.

APPENDIX I MARITIME MARSHLAND REHABILITATION PROJECTS

A. -Active Projects

Note: Acreages are based on information available as of March 31, 1959

In most cases the salt marsh acreage indicated lies outside existing dyke and can not be reclaimed;

(x) indicates that a portion of the salt marsh may be reclaimed;

(o) indicates the entire area is salt or unprotected marsh. Protected marsh includes dyke, right-of-way, creeks and roads.

Project No.	Name of Marsh	Location	Acreage	
			Protected Marsh	Unprotected Marsh (Salt)
<u>NOVA SCOTIA</u>				
N. S. 2	Windsor Forks	Hants Co.	465	41
N. S. 3	Falmouth Great Dyke	Hants Co.	975	41
N. S. 4	Queen Anne	Anna. Co.	477	70
N. S. 5	Dugau	Anna. Co.	172	27
N. S. 6	Saulnierville	Digby Co.	73	-
N. S. 8	Grand Pre (including Wickwire Marsh)	Kings Co. (x)	2699	563
N. S. 11	Truro Dykeland Park	Col. Co.	878	36
N. S. 12	Victoria Diamond Jubilee	Col. Co.	527	75
N. S. 13	Dentiballis	Anna Co.	348	62
N. S. 14	Elderkin	Hants Co.	223	53
N. S. 15	Isgonish	Col. Co.	491	4
N. S. 16	Castle Frederick	Hants Co.	142	22
N. S. 17	Falmouth Village	Hants Co.	97	10
N. S. 18	Ryerson	Anna. Co.	86	7
N. S. 20	Advocate	Cumb. Co.	489	89
N. S. 23	Masstown	Col. Co.	986	285
N. S. 24	Noel Shore	Hants Co. (x)	223	396
N. S. 27	Newport Town	Hants Co.	338	68
N. S. 30	Allan River	Anna. Co.	122	248
N. S. 38	St. Croix	Hants Co.	248	16
N. S. 39	Round	Col. Co.	86	27
N. S. 40	Fort Belcher	Col. Co.	181	38
N. S. 41	Habitant	Kings Co.	677	-
N. S. 42	Amherst Point	Cumb. Co.	2249	302
N. S. 44	Converse	Cumb. Co.	811	26
N. S. 45	Barronsfield	Cumb. Co.	237	27
N. S. 46	River Hebert	Cumb. Co.	1052	164
N. S. 47	Selmah	Hants Co.	171	12
N. S. 48	Centre Burlington	Hants Co.	157	71
N. S. 49	Scotch Village	Hants Co.	89	2
N. S. 50	Herbert River	Hants Co.	74	5
N. S. 53	John Lusby	Cumb. Co.	818	1205
N. S. 54	Minudie	Cumb. Co.	2711	541
N. S. 55	Seaman	Cumb. Co.	425	20
N. S. 56	Wellington	Kings Co.	3105	23
N. S. 57	New Minas	Kings Co.	304	51
N. S. 61	Kennetcook	Hants Co.	169	22
N. S. 63	Maccan	Cumb. Co.	193	36

Project No.	Name of Marsh	Location	Acreage	
			Protected Marsh	Unprotected Marsh (Salt)
N. S. 64	Glenholme	Col. Co.	292	114
N. S. 65	Bishop Beckwith	Kings Co.	604	99
N. S. 66	Flemming	Col. Co.	277	27
N. S. 67	Onslow North River	Col. Co.	496	58
N. S. 68	Tregothic	Hants Co.	576	20
N. S. 69	Martock	Hants Co.	1478	42
N. S. 70	Chegoggin	Yar. Co.	425	-
N. S. 71	Goose Bay	Yar. Co.	230	5
N. S. 72	Horton	Kings Co. (x)	232	218
N. S. 75	Armstrong	Hants Co.	53	3
N. S. 76	Farnham Dyke	Kings Co.	192	26
N. S. 77	Princeport	Col. Co.	49	3
N. S. 78	Athol	Cumb. Co.	131	23
N. S. 79	Chambers	Hants Co.	61	1
N. S. 80	Starr's Point	Kings Co.	303	281
N. S. 81	Lower Truro	Col. Co.	399	25
N. S. 82	Kentville	Kings Co.	71	7
N. S. 85	Mantua Poplar Grove	Hants Co.	362	51
N. S. 86	Central Onslow	Colchester Co.	291	14
N. S. 87	Chignecto	Cumb. Co.	544	9
N. S. 88	Burlington	Hants Co.	106	34
N. S. 90	Old Barns	Col. Co.	160	18
N. S. 91	Belcher Street	Kings Co.	346	75
N. S. 92	Avonport	Kings Co.	249	174
N. S. 93	Greenhill	Hants Co.	53	36
N. S. 95	Fort Lawrence-Amherst	Cumb. Co.	3400	-
N. S. 97	Highland Village	Col. Co. (o)	-	246
N. S. 98	Stewiacke	Col. Co.	131	48
N. S. 100	Wentworth	Hants Co.	150	13
N. S. 101	Pereaux	Kings Co.	113	10
N. S. 102	Chebogue River	Yar. Co. (o)	-	1600
N. S. 103	Annapolis River Dam	Anna. Co.	2583	1717
N. S. 104	Sunny Slope	Hants Co.	17	2
N. S. 105	Belmont	Hants Co. (o)	-	147
N. S. 106	Fort Ellis	Col. Co.	179	41
N. S. 108	Argyle	Yar. Co. (o)	-	47
N. S. 109	Nappan River Dam	Cumb. Co. (x)	996	130
N. S. 111	Burntcoat	Hants Co.	37	-
N. S. 112	Rhynds Creek	Hants Co.	187	78
N. S. 113	Southside	Col. Co.	134	17
N. S. 114	Great Village	Col. Co. (o)	-	567
Total			39,475	10,711

NEW BRUNSWICK

N. B. 4	Allison	West Co.	197	15
N. B. 5	Westcock	West Co.	800	225
N. B. 6	Taylor Village	West Co.	444	105
N. B. 8	Coyle Landry	West Co.	305	37
N. B. 11	Belliveau Village	West Co.	191	15

Project No.	Name of Marsh	Location	Acreage	
			Protected Marsh	Unprotected Marsh (Salt)
N. B. 12	Pre d'en Haut	West Co.	113	28
N. B. 13	Dorchester	West Co.	1758	171
N. B. 14	Lower Coverdale	Albert Co.	149	15
N. B. 15	Middle Coverdale	Albert Co.	31	21
N. B. 16	Dixon Island	West Co.	330	70
N. B. 17	New Horton	Albert Co.	799	107
N. B. 18	Fox Creek	West Co.	96	13
N. B. 19	Beaumont	West Co.	207	33
N. B. 20	Gautreau Village	West Co.	209	21
N. B. 21	Memramcook West	West Co.	1105	123
N. B. 24	Aulac	West Co.	1957	534
N. B. 25	Dock	West Co.	52	4
N. B. 26	Dover	West Co.	43	9
N. B. 27	College Bridge	West Co.	873	178
N. B. 28	Upper Coverdale	Albert Co.	45	6
N. B. 30	Calkins	Albert Co.	227	23
N. B. 33	West Coverdale	Albert Co.	260	42
N. B. 36	Boundary Creek	West Co.	51	1
N. B. 37	Sackville	West Co.	473	590
N. B. 40	Woodpoint	West Co.	43	194
N. B. 41	Turtle Creek	Albert Co.	103	115
N. B. 43	Creek's	Albert Co.	99	-
N. B. 45	Chartersville	West Co.	348	33
N. B. 46	Wilson	West Co.	157	24
N. B. 47	Hillsboro	Albert Co.	955	82
N. B. 50	Black River	Saint John Co.	41	-
N. B. 51	Shepody River Dam	Albert Co.	5552	323
N. B. 54	Jones Creek	West Co.	51	15
N. B. 55	Missaguash	West Co.	333	-
N. B. 56	Tantramar River Dam	West Co. (x)	17,557 ^x	443
			^x includes 5497 acres of Class 4 and Peat	
		Total	35,954	3,615

PRINCE EDWARD ISLAND

P. E. I. 1	Johnson River	Queen's Co.	275	-
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B. - Non-Active Projects

Note: These projects are those which:

- (a) have been incorporated into larger projects.
- (b) were established for purposes of investigation.
- (c) were established for purposes of investigation at the request of the Provinces.
- (d) were incorporated by the Provinces who have since requested they be dropped.

(e) the Advisory Committee have recommended be dropped.

Acreages are indicated only for those projects included in (c) or (d) or (e) above.

Project No.	Name of Marsh	Location	Acreage
<u>NOVA SCOTIA</u>			
N.S. 1	Comeau	Anna. Co. (a)	
N.S. 7	Annapolis River Survey	Anna. Co. (b)	
N.S. 9	Woodworth	Anna. Co. (a)	
N.S. 10	Upper Belleisle	Anna. Co. (a)	
N.S. 19	Bridgetown	Anna. Co. (d) & (a)	
N.S. 21	Upper Nappan	Cumb. Co. (a)	
N.S. 22	Gaspereau River Survey	Kings Co.	
N.S. 25	Maitland	Hants Co. (d)	34 (No Survey)
N.S. 26	Stirling Brook	Hants Co. (e)	99
N.S. 28	Scott's Bay	Kings Co. (e)	71
N.S. 29	Pre Rond	Anna. Co. (a)	
N.S. 31	Fox Bow	Anna. Co. (a)	
N.S. 32	Mount Anne	Anna. Co. (a)	
N.S. 33	Windermere	Anna. Co. (a)	
N.S. 34	Moschelle	Anna. Co. (a)	
N.S. 35	Ricketson	Anna. Co. (a)	
N.S. 36	Rossette	Anna. Co. (a)	
N.S. 37	Walker	Anna. Co. (a)	
N.S. 43	Annapolis Royal Town	Anna. Co. (a)	
N.S. 51	Morse	Anna. Co. (a)	
N.S. 52	Rossway	Digby Co. (c)	718
N.S. 58	Granville Centre	Anna. Co. (a)	
N.S. 59	Brown Salt Pond	Yar. Co. (d)	277
N.S. 60	Morse Bishop	Anna. Co. (a)	
N.S. 62	McKay	Cumb. Co. (a)	
N.S. 73	Mill	Anna. Co. (a)	
N.S. 74	Tupperville	Anna. Co. (a)	
N.S. 83	Messenger	Anna. Co. (a)	
N.S. 84	Bartlett's Beach	Digby Co. (d)	284
N.S. 89	Cogmagun	Hants Co. (e)	637
N.S. 94	Mosherville	Hants Co. (d)	102
N.S. 96	Shipley	Cumb. Co. (a)	
N.S. 99	Upper Burlington	Hants Co. (e)	66
N.S. 107	Hicks	Cumb. Co. (e)	47
N.S. 110	Ripley	Cumb. Co. (a)	
Total			2,335

NEW BRUNSWICK

N.B. 1	Upper Dyke	Albert Co. (a)
N.B. 2	Germantown	Albert Co. (a)
N.B. 3	Tantramar West	West Co. (a)
N.B. 7	Hopewell Hill	Albert Co. (a)
N.B. 9	Harvey	Albert Co. (a)
N.B. 10	Shepody River Survey	Albert Co. (b)
N.B. 22	Tantramar River Survey	West Co. (b)

Project No.	Name of Marsh	Location	Acreage
N.B. 23	Memramcook River Survey	West Co. (b)	
N.B. 29	Log Lake	West Co. (a)	
N.B. 31	Baie Verte	West Co. (e)	488
N.B. 32	Salem	Albert Co. (d)	65
N.B. 34	Coverdale	Albert Co. (e)	59
N.B. 35	Waterside	Albert Co. (e)	684
N.B. 38	Rockland	West Co. (e)	234
N.B. 39	Chance Harbour	Saint John Co. (c)	25
N.B. 42	Jones	West Co. (d)	135
N.B. 44	Coles Island	West Co. (a)	
N.B. 48	McAlmon	Albert Co. (e)	67
N.B. 49	La Coupe	West Co. (a)	
N.B. 52	Little River	Saint John Co. (e)	130
N.B. 53	Great Marsh	West Co. (a)	
		Total	1.887

TOTAL BY PROVINCES

Protected	Active Projects		Non-Active Projects	Total
	Protected	Unprotected		
N.S.	39,475	10,711	2,335	52,521
N.B.	35,954	3,615	1,887	41,456
P.E.I.	275	-	-	275
	<u>75,704</u>	<u>14,326</u>	<u>4,222</u>	<u>94,252</u>

NEW BRUNSWICK

- (a) Albert Co.
- (a) Albert Co.
- (a) West Co.
- (a) Albert Co.
- (a) Albert Co.
- (b) Albert Co.
- (b) West Co.

APPENDIX II EXPENDITURES UNDER THE MARITIME MARSHLAND
REHABILITATION ACT

		<u>1949-1958</u>	<u>1958-1959</u>
Administration		\$ 402,101.57	\$ 41,896.58
Surveys and Engineering		1,419,310.64	122,065.06
Workshop and Construction Supervision		2,212,726.03	344,364.91
Construction and Maintenance of Projects and Special Surveys:			
Advocate Marsh	Nova Scotia	124,197.16	170.97
Allan River Marsh	" "	49,692.33	143.90
Amherst Point Marsh	" "	141,448.96	8,314.47
Annapolis Royal Town Marsh	" "	27,497.06	79.65
Annapolis River Survey	" "	22,282.40(1)	427,852.16(2)
Armstrong Marsh	" "	13,771.82	3,824.71
Argyle Marsh	" "	-	-
Athol Marsh	" "	18,399.96	340.65
Avonport Marsh	" "	33,831.24	61,415.26
Barronsfield Marsh	" "	72,004.50	2,989.18
Bartlett's Beach Marsh	" "	2,644.17	-
Belmont Marsh	" "	-	-
Belcher Street Marsh	" "	109,705.97	5,356.25
Bishop Beckwith Marsh	" "	166,429.40	5,875.46
Burlington Marsh	" "	39,928.30	3,220.23
Burntcoat Marsh	" "	-	14,419.36
Castle Frederick Marsh	" "	45,605.32	3,283.66
Central Onslow Marsh	" "	39,471.32	3,281.33
Centre Burlington Marsh	" "	32,540.61	4,044.72
Chambers Marsh	" "	15,273.25	109.54
Chegoggin Marsh	" "	30,666.53	1,640.88
Chignecto Marsh	" "	43,940.48	585.21
Comeau Marsh	" "	38,016.02	213.09
Converse Marsh	" "	131,695.62	1,229.02
Dentiballis Marsh	" "	98,175.61	3,521.98
Dugau Marsh	" "	24,648.92	4,264.73
Elderkin Marsh	" "	65,248.84	4,159.95
Falmouth Great Dyke Marsh	" "	116,209.55	13,400.45
Falmouth Village Marsh	" "	38,659.18	1,398.66
Farnham Dyke Marsh	" "	32,776.99	23.15
Flemming Marsh	" "	35,757.43	4,263.40
Fort Belcher Marsh	" "	52,272.30	3,086.78
Fort Ellis Marsh	" "	-	29,105.18
Fox Bow Marsh	" "	19,422.49	492.14
Fort Lawrence-Amherst Marsh	" "	61,095.60	22,630.11
Glenholme Marsh	" "	53,072.21	3,614.80
Grand Pre Marsh	" "	173,672.02	143,668.03
Goose Bay Marsh	" "	28,069.00	382.78
Granville Centre Marsh	" "	25,450.92	1,208.23
Greenhill Marsh	" "	24,506.79	978.14
Habitant Marsh	" "	16,900.10	3,334.88
Herbert River Marsh	" "	23,541.79	51.30
Horton Marsh	" "	7,312.22	63,287.76
Hicks Marsh	" "	-	-

- (1) Total expenditures were \$35,013.20 of which \$12,730.80 was refunded by the Province of Nova Scotia.
- (2) Total expenditures were \$672,339.11 of which \$244,486.95 was refuned by the Province of Nova Scotia.

Construction and Maintenance of Projects,
and Special Surveys (Cont'd):

		1949-1958	1958-1959
Isgonish Marsh	Nova Scotia	174,307.93(3)	245.28
John Lusby Marsh	" "	116,580.12	21,493.53
Kennetcook Marsh	" "	46,514.16	1,962.33
Kentville Marsh	" "	15,311.61	176.95
Lower Truro Marsh	" "	52,870.49	4,044.47
Maccan Marsh	" "	37,604.56	1,530.14
Mantua Poplar Grove Marsh	" "	73,463.65	6,329.54
Martock Marsh	" "	153,478.29	4,118.91
McKay Marsh	" "	17,162.90	3.04
Masstown Marsh	" "	169,487.83	6,414.61
Messenger Marsh	" "	2,670.11	409.30
Mill Marsh	" "	6,197.15	258.65
Minudie Marsh	" "	128,149.05	5,322.16
Morse Marsh	" "	3,084.47	992.83
Morse Bishop Marsh	" "	1,303.43	1,239.28
Moschelle Marsh	" "	28,719.68	-
Mount Anne Marsh	" "	58,255.05	1,819.01
Nappan River Dam	" "	-	60,031.66(4)
New Minas Marsh	" "	92,748.05	715.24
Newport Town Marsh	" "	62,101.64	7,990.45
Noel Shore Marsh	" "	121,583.48	8,416.52
Old Barns Marsh	" "	29,762.29	8,425.00
Onslow North River Marsh	" "	61,439.32	4,200.13
Pre Rond Marsh	" "	7,829.26	983.85
Princeport Marsh	" "	9,924.03	67.91
Pereaux Marsh	" "	16,435.87	4,750.64
Queen Anne Marsh	" "	166,116.60	374.13
Ripley Marsh	" "	-	-
Ricketson Marsh	" "	1,180.80	802.19
River Hebert Marsh	" "	229,863.87	7,749.14
Rosette Marsh	" "	1,666.79	803.88
Round Marsh	" "	34,566.07	104.21
Ryerson Marsh	" "	45,557.75	4,744.52
Rhynds Creek Marsh	" "	-	33,533.12
Saulnierville Marsh	" "	7,111.98	10.35
Scotch Village Marsh	" "	16,818.85	249.46
Seaman Marsh	" "	42,949.50	1,775.11
Selmah Marsh	" "	25,787.69	1,390.04
Shipley Marsh	" "	1,595.60	2,997.65
Southside Marsh	" "	-	21,679.32
St. Croix Marsh	" "	85,916.41	2,105.32
Starr's Point Marsh	" "	100,401.17	4,029.32
Stewiacke Marsh	" "	25,065.88	2,088.28
Sunny Slope Marsh	" "	1,276.09	7,497.33
Tregothic Marsh	" "	46,862.86	451.40
Truro Dykeland Park Marsh	" "	106,198.76	4,324.08
Tupperville Marsh	" "	16,610.85	1,246.85
Upper Belleisle Marsh	" "	31,569.83	320.15
Upper Nappan Marsh	" "	53,234.93	1,622.04
Victoria Diamond Jubilee Marsh	" "	79,527.90	3,206.10
Walker Marsh	" "	3,639.31	249.30
Wellington Marsh	" "	90,262.21	2,402.42

(3) This was a joint project with the Province of Nova Scotia. Of this amount \$56,821.10 was refunded by the Province and in addition to it expenditures of \$46,745.42 were made, which amount was also refunded. Total Provincial contribution was \$103,566.82.

(4) Of this amount \$7,503.96 was recovered from the Province of Nova Scotia because the structure, when completed, will serve as a river crossing and thus replace a bridge.

Construction and Maintenance of Projects
and Special Surveys (Cont'd):

		1949-1958	1958-1959
Windermere Marsh	Nova Scotia	48,841.48	129.35
Windsor Forks Marsh	" "	64,965.98	9,754.02
Woodworth Marsh	" "	21,987.44	1,089.97
Wentworth Marsh	" "	16,899.32	1,118.43
Sub-total for Nova Scotia Projects		4,976,344.32	1,121,051.06
Allison Marsh	New Brunswick	23,757.60	-
Aulac Marsh	" "	241,786.47	14,239.96
Baie Verte Marsh	" "	923.03	-
Beaumont Marsh	" "	63,417.62	2,289.45
Belliveau Village Marsh	" "	21,884.35	1,758.71
Black River Marsh	" "	7,481.65	6,392.75
Boundary Creek Marsh	" "	4,268.10	-
Calkins Marsh	" "	103,144.60	1,443.43
Chartersville Marsh	" "	49,800.05	113.40
Coles Island Marsh	" "	46,142.68	3,717.08
College Bridge Marsh	" "	78,986.66	8,513.21
Coverdale Marsh	" "	19.31	-
Coyle Landry Marsh	" "	47,066.21	92.65
Creeks Marsh	" "	10,023.96	261.65
Dixon Island Marsh	" "	65,488.91	5,931.62
Dock Marsh	" "	13,827.49	2,998.06
Dorchester Marsh	" "	276,981.07	2,061.55
Dover Marsh	" "	12,726.03	241.62
Fox Creek Marsh	" "	32,083.13	1,359.11
Great Marsh	" "	5,761.39	598.68
Gautreau Village Marsh	" "	75,148.58	17,387.33
Germantown Marsh	" "	11,909.61	-
Hillsboro Marsh	" "	136,154.64	16,905.17
Hopewell Hill Marsh	" "	72,406.13	-
Jones Creek Marsh	" "	12,338.16	195.15
Log Lake Marsh	" "	44,402.46	3,268.24
Lower Coverdale Marsh	" "	39,066.70	9,780.86
Memramcook West Marsh	" "	173,885.67	6,784.06
Middle Coverdale Marsh	" "	14,860.44	98.61
Missaguash Marsh	" "	11,513.58	10.00
New Horton Marsh	" "	91,977.63	3,341.88
Pre D'En Haut Marsh	" "	38,053.37	2,498.14
Sackville Marsh	" "	56,852.49	2,960.08
Shepody River Dam	" "	1,531,891.95	6,489.34
Shepody River Survey	" "	26,334.17	-
Tantramar River Survey	" "	23,201.48	-
Tantramar River Dam	" "	470.13(5)	298,704.58(5)
Tantramar West Marsh	" "	32,801.29	9,822.18
Taylor Village Marsh	" "	81,912.18	7,415.56

(5) Twenty-two and one half per cent of these amounts (a total of \$67,314.31) will be refunded by the Province of New Brunswick since the structure will serve as a river crossing and thus replace a bridge.

Construction and Maintenance of Projects
and Special Surveys (Cont'd):

		1949-1958	1958-1959
Turtle Creek Marsh	New Brunswick	24,405.52	1,456.90
Upper Coverdale Marsh	" "	16,873.62	-
Upper Dyke Marsh	" "	11,149.33	-
Westcock Marsh	" "	150,728.12	9,857.71
West Coverdale Marsh	" "	60,689.82	6,885.06
Wilson Marsh	" "	28,119.51	426.75
Woodpoint Marsh	" "	811.86	1,070.74
Sub-Total for New Brunswick projects			
		<u>\$ 3,873,546.05</u>	<u>457,371.27</u>
Johnson River Marsh, Prince Edward Island and Sub-total for Prince Edward Island Projects ...		<u>19,712.52</u>	
Total Expenditure for Projects apart from Administration, engineering and supervision		<u>8,869,602.89</u>	<u>1,578,422.33</u>
Total expenditure		<u>12,903,741.13</u>	<u>2,086,748.88</u>

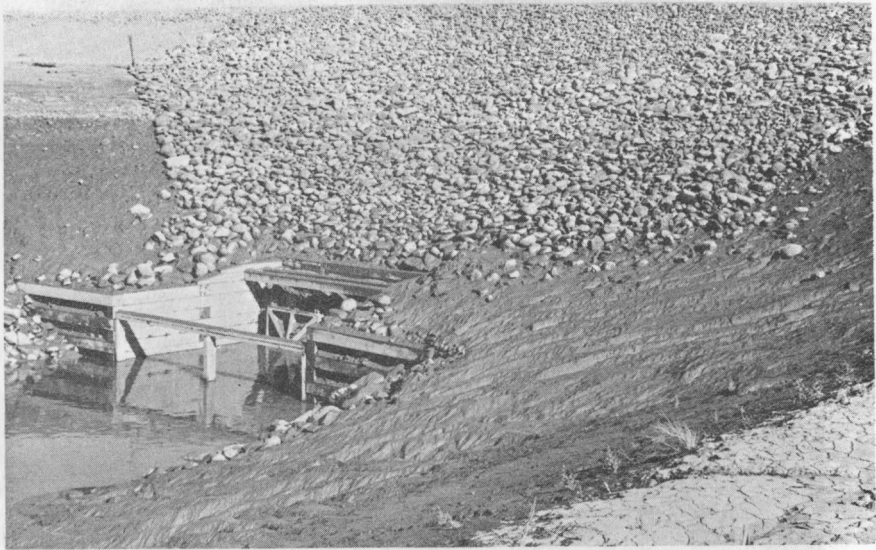


Figure 1.-- Tidal face of the LaPlanche River Aboiteau, the only protective work for the Fort Lawrence-Amherst Marsh, Cumberland Co., N.S. The sluice is a two-barrel type 5ft. X 5ft., with cable hung steel gates.

Photo (95-005) - Aug. 24/58.

N.S. 95/10



Figure 2.-- Aboiteau #1, Wellington Marsh, Kings Co., N.S. Asbestos bonded steel corrugated pipes were threaded through the old sluice and extended downstream to allow placement of a stable rock face. New inlet cribs and emergency shut-off gates were also constructed.

(Photo 56-021) - April 21/59

N.S. 56/58



Figure 3.-- Looking along the top of the dyke protecting John Lusby Marsh, Co., N.S. The photo was taken at the peak of an extreme high tide, during a stormy period. Considerable erosion of the dyke face resulted indicating a need for dyke facing.

(Photo 53-001) - Sept. 15/58
N.S. 53 // 47

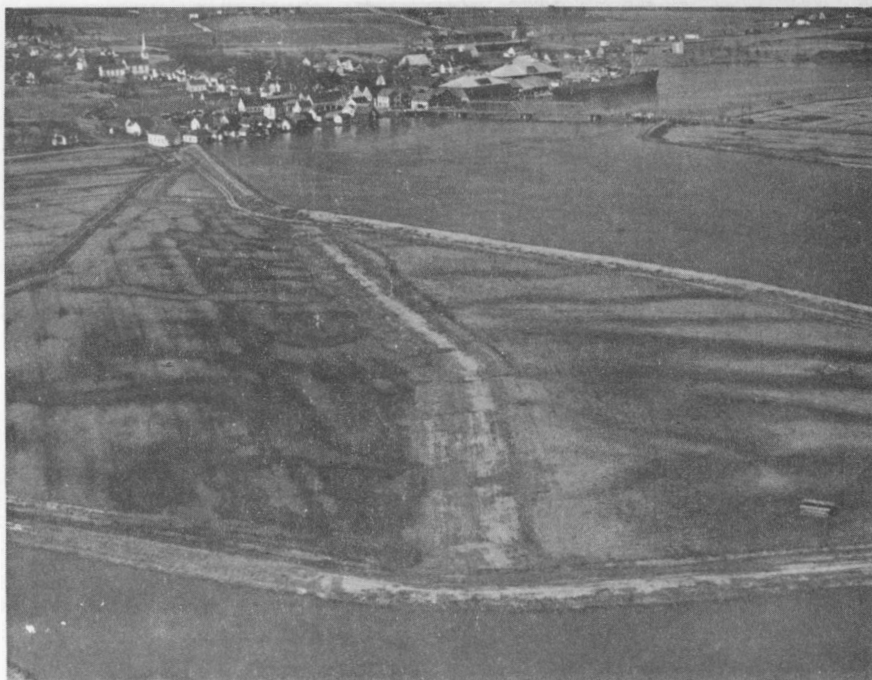


Figure 4.-- Belcher Street Marsh, Kings Co., N.S. Aerial photo taken during the spring tides, looking north to Port Williams. The main highway to Port Williams is protected by the dyke in the right background.

(Photo 6-030) - April 6/58
N.S. 90 // 2

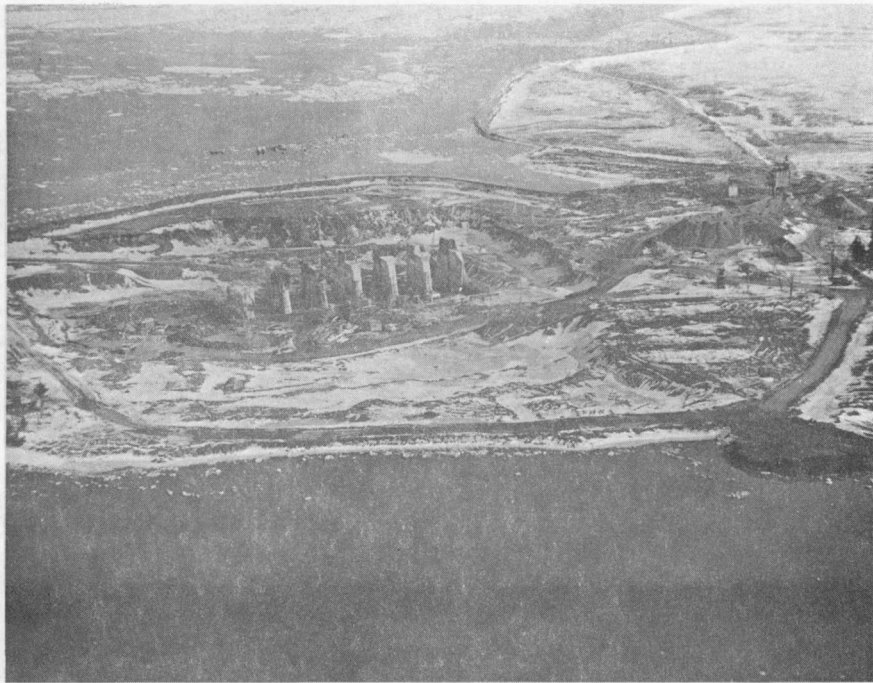


Figure 5.-- Annapolis River Dam, Annapolis Co., N.S. Aerial view, looking upstream along the line of the eventual channel. Construction is proceeding on the concrete by-pass structures. The main dam is to be to the left, out of the photo.

(Photo 103-268) - Feb. 27/59

N.S. 103/9

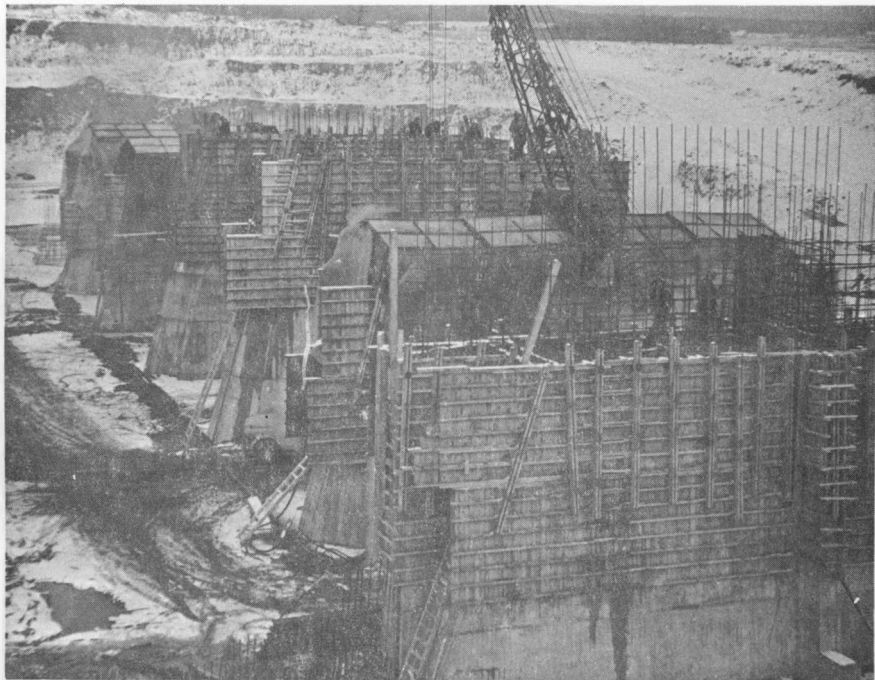


Figure 6.-- Ground view of the concrete piers seen in Figure 5. The tops of three of the piers are covered to allow steam heating of the curing concrete during the cold weather.

(Photo 103-207) - Jan. 19/59.

N.S. 103/8



Figure 7.-- Nappan River Dam, Cumberland Co., N.S. Excavation in progress for a two barrel 10ft. X 12½ft. concrete sluice. A rock fill causeway will replace the bridge at lower left.

(Photo 109-061) - Jan. 19/59.

N.S. 109/11



Figure 8.-- Nappan River Dam. Preparing leads for driving pile, necessary to support the reinforced concrete sluice.

(Photo 109-089) - March 25/59.

N.S. 109/12



Figure 9.-- Tantramar River Dam, Westmorland Co., N.B. Aerial view of the project in the early stages of excavation, looking upstream. A corner of the bridge which will be replaced can be seen at lower right. The initial dam fill extends into the river at center right.

(Photo 56-061) - Aug. 20/58.
NB. 56/31

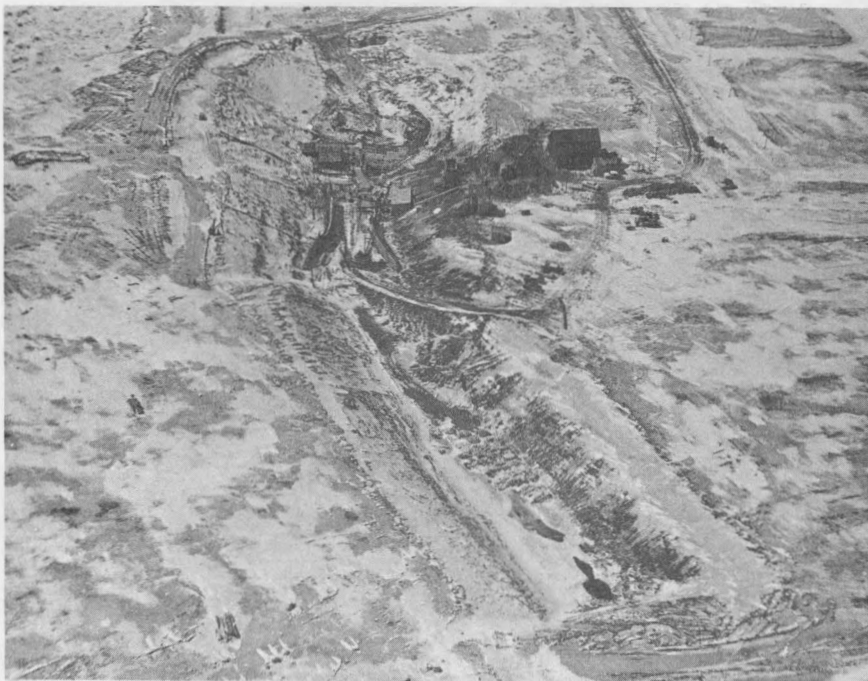


Figure 10.-- Aerial view taken in the opposite direction from that of Figure 9. Concrete operations are continuing under cover as part of the winter works program.

(Photo 56-356) - March 11/59.
NB. 56/32