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# PFFRA

ANNUAL REPORT

1973 / 1974



Regional Economic Expansion  
Expansion Économique Régionale

PRAIRIE FARM  
REHABILITATION  
AND RELATED  
ACTIVITIES

**ANNUAL REPORT**  
**ON THE PRAIRIE FARM REHABILITATION ADMINISTRATION**  
**1973-1974**

**DEPARTMENT OF REGIONAL ECONOMIC EXPANSION**

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## INTRODUCTION

The Prairie Farm Rehabilitation Act was passed by Parliament in 1935 to assist in the reclamation of agricultural lands in Manitoba, Saskatchewan and Alberta which were seriously affected by drought and soil drifting. Subsequent amendments to the Act widened the scope of PFRA activities, extended indefinitely the life of the original legislation, and relaxed the PFRA boundaries to include all agricultural areas of the three prairie provinces.

Water conservation and development, and land use adjustment, have long been major concerns of PFRA; its activities have included the development of large-scale irrigation, reclamation, and community pasture operations. These activities continued during 1973-74, while a significant addition to the water development program was the implementation of a schedule of assistance in the development of wells.

In addition to operating its long-standing programs, PFRA was engaged in activities under Agricultural Service Centres Agreements negotiated with Manitoba, Saskatchewan and Alberta for the improvement or extension of sewer and water facilities in designated centres. The cost of such projects is being shared, with Canada contributing half the cost and providing the balance in the form of loans to the provinces. PFRA is responsible for implementation and supervision of construction of the projects.

Other events of significance in the year under review included major construction activity on irrigation works in Alberta and the transfer to provincial jurisdiction of the St. Mary and Bow River Irrigation Projects, both under terms of the Alberta Irrigation Agreement signed on March 29, 1973.

The following is a summary of activities of the Prairie Farm Rehabilitation Administration for the year ending March 31, 1974.



## LAND USE SERVICE

The Land Use Service originated in 1937 when an amendment to the Prairie Farm Rehabilitation Act included the removal of submarginal land from cereal crop production. Such land was to be regrassed and otherwise developed for grazing.

PFRA is now operating 95 community pastures, including the Suffield Pasture in Alberta, which has been operated intermittently since 1961. One new pasture near Roblin, Manitoba, was under construction in 1973.

### PASTURE OPERATIONS

Acreage of operating pastures in the 1973-74 fiscal year totalled 2,417,650. Established pastures carried 233,997 cattle, an increase of 18,099 over the previous year. These animals were owned by 5,872 patrons. Grass and water conditions were generally satisfactory. The breeding service required the use of 3,836 bulls including 3,312 owned by PFRA; the remainder were rented. A total of 101,493 cows were serviced.

### Grazing Fees

Pasture and breeding fees were increased effective March 1973. In lieu of taxes, local governments continued to receive one cent per day for each adult animal grazed. The new rate schedule is:

Cattle - 8¢ per day (including 1¢ tax levy)  
Calves - \$4.50 per head (of current season)  
Horses - 10¢ per day (including 1¢ tax levy)  
Colts - \$6.50 per head (of current season)  
Sheep - 2¢ per day (including 0.3¢ tax levy)  
Breeding Service - \$7.50 per cow

Minimum grazing fee per head per season: cattle \$7, horses \$9.

Fees for grazing in pastures on Indian Reserves are the same as regular pasture fees; however, one third of grazing revenue is turned over to the Indian Bands involved. In 1973, 15 Bands received \$62,562 as their share of revenue.

### Haying

Hay harvested on pastures and irrigation projects associated with the

pasture program amounted to 6,094 tons. This hay is used for winter feeding of PFRA bulls.

#### Pasture Construction

Approximately 25 miles of fence was constructed and 235 miles rebuilt. The pastures are now enclosed or divided by 6,360 miles of fence. Four buildings were constructed and six repaired during the year.

#### Pasture Improvement

Water development activity consisted of the construction or enlargement of 46 dugouts, the drilling of four wells, the relocation of 18 windmills, the development of nine springs, and the installation of two water control structures.

There has been an extensive land improvement program to increase pasture carrying capacity; land clearing on 10,552 acres is at various stages of completion, but with most of it completed. In addition, 6,573 acres were cultivated and seeded, 2,225 acres cultivated only, 39,790 acres sprayed for weed and brush control, and 13,620 acres sprayed for pest control.

#### Irrigation

Work continued on extensions to the Val Marie and Bitter Lake Irrigation Projects, together with replacement and repair of water control structures on other irrigation projects associated with the community pastures program. Development work also continued on a 160-acre forage production project at Meeting Lake. These projects produce winter feed supply for PFRA bulls.

## WATER DEVELOPMENT SERVICE

Through its five divisions, the Water Development Service provides technical and financial assistance in the development of land and water resources for agricultural purposes, manages certain irrigation projects in Saskatchewan and Alberta, and maintains a tree nursery to produce and distribute shelterbelt material to rural users.

Technical and financial assistance is provided for farm dugouts, stockwatering dams, irrigation works, and wells; the latter were added to the program at the beginning of the fiscal year under review. Broader services are provided for community water projects, frequently involving complete engineering and substantial financial assistance.

In southwest Saskatchewan, PFRA has constructed water storage facilities with a variety of uses including the irrigation of 40,000 acres of forage crops which produce winter feed for the large livestock population of the area. PFRA continues to maintain and operate the storage works as well as six of the irrigation projects containing 25,000 irrigated acres.

PFRA continued to operate the Bow River Irrigation Project and its 125,000 irrigated acres until March 31, 1974. At that time, by agreement, it was transferred to the Province of Alberta.

The PFRA Tree Nursery at Indian Head, Saskatchewan, again produced and distributed tree seedlings and cuttings for farmstead and field shelterbelt plantings in the Prairie Provinces.

### WATER DEVELOPMENT DIVISION

Spring runoff in 1973 was generally light, leaving some storages below full supply level. However, heavy rains later in the spring improved the situation in many areas.

Dugout construction increased by 70 per cent over last year to nearly 2,600. The program in Manitoba was of special significance in that it increased 147 per cent. The number of stockwatering dams and individual irrigation projects in the three provinces decreased slightly.

The new farm wells program was well received in its first year, with financial assistance paid on 4,492 completed wells.



Fifty small community projects were authorized and 41 constructed, paralleling last year's activity.

The table on page 7 indicates field services provided in 1973-74.

#### CONSTRUCTION OF LARGE WATER STORAGE PROJECTS

No large community projects were constructed by the Water Development Division. However, negotiations with Manitoba were completed and cost-sharing agreements signed for construction of the Vermilion and McEachern Dams. Construction is scheduled to begin in 1974-75.

#### TECHNICAL SERVICES TO OTHER AGENCIES

PFRA provided technical services to the Department of Indian Affairs and Northern Development and to the provincial Water Rights agencies. Services were also provided to rural water development programs operating in each of the three Prairie Provinces.

#### IRRIGATION PROJECTS (Developed, operated and maintained by PFRA)

##### Rehabilitation, Southwest Saskatchewan

PFRA has built and operates 27 reservoirs from which water is available for the irrigation of 40,000 acres of land in southwest Saskatchewan. Six PFRA-managed projects contain 25,000 acres of irrigated land, with the remainder under provincial or private control.

Hay production on PFRA projects was estimated to be 41,000 tons. This was produced by 541 farmers owning 56,000 cattle, an increase of about 2,150, and 2,900 sheep, a slight decrease from the previous year.

PFRA provided technical services for land levelling of 1,072 acres on these projects. Levelling costs are paid by the farmer or included in the sale price of the land.

##### Bow River Irrigation Project

Negotiations between Canada and Alberta over the past three years resulted in the formal turnover of the Bow River Irrigation Project to Alberta as of March 31, 1974. Many of the project activities during the year were directed to this imminent change in administration.

An implementation board, consisting of three officers from PFRA and three from Alberta, monitored the transfer and gave particular attention to the staff on the project. On April 1, 1973, there were 82 full time and nine casual employees on the project. During the year most of these were either placed in positions with the new irrigation district or with the federal or provincial governments.

SERVICES PROVIDED BY WATER DEVELOPMENT DIVISION

Fiscal Year 1973-74 March 31, 1974

Agency	Dugout		S.W.D.				Irrigation				Drainage			Community Projects					Wells		Other Services	Meetings Attended	Total Services To Date
	Technical Investigation	Final Inspection	Technical Investigation	Survey	Plan	Final Inspection	Technical Investigation	Survey	Plan	Final Inspection	Technical Investigation	Survey	Plan	Technical Investigation	Survey	Plan	Report	Final Inspection	Technical Investigation	Final Inspection			
PFRA Program	2349	2794	769	334	285	140	725	260	206	94	95	15	2	633	26	26	33	41	1145	4492	873		15,835
Federal Request	8		8	2	1	2	1		2		2	1		1					1		23		52
Provincial Request	6	4	103	43	33	6	93	17	27	5	42	12	11	43	5	1	1		7		159		618
Municipal Rural-Urban	2						3	4			2			11	3	6	2				17		50
Other Groups or Individuals	3										6	2									12		23
TOTAL	2368	2798	880	379	319	148	822	281	235	99	147	30	13	688	34	33	36	41	1153	4492	1084	498	16,578

Total Capital Expenditure on Individual Projects \$2,017,626.93

Total Capital Expenditure on Small Community Projects \$ 201,612.66

The operation and maintenance program was continued including the reconstruction of the East Arrowwood Syphon which had been started under a 1972 contract. Reconstruction of the Carseland Weir was also completed early in 1973. A number of small structures were replaced during the year as part of a routine program.

There were more than the normal number of land transactions involving project farms during the year due to the impending change of administration, generally better financial capability on the part of farmers, and an aggressive program of collecting accounts.

Farms on the project continue to increase in size, and with a higher potential income from agricultural commodities there is keen interest in land levelling and sprinkler irrigation. While livestock production is still a basic source of income in the irrigation district, there have been marketing difficulties during the past year. Summer grazing for livestock is also limited, particularly as a result of the dry conditions which have prevailed over the past year or more. Field crop production was generally good and there were more than 13,000 acres in specialty crops, the major acreage being in peas, potatoes and sugar beets.

The project will now operate as an independent district under a board of directors which was elected in March 1974. The new district will include the area formerly managed by PFRA together with the Enchant district which had previously operated independently. The diversion works at Carseland and the main canal system, including Lake McGregor, Travers and Little Bow Reservoirs, will be administered by the Alberta Department of Environment. The irrigation district will manage and operate the distribution system serving an area of about 125,000 acres. Alberta allocated to the district \$1,700,000 from moneys received from Canada under the Irrigation Projects Agreement, along with the unsold farm lands, the existing agreements for sale and the inventory of equipment and buildings.

#### DEMONSTRATION FARM

The primary role of the 155-acre Demonstration Farm at Outlook, Saskatchewan, has changed during the last few years. Its operations are being recognized to an increasing extent by people involved not only in irrigated farming, but also in research, education, tourism, government and industry.

The farm demonstrates and evaluates available alternatives for crop production and land use under irrigation. The results are publicized to allow individual decisions to be made after taking into account such factors as meteorological data, labour and equipment requirements, cultural problems and marketing conditions.

Demonstrations undertaken in 1973, in co-operation with provincial agencies and the University of Saskatchewan, have shown that high yields of cabbage and peas can be grown on irrigated land. Other vegetable crops such as broccoli, cauliflower and snapbeans have not produced satisfactorily; sweet corn and onions have shown high quality and acceptable yields when weed control and labor requirements can be met.

As a complement to the previously established drylot cow-calf operation, an irrigated pasture project was introduced which developed valuable information on rotational grazing under conditions prevailing in this area.

Eleven tour groups visited the farm during the year. There were also visits from tourists, research and university personnel, local farmers, agri-business representatives, and members of 4-H clubs.

Detailed information on methods used, cost factors involved and results obtained on all of the farm operations are available to interested parties.

#### CONSTRUCTION, EQUIPMENT AND SERVICES DIVISION

This division provides personnel and equipment for construction and repair of PFRA projects. In the 1973-74 fiscal year, the Field Construction Section completed 139 jobs valued at \$535,000, an increase of 10 jobs and \$133,500 over the previous year.

Major activity included 50 repair and renovation assignments on the Southwest Saskatchewan Irrigation Projects, with the work valued at \$303,000. On the Val Marie and West Val Marie Projects, more than 40,000 feet of canals and laterals were reconstructed and 26 water control structures replaced. Three and a half miles of the inlet canal to the Cypress Lake Reservoir were renovated and a second outlet constructed in the West dam. Other work involved levelling for irrigation, concrete and timber structure replacements, pipe installations and painting of PFRA buildings.

The Moose Jaw Service Depot carried out 2,568 assignments with a value of \$627,000. These included repair and modification of equipment, vehicle overhaul, and fabrication of materials for community pasture and field construction operations.

The formal transfer of the Safety Section to Personnel Division has been authorized. During 1973-74, this activity was still under the direction of the superintendent of this division. Lost-time accidents decreased from 54 to 46, and lost days from 939 to 606 compared to the previous year.

#### TREE NURSERY

Since its establishment in 1903, the Nursery has supplied more than

377,000,000 trees, mainly for farm planting. Demands for seedlings and cuttings increased by 1,000,000 plants (or 22 per cent) over the previous year. This increased demand has stimulated plans to step up Nursery production in 1974. Additional applied research has been undertaken to resolve problems of production and shelterbelt maintenance.

Spring packing and shipping of 5,000,000 trees to 7,400 planters in Manitoba, Saskatchewan and Alberta began on April 9, the earliest date on record, and continued until April 26. The efficiency of this operation was significantly increased by the use of plastic wrapping material instead of burlap.

Trees supplied for farm shelterbelt plantings increased to close to 3,000,000 shipped to 6,395 planters, the largest increase in demand coming from Manitoba. Requests from municipalities decreased slightly, while those from the provincial governments doubled. Trees continued to be supplied to federal and non-commercial agencies including churches, hospitals and youth groups.

Inspection of tree planting sites to verify the eligibility of applicants and to provide technical information on care and maintenance of shelterbelts was reinstated with the help of PFRA Water Development field office personnel and their.

Car counters recorded that visitors in more than 9,000 automobiles attended the nursery during the summer of 1973. Tours were provided to six provincial and international organizations. Thousands of enquiries from farmers, visitors, provincial and federal agencies, foreign nurseries, and the general public were processed.

## ENGINEERING SERVICE

The PFRA Engineering Service is engaged in the investigation, planning, design, construction and maintenance of various works pertaining to water development, irrigation and infrastructure programs in Manitoba, Saskatchewan and Alberta. It provides technical assistance to other PFRA offices responsible for the operation and maintenance of projects in which the federal government retains an interest, and to several outside agencies engaged in planning and implementing major works in large river basin developments of interprovincial or international scope. These agencies include the International Joint Commission, the Canadian International Development Agency and the Prairie Provinces Water Board.

Specialized engineering units are maintained to provide basic services in the fields of hydrology, design, geology, air surveys, soil mechanics and materials, construction, planning and investigation.

Project offices are located at Lethbridge and Cutbank to operate and maintain the St. Mary Irrigation Project and the South Saskatchewan River Project respectively. Three regional offices are established at Winnipeg, Regina and Calgary, and a regional sub-office at Swift Current. The Soil Mechanics and Materials Division is located on the University of Saskatchewan campus in Saskatoon.

The project offices supervise construction, maintenance and operation of the works of large projects. The regional offices direct the field investigations and the construction of projects ranging from small water development projects to the larger community water storage works that involve provincial participation. The technical divisions do the detailed planning, designing and other engineering work necessary for implementing projects.

### MAJOR PROJECTS

#### South Saskatchewan River Project

The two main structures on this project are the Gardiner and Qu'Appelle River Dams. Gardiner Dam is the largest earthfill dam in Canada, and is situated mid-way between the towns of Outlook and Elbow. The two dams create an 8,000,000 acre-foot capacity reservoir that provides water for irrigation, power production, and for industrial, domestic and recreational uses. The cost of construction was approximately \$120,000,000, of which Canada paid \$95,000,000 and Saskatchewan \$25,000,000.

Under a 1958 federal-provincial agreement, Canada was responsible for the planning, design and construction of the works necessary to create the reservoir, and continues to be responsible for the maintenance of the structures. Making the most efficient use of the water, through development of the appropriate works, is a provincial responsibility.

During 1973-74, PFRA continued observations to assess the performance of the structures and carried out maintenance of the works and property as required. Readings were also taken throughout the year at piezometer installations in the Riverhurst area for the Inland Waters Branch of the Department of the Environment, and at piezometer and slope hole installations in the vicinity of the Coteau Creek Generating Station for the Saskatchewan Power Corporation.

### St. Mary Irrigation Project

This project involves the planning and construction of works to irrigate nearly 500,000 acres in the Lethbridge-Medicine Hat area of southern Alberta.

Construction of headwater storage works began in 1946. The construction of all these works and interconnecting canals has been completed. Distribution works to serve 304,000 acres by gravity have been constructed.

The total capital expenditures by the governments involved, from 1946 to date, are approximately:

Government of Canada (PFRA)	\$23,434,000
Province of Alberta	\$22,467,000

Engineering staff was employed on the finalization of the "as constructed" plans of the recently completed Carseland Dam on the Bow River Project.

Field staff began surveys and investigations in regard to the replacement or renovation of the Brooks Aqueduct and the Bassano Dam under the Alberta Irrigation Rehabilitation Program.

In addition to carrying out normal operation and maintenance activities, the St. Mary Project office completed major repairs to the stilling basin of Ridge Reservoir outlet. Works for delivering water to areas of the Blood Indian Reserve were constructed, and the Carseland construction camp moved to Brooks.

Generally dry conditions prevailed throughout the season, resulting in a record of nearly 490,000 acre feet of water being delivered.

At the close of the fiscal year the federal government ceased to be responsible for the St. Mary Project, which reverted to the jurisdiction of

the Alberta Department of Environment. This brought to a close 36 years of continuous involvement by PFRA in the development and operation of this project.

#### REGIONAL OFFICES

The regional offices of the Engineering Service at Winnipeg, Regina and Calgary, and the sub-office at Swift Current, carried out diverse engineering functions including field surveys and investigations, office design and cost studies, construction supervision, and writing of preliminary or construction reports for a variety of projects during the year. In addition the regional offices provided planning and supervision of repairs or renovations to existing projects. Engineering assistance was rendered to other divisions of PFRA, to the Department of Regional Economic Expansion, the Prairie Provinces Water Board, and to various other federal and provincial departments.

#### Manitoba

Repairs to the Assiniboine River dikes were more extensive than usual due to erosion in three areas. Weed spraying and willow planting on the dikes continued.

Final designs for McEachern Dam were completed, as was a hydrology study of Tobacco Creek. Recommendations for the physical nature of the proposed Vermilion Dam were put forward.

Under the Agricultural Service Centres Agreement program, engineering activity was extensive with construction proceeding at Beausejour, Brandon, Dauphin, Minnedosa, Selkirk and Winkler.

Extensive engineering effort was required for infrastructure construction on The Pas Indian Reserve, the Roseau River study, the Pequis Indian Reserve drainage, Wilson Creek Experimental Watershed and smaller miscellaneous projects.

Maintenance and repair activity on the Shellmouth Dam was continued.

#### Saskatchewan

As part of the Agricultural Service Centres program, engineering investigations and field surveys in 15 communities and supervision for sewer and water projects in two others were undertaken.

Contracts covering the construction of community reservoirs at Elfros and Semans were administered. Spillway modifications were undertaken on the Sinfield Creek, Fahlman Creek and Cedoux Dams. Reservoir development proposals were investigated for the communities of Kipling and Ceylon, and water supply studies were begun for Kerrobert and Gull Lake.



Technical assistance was provided during the construction of sewage disposal facilities at Black Lake and Fond du Lac, and during construction of a spray-freeze desalinization project at Frontier.

Engineering and hydrologic investigations were completed and a report submitted on the Wascana Creek flood study.

Detailed topographic surveys were undertaken on the Muscowpetung and Pasqua Indian Reserves.

The Swift Current district office provided engineering supervision for the operation and maintenance of PFRA controlled irrigation projects in southwest Saskatchewan. About 1,410 acres were levelled and border dike systems were laid out around 1,670 acres. Surveys were undertaken to collect information for several proposed renovations. More than 36 miles of supply canals and 11 miles of drains were surveyed during the year. Supervision and layout of construction for an additional outlet conduit at the west end of Cypress Lake was completed. Eighty-four small control structures were placed through the irrigation projects and 900 lineal feet of culvert installed.

The PFRA Tree Nursery requested engineering assistance for various projects at Indian Head throughout the year.

Operations associated with the control and distribution of water in the Qu'Appelle Valley were continued.

#### Alberta

Work was completed on the replacement of the 8½-foot diameter East Arrowwood Syphon, thus virtually finishing renovation of the Bow River Irrigation Project works and again permitting water diversion from the Bow River to Lake McGregor.

As part of a detailed hydraulic study, water surface profiles and cross sections were taken along 26 miles of canal.

Work has begun to replace the Western Irrigation District headworks on the Bow River in Calgary. Site surveys were carried out and the first contract awarded for construction of the canal headgates and sluiceway.

Investigations were continued on the Carleton Creek Project; the Elbow River near Bragg Creek was surveyed; investigations and design studies were carried out on several other small projects: Balzac, Uland Reservoir, Grett Lake and Granum. A total of 232 plans of water storage and irrigation projects were checked prior to submission to the Water Resources Branch for licensing.

Inspections were conducted into the performance of the Sawridge Creek Flood Control Project. Field surveys in the Peace-Athabasca Delta region were performed in connection with a project to control falling water levels in Lake Athabasca.

Under the Agricultural Service Centres Agreement, contract plans were prepared for Coaldale and Leduc.

#### TECHNICAL DIVISIONS

##### Design

Final designs, contract drawings and specifications were completed for the Western Irrigation District headworks. Contracts were tendered and awarded for the construction of the headgate structure and the supply of reinforcing steel for the weir structure. A contract for the construction of the weir and sluiceway was also tendered. Drawings and specifications were prepared and a contract awarded for the construction of a cofferdam and access road for the headworks. Detailed designs, drawings and specifications proceeded for the supply and installation of gates, hoists and equipment for the headworks.

Feasibility studies and cost estimates were completed on a number of alternative proposals for the Brooks Aqueduct replacement. Final designs, contract drawings and specifications were brought to the tender stage for a cast-in-place, reinforced concrete, syphon structure to replace the Brooks Aqueduct.

Preliminary designs and cost estimates were prepared on proposals for an earth dam and chute spillway to replace the existing Bassano Dam. Office hydraulic studies were conducted and structural data prepared for stability studies connected with the proposed rehabilitation of the existing works. Information was also provided to consultants for use in feasibility studies on rehabilitation.

Shop drawings were checked and approved for Carseland Dam gates and hoists for development of "as constructed" drawings. Final designs and contract drawings were completed for the Dead Horse Coulee drop structure. Specifications were prepared for the repair of one of the high pressure gates in the Qu'Appelle Dam outlet works.

Detailed hydraulic investigations, construction method feasibility studies and preliminary cost estimates were conducted for the following components of the Peace-Athabasca Delta Project: a rock weir on the Rivière des Rochers; a rock filled plug on the Revillon Coupe; and the removal of an existing rock dam at Quatre Fourches.

In accordance with agreements between Canada and the Prairie Provinces for the development of Agricultural Service Centres, drawings and specifications prepared by consultants for the construction of water supply or sewage works

were reviewed and 33 contracts tendered. Detailed design, contract drawings and specifications were initiated on the construction of works to increase the capacity of the raw water storage facilities for Hanna, and completed for the construction of a water supply line for Dauphin. Preliminary designs and cost estimates were prepared for various alternatives to provide an increased water supply for Assiniboia. A report was prepared and submitted. Various proposals were investigated for alleviating silting problems associated with the water treatment plant intakes for Estevan. A feasibility study, cost estimates and an engineering report were prepared.

Contract drawings and specifications were prepared and a contract advertised for the construction of a stoplog structure for McEachern Dam. Drawings and specifications were prepared for the Saskatchewan Power Corporation for the supply of a set of reinforced concrete stoplogs with lifting devices to be used in the Boundary Dam spillway. Contract drawings and specifications prepared by the Manitoba Regional Division were reviewed and a contract awarded for road grading and paving, and street paving for The Pas Indian Reserve. Construction drawings, specifications and material lists were prepared for the construction of an additional outlet conduit at the West Cypress outlet, a sheet pile and rock chute replacement structure for the Falham Creek Project, surface drainage control structures at Shellmouth Dam and an exhaust ventilation system at the PFRA Tree Nursery.

Contract and construction drawings and specifications were prepared for the supply and installation of a replacement pump and electrical service at the PFRA Demonstration Farm pumping plant. An office study was performed to determine the feasibility and cost of an open channel sewer for Prince Albert, and a preliminary design report prepared. An investigation was made into damage to the East Cypress outlet, and a report prepared giving recommendations for repairs.

Feasibility studies, design and cost estimates were undertaken for increasing the reservoir capacity on the Russell Creek Project, additional alternatives for the replacement of the spillway at Rinfret Dam, increasing the capacity of Ceylon Dam, enlarging the West Cypress outlet system, increasing the capacity of the CNR Dam at Kipling, a new dam for the town of Kipling, various alternative methods of providing a measuring weir and low river crossing in the Last Mountain Lake outlet channel near Craven Dam, a v-notch rock weir with steel sheet piling cutoff near Craven Dam, and a rock and sheet pile structure for McEachern Dam.

Facilities of the hydraulics laboratory were utilized in model studies to develop the hydraulic form of the headgate, sluiceway and weir components of the Western Irrigation District headworks. A comprehensive model test was also performed which included sections of the natural river channel to test the effect of cofferdamming the existing structure during construction of the new works. Model tests were also performed for the development of a more economical type of rock and sheet pile dam.

#### Geology and Air Surveys Division

Geological investigations, photogrammetric mapping and air photo interpretation studies were carried out during the fiscal year in connection

with water resource projects, Agricultural Service Centres programs, and community pasture improvement programs.

In Manitoba, geology studies were completed on dam sites on Deadhorse Creek near Morden, and groundwater studies were completed on an aquifer adjacent to the Vermilion River near Dauphin. In Saskatchewan, geology studies were completed on dam sites near Assiniboia, and groundwater studies were completed on potential supplies near Unity and Canora. In Alberta, geology studies and floodplain mapping were completed on the Elbow River near Bragg Creek, and terrain mapping and rock-quality studies were undertaken in connection with proposals for remedial works on the Peace-Athabasca Delta.

Air photo mosaic base plans were prepared for all community pastures in connection with improvement programs, and work on the physical inventory was initiated.

In Saskatchewan, large-scale, detailed photogrammetric mapping was completed at Melfort, Melville, North Battleford, Prince Albert and Weyburn in connection with the Agricultural Service Centres program and at Russell Creek, Ceylon and Unity in connection with water resource studies. Mapping was also completed at the Bassano Dam and Brooks Aqueduct in connection with the Alberta Irrigation Rehabilitation program.

Large-scale air photo mosaics and photo maps were supplied to the Water Development Service to assist in project planning and investigation.

#### Soil Mechanics and Materials Division

During the fiscal year 1973-74, the division worked on 112 engineering studies related to the investigation, design, construction, performance and maintenance of engineering works for water development. Of these, 72 were project studies, including 24 in Alberta, 31 in Saskatchewan and 17 in Manitoba. The project studies ranged from investigations of individual dugouts and development of water wells to continuing development and maintenance of major projects such as the South Saskatchewan River, Bow River Irrigation and St. Mary Irrigation projects. The studies also included investigation and design work for the Province of Saskatchewan and for agricultural service centres and special areas. In addition to the project studies, work was performed on 40 research, testing and evaluation studies. Fifty-two of the engineering studies were completed and 20 were in progress or nearing completion. These studies required the drafting of 407 plans.

A total of 42,115 lineal feet of test-hole drilling was carried out at 55 sites and 8,905 samples were recovered. In the main laboratory, 38,735 tests were performed on 30,485 samples of soil, bedrock, concrete, cement, aggregates and construction materials.

Technical assistance during construction was provided at seven sites, and

routine performance observations were continued at 22 sites.

The division appraised three water supply dams near St. John's, Newfoundland, as part of a Canada-Newfoundland Special Areas Agreement, assisted task force studies on Great Lakes water levels, and continued to represent the department on the soil mechanics subcommittee of the National Research Council. The division also sponsored a seminar on materials inspection and testing for PFRA staff.

#### Hydrology Division

During the fiscal year under review this division continued to fulfill its basic responsibility to supply hydrologic information for the planning, design and operation of PFRA projects. It also continued to extend its services to several other water resource agencies in the prairie region, and participated in meetings of the water quality and hydrology committees of the Prairie Provinces Water Board.

Seven formal reports were completed in the past year, and a total of 35 study requests were answered. Work continued on the Roseau River study and the four International Hydrological Decade projects. A final report on four of the five studies is expected in 1974.

Another important undertaking in 1973 was the complete review of the division's computation files. The division also continued to operate a successful internal training program.

#### Legal Surveys Division

All surveys excepting three contracts on the Bow River and Brooks Aqueduct projects were performed by PFRA personnel. Field surveys undertaken and completed consisted of rights-of-way, subdivisions, parcels, road diversions, retracement and topography surveys in connection with Weyburn, Cadillac, Gouverneur, Admiral and Moose Mountain Reservoirs; Val Marie, Rush Lake and Eastend Irrigation projects; the Qu'Appelle River Project, Reed Lake drain, PFRA Demonstration Farm and Mariposa Community Pasture.

Office activities consisted of plotting, drafting, calculating and processing 16 plans for registration in the provincial land registration system; preparing summaries of land control requirements and related procedures for eight surveys; plotting and computations on Bassano, Brooks, Melville and Shellmouth projects and on all compiled plans for Southwest Saskatchewan Irrigation projects; approving and preparing 211 descriptions and related sketch plans and computations.

## ADMINISTRATION DIVISION

This division, operating through seven sections, co-ordinates administrative services and gives support on request to the departmental program in western Canada.

The General Services Section is responsible for the provision of transcribing, records management, and office services to headquarters' office and for centralized administrative responsibilities including accommodation, communications, data processing, Crown Assets disposal, secretariat services and related activities. Particular attention in the past year in this section has been given to introducing labour-saving equipment such as automatic typewriters, improved copy machines and more modern dictating equipment.

The Finance Section is responsible for the financial control of all budgetary and non-budgetary expenditures and revenues, payment authority in accordance with the regulations respecting account verification and payment requisition, classification of accounts, commitment certificates and financial reports and statements for all PFRA programs. It is also responsible for the preparation of the program forecast and final estimates. Emphasis in the past year has been given to the financial management of the Agricultural Service Centres program in relation to cost-sharing, loan amortizations and the recovery of the provincial contributions in accordance with subsidiary agreements entered into with each of the Prairie Provinces.

The Management Services Section provides an advisory service for management at all levels. Its primary function is to study management and operational problems and to make recommendations for improvement. The main work areas are organization analysis, systems and procedures studies, feasibility studies for data processing applications, forms design and control, and appraisal of requests for office equipment. During the past year 27 defined projects were completed. Eighteen have been implemented with the expectation of improved management practices and a reduction of operational cost.

The Library Section provides complete library facilities and services to all PFRA activities and gives support as required to other departmental programs in the west. Over the year statistics showed an increased use of reference and loan services, and progress continued on special projects such as the book catalogue, with 4,800 titles listed, the union list of serials, and the federal shared library services program.

The Information Section provides a full range of information and technical support services. Numerous reports, brochures, news releases (including television films) and related items were made available to the public during the year. Displays and exhibits were supplied to fairs and special events, and general support was given to the departmental information program in western Canada. The Photographic Unit, as well as providing coverage for information purposes, continued to give assistance to the technical program of PFRA through exact scale reproduction work, hydraulic test motion picture photography, rescaling of mosaics, and other specialized photographic techniques. Over the past year emphasis has been given to improved systems and procedures for processing media releases, and for monitoring and controlling production of the section.

The Materiel Management Section provides a central service for requisitioning materiel requirements from the Department of Supply and Services, operates a supply depot, and provides related service such as preparation of specifications, cataloguing, and the maintenance, distribution and disposal of materiel. Acquisition of materiel through DSS regional offices in Calgary, Winnipeg and Regina totalled \$5,394,000. During the year, an average inventory of \$141,906 was maintained in the Moose Jaw and Vauxhall supply depots. Stock issued was \$380,698, resulting in a turnover ratio of 3.7 to 1. The Vauxhall supply depot was closed on July 31, 1973, in preparation for the transfer of the Bow River Project to the Government of Alberta. The program for identifying and disposing of surplus and obsolete equipment was continued. During the year, 2,871 items of equipment, with a book value of \$913,411, were disposed of through the Crown Assets Disposal Corporation. The equipment distribution record at March 31, 1974, contained 8,256 items, having a book value of \$7,596,358.

The Land Section is responsible for the acquisition and administrative management of lands required for the PFRA program. This includes appraising and negotiating the purchase of land, issuing permits and leases, acquiring easements, arranging land exchanges, and maintaining a land and real property inventory. In the year under review, particular attention was given to assembling land control records for the transfer of approximately 130,000 acres of land on the St. Mary and Bow River projects to the Province of Alberta. As well, continued emphasis was placed on land inventory management, through computer applications. The PFRA land inventory as of March 31, 1974 is:

SUMMARY OF LAND INVENTORY TO MARCH 31, 1974

	<u>Title</u>	<u>Reservation Order-in-Council Lease, Easement,</u>	<u>Total</u>
	(acres)		
<b>I. <u>WATER DEVELOPMENT SERVICE</u></b>			
<b>A. <u>Water Conservation</u></b>			
Manitoba	1.3	-	1.3
Saskatchewan	11,363.3	472.8	11,836.1
Alberta	107.6	198.6	306.2
<b>B. <u>Irrigation Projects</u></b>			
Southwest Saskatchewan	49,339.9	325.6	49,665.5
Alberta-Bow River Project	86,176.6	21,443.3	107,619.9
<b>C. <u>Tree Nursery</u></b>			
	160.0	480.0	640.0
<b>D. <u>Demonstration Farm</u></b>			
	169.5	-	169.5
	147,318.2	22,920.3	170,238.5
<b>II. <u>LAND USE SERVICE</u></b>			
<b>A. <u>Community Pastures</u></b>			
Manitoba	4,744.4	397,642.8	402,387.2
Saskatchewan	1,237,095.9	591,019.5	1,828,115.4
Alberta	-	154,437.0	154,437.0
	1,241,840.3	1,143,099.3	2,384,939.6
<b>III. <u>ENGINEERING SERVICE</u></b>			
<b>A. <u>Assiniboine River Dyking</u></b>			
	1,077.9	27.9	1,105.8
<b>B. <u>St. Mary River</u></b>			
	14,187.5	7,460.0	21,647.5
	15,265.4	7,487.9	22,753.3



SUMMARY OF LAND INVENTORY TO MARCH 31, 1974  
(cont'd)

	<u>Title</u>	<u>Reservation Order-in-Council Lease, Easement,</u>	<u>Total</u>
	(acres)		
<u>IV. MISCELLANEOUS</u>			
A. <u>Hydrometric Site</u>	10.0	-	10.0
B. <u>Service Depots</u>	24.5	0.5	25.0
C. <u>Bow River Exchange Lands</u>	<u>7,581.4</u>	<u>-</u>	<u>7,581.4</u>
	7,615.9	0.5	7,616.4
 <u>SUMMARY</u>			
I. Water Development Service	147,318.2	22,920.3	170,238.5
II. Land Use Service	1,241,840.3	1,143,099.3	2,384,939.6
III. Engineering Service	15,265.4	7,487.9	22,753.3
IV. Miscellaneous	<u>7,615.9</u>	<u>0.5</u>	<u>7,616.4</u>
TOTAL --	<u>1,412,039.8</u>	<u>1,173,508.0</u>	<u>2,585,547.8</u>

## PERSONNEL DIVISION

This division provided personnel services to PFRA offices and to all elements of the department in the four western provinces. PFRA has a full-time staff of approximately 800 employees and an additional 280 man years of casual and seasonal employment. These employees belong to all six categories of employment and to 26 occupational groups in the federal classification system. The division is organized under four sections: Staff Services, Staff Relations, Staffing and Classification.

An innovation over the past year was the introduction of an "Effective Writing " program. Three courses were held involving 40 employees. The "Supervisors' Training" program continued, with one residential-type seminar providing training for 16 employees. An additional 15 per cent of the employees were enrolled in various skills and professional upgrading programs and in management training. The employee appraisal program introduced several years ago has been of considerable assistance in identifying training requirements.

During the past year a major classification review involving engineering and scientific support positions was undertaken; the results will be implemented shortly. Formal classification activities were carried out on approximately 15 per cent of full-time PFRA positions.

Staffing activity in the past year reflected the general trend of increasing PFRA activity. Many vacant positions were filled, and as a result of the transfer of the St. Mary and Bow River projects to the Province of Alberta, various staffing actions were required. DREE's decentralization program has caused the division to be deeply involved in meeting the staffing requirements of western offices.



APPENDIX I  
WATER DEVELOPMENT PROJECTS COMPLETED AND ASSISTANCE PAID  
1935 - March 31, 1974

	<u>DUGOUTS</u>		<u>STOCKWATERING DAMS</u>		<u>IRRIGATION PROJECTS</u>		<u>WELLS</u>		<u>TOTAL</u>	
	Completed	Assistance	Completed	Assistance	Completed	Assistance	Completed	Assistance	Completed	Assistance
<u>Manitoba</u>										
Individual	18,732	2,748,135.94	355	33,473.29	346	145,478.55	1,228	247,056.63	20,661	3,174,144.41
Neighbour	77	21,852.05	18	6,445.01	23	14,799.99			118	43,097.05
Small Community	42	130,790.73	25	134,401.87	2	30,582.54			69	295,775.14
<b>Total</b>	<b>18,851</b>	<b>2,900,778.72</b>	<b>398</b>	<b>174,320.17</b>	<b>371</b>	<b>190,861.08</b>	<b>1,228</b>	<b>247,056.63</b>	<b>20,848</b>	<b>3,513,016.60</b>
<u>Saskatchewan</u>										
Individual	55,361	8,841,390.34	6,071	712,134.73	3,551	1,037,763.63	1,561	435,912.91	66,544	11,027,201.61
Neighbour	433	137,580.03	65	15,040.62	191	114,214.51			689	266,835.16
Small Community	574	1,024,337.14	225	1,169,530.44	74	697,438.92			873	2,891,306.50
<b>Total</b>	<b>56,368</b>	<b>10,003,307.51</b>	<b>6,361</b>	<b>1,896,705.79</b>	<b>3,816</b>	<b>1,849,417.06</b>	<b>1,561</b>	<b>435,912.91</b>	<b>68,106</b>	<b>14,185,343.27</b>
<u>Alberta</u>										
Individual	18,754	3,449,395.89	4,167	578,548.49	1,688	517,130.49	1,703	403,673.61	26,312	4,948,748.48
Neighbour	68	26,955.65	18	7,108.10	31	17,661.65			117	51,725.40
Small Community	221	582,999.75	131	839,370.94	68	752,421.49			420	2,174,792.18
<b>Total</b>	<b>19,043</b>	<b>4,059,351.29</b>	<b>4,316</b>	<b>1,425,027.53</b>	<b>1,787</b>	<b>1,287,213.63</b>	<b>1,703</b>	<b>403,673.61</b>	<b>26,849</b>	<b>7,175,266.06</b>
<b>GRAND TOTAL</b>	<b>94,262</b>	<b>16,963,437.52</b>	<b>11,075</b>	<b>3,496,053.49</b>	<b>5,974</b>	<b>3,327,491.77</b>	<b>4,492</b>	<b>1,086,643.15</b>	<b>115,803</b>	<b>24,873,625.93</b>

APPENDIX II

DEVELOPMENT AND OPERATION OF COMMUNITY PASTURES  
UNDER PFRA, 1938 - 1973

Fiscal Year	No. of Pasture Units in Operation	Area of Land in Pastures (acres)	Total Cost of Construction of Pastures \$	Livestock Units Carried on Pastures	Acres per Unit of Livestock	Cost of Operation		Net Operating Cost per Unit of Livestock	Average Charge per Unit Livestock to Farmers	Municipal Tax Levy Collected
						Revenue \$	Operating Costs \$			
1938-39	14	189,800	165,995	3,231	58.7	6,340	10,186	3.15	1.96	
1939-40	26	612,300	663,471	11,522	53.1	21,633	20,946	1.82	1.82	
1940-41	35	884,500	1,004,306	23,245	38.1	43,452	35,291	1.52	1.87	
1941-42	38	936,548	1,187,361	33,230	28.2	65,435	50,607	1.52	1.97	
1942-43	45	1,261,100	1,298,488	551,127	24.7	98,292	79,907	1.56	1.92	
1943-44	46	1,268,140	1,558,055	54,472	23.3	111,114	107,535	1.97	2.04	
1944-45	49	1,337,320	1,699,012	59,997	22.3	151,461	117,065	1.95	2.52	
1945-46	50	1,361,440	1,857,020	67,778	20.1	167,045	136,567	2.01	2.46	
1946-47	53	1,412,860	2,072,274	68,493	20.6	198,115	145,293	2.12	2.89	
1947-48	53	1,417,320	2,208,919	66,347	21.4	203,888	161,471	2.43	3.07	
1948-49	54	1,436,480	2,486,277	71,393	20.1	204,012	175,666	2.46	2.86	
1949-50	54	1,439,680	2,809,196	70,308	20.5	211,624	172,255	2.45	3.01	
1950-51	56	1,521,080	3,237,331	68,858	22.1	221,129	217,867	3.16	3.21	
1951-52	57	1,574,642	3,426,586	77,240	20.4	335,327	237,742	3.08	4.34	
1952-53	59	1,652,020	3,754,098	94,137	17.5	438,514	373,737	3.97	4.66	
1953-54	60	1,678,736	3,963,573	109,583	15.3	507,179	490,808	4.48	4.55	
1954-55	60	1,696,900	4,273,917	106,322	15.9	496,806	466,154	4.38	4.66	
1955-56	60	1,728,700	4,509,669	108,499	15.8	499,045	501,541	4.67	4.60	
1956-57	61	1,759,570	4,832,863	117,441	14.9	548,601	508,003	4.33	4.67	
1957-58	61	1,796,275	5,119,317	119,398	15.0	552,938	607,129	5.08	4.63	
1958-59	62	1,815,265	5,509,958	117,032	15.5	542,607	686,449	5.87	4.64	
1959-60	64	1,818,464	5,800,342	124,812	14.6	705,785	742,915	5.95	5.65	
1960-61	65	1,896,173	6,254,224	122,813	15.4	656,709	716,467	5.83	5.35	
1961-62	68	2,088,704	6,845,656	146,672	14.2	860,808	952,359	6.49	5.87	
1962-63	71	2,114,412	7,283,658	139,643	15.1	871,955	847,753	6.07	6.24	
1963-64	75	2,149,292	7,677,379	141,723	15.2	1,168,641	981,506	6.93	8.25	145,631
1964-65	83	2,318,477	8,826,041	156,978	14.8	1,460,279	1,156,912	7.37	9.30	157,768
1965-66	84	2,325,564	9,274,172	158,434	14.7	1,431,952	1,099,382	6.94	9.04	167,493
1966-67	85	2,337,113	9,965,500	154,742	15.1	1,353,112	1,215,711	7.86	8.74	147,475
1967-68	86	2,363,671	10,946,862	162,482	14.5	1,380,678	1,341,258	7.64	8.50	144,258
1968-69	88	2,382,456	11,543,616	172,629	13.8	1,570,652	1,554,688	9.01	9.10	170,000
1969-70	88	2,386,799	12,465,226	172,624	13.8	1,652,165	1,666,223	9.65	9.57	160,959
1970-71	90	2,431,784	13,469,740	182,689	13.3	1,754,194	1,900,158	10.40	9.60	162,974
1971-72	93	2,430,940	14,227,399	205,611	11.8	1,954,604	2,002,379	9.74	9.51	176,435
1972-73	94	2,431,420	14,878,288	216,708	11.2	1,912,347	2,368,818	10.93	8.82	182,378
1973-74	95	2,419,100	15,798,792	234,488	10.3	3,217,128	3,014,999	12.86	13.72	182,680
						27,575,566	26,863,747			

APPENDIX III

MAJOR PROJECTS - IRRIGATION, RECLAMATION AND WATER STORAGE\*  
TO MARCH 31, 1974

Name of Project	Location	Type of Project	Date Completed	Irrigated Acres	Storage Capacity Acre Feet	Costs \$
MANITOBA						
Assiniboine River Dyking and Cut Off	Brandon	River Control	Not yet complete	-	-	1, 1,719,517
Northwest Escarpment Reclamation Project - Riding Mt. Area	Dauphin	Watershed Control	1966	-	-	1,313,103
Fairford River Project	Lake Manitoba	Flood Control	1960	-	-	287,751
Saskatchewan River Reclamation - Pasquia Area	The Pas	Reclamation	1960	135,000	-	2,256,388
Shellmouth Dam and Portage Diversion	Russell	River Control	1970	-	430,000	19,242,646
Agricultural Service Centres The Pas West	The Pas	Water and Sewer	Not yet complete	-	-	1,216,017
		Water and Sewer	Not yet complete	-	-	603,130
ALBERTA						
27 Bow River	Medicine Hat	Irrigation	Not yet complete	235,000	408,862	
a) Purchase of Canada Land and Irrigation Company						2,353,517
b) Development and Construction						24,941,316
St. Mary	Lethbridge	Irrigation	Not yet complete	510,000	320,000	25,160,993
Sawridge Creek	Slave Lake	Flood Control	Not yet complete	-	-	248,377
Alberta Irrigation Rehabilitation		Irrigation	Not yet complete	-	-	4,527,013
Agricultural Service Centres		Sewer and Water	Not yet complete	-	-	16,028
BRITISH COLUMBIA						
Cawston Benches	Keremeos	Irrigation (pump)	1951	629	2,000	185,491
Chase & Johnston - Western Canada Ranching	Kamloops	Irrigation	1951	755	-	98,243
Western Canada Ranching (No. 2)	Kamloops	Irrigation (pump)	1950	54	-	58,069
Lillooet - Pemberton	Pemberton	River Control	1953	-	-	1,056,539
South Thompson-Niskonlith Gravity Project	Kamloops	Irrigation	1951	1,030	1,200	12,282
Westbank Project	Kelowna	Irrigation	1950	1,200	2,500	537,450
Bankhead Irrigation Project	Kelowna	Irrigation	1951	92	-	32,229
Penticton West Bench	Penticton	Irrigation (pump)	1953	800	-	66,362
B.C. Fruitlands	Kamloops	Irrigation	1966	2,000	-	200,000
SASKATCHEWAN						
South Saskatchewan River Project	Outlook	Multi-purpose	1969	312,650 (Including 24,000 in Qu'Appelle ex- tension)	7,591,000	120,123,235
Buffalo Pound Project	Qu'Appelle Valley	Urban Water Supply	1960	-	42,000	2,293,145
Eyebrow Lake Diversion	Eyebrow	Water Supply	1960	-	-	98,376
Agricultural Service Centres		Water and Sewer	Not yet complete	-	-	549,008
(Above includes ONLY Construction Costs)						

\* Funds for certain of these projects were provided by special votes of parliament.

APPENDIX IV

PFRA EXPENDITURES BY ACTIVITIES, 1935 - 1974

ADMINISTRATION

Regina Administration \$ 11,719,240

LAND USE SERVICE

Cultural Work - Soil Drifting, etc. (Exp. Farm Service) 4,966,394  
 Community Pastures - Construction, Operation and Maintenance 58,627,775  
 Movement of Settlers 227,841

WATER DEVELOPMENT SERVICE

Supervision, Individual Dugouts, Wells, Community Large Water Storage and  
 Irrigation Projects 76,220,811  
 Equipment - Purchase and Repairs, Service Depot 20,606,771  
 Tree Nursery Stations 6,727,950  
 Bow River Irrigation Project 47,353,798

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ENGINEERING SERVICE

Surveys, Design, Soil Mechanics, Drainage Studies, Legal Surveys,  
 Supervision of Construction 48,931,235  
 St. Mary Irrigation Project 33,928,864  
 South Saskatchewan River Project 137,673,514  
 Assiniboine River Dyking 1,719,517  
 Shellmouth Dam and Portage Diversion 19,242,646  
 B.C. Reclamation and Development, including Lillooet Project 3,310,182  
 Land Protection and Reclamation, Manitoba and Eastern Canada 4,136,021  
 Alberta Irrigation Rehabilitation 4,527,013  
 Agricultural Service Centres 1,781,053  
 Miscellaneous Projects - Construction 4,976,157

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\$486,676,782

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PFRA REVENUES BY ACTIVITIES, 1935 - 1974

Community Pasture Operations 27,575,566  
 Irrigation Project Operation and General Revenue 20,658,551

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\$ 48,234,117

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