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1996/97 Annual Report



**Low-Level Radioactive Waste
Management Office**

MISSION

The Low-Level Radioactive Waste Management Office (LLRWMO) was established in 1982 to carry out the responsibilities of the federal government for low-level radioactive waste (LLRW) management in Canada.

MANDATE

- resolve historic waste problems that are a federal responsibility.
- establish, as required, a user-pay service for the disposal of LLRW produced on an ongoing basis, and
- address general public information needs about low-level radioactive wastes.

The Low-Level Radioactive Waste Management Office is operated by Atomic Energy of Canada Limited (AECL) through a cost recovery agreement with Natural Resources Canada, the federal department which provides the funding and establishes national policy for LLRW management.

LOCATIONS

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Dear Sirs:

I have the honour to present to you the Annual Report of the Low-Level Radioactive Waste Management Office for the fiscal year ending 1997 March 31.

This report has been prepared in accordance with the Memorandum of Understanding between Energy, Mines and Resources Canada (now called Natural Resources Canada, NRCan) and Atomic Energy of Canada Limited for the operation of the Low-Level Radioactive Waste Management Office.

Sincerely,



R.W. Pollock
Director

HIGHLIGHTS

Scarborough, Ontario: Expenditure \$270 k

About 9,000 m³ of mildly contaminated soil, from excavation and restoration of more than 60 residential and commercial properties in Scarborough, is safely and securely stored on an interim basis in an engineered mound in an undeveloped part of an industrial area in Scarborough. The landscaping of the mound was designed to blend with the surroundings. An environmental monitoring program was instituted to confirm that there are no adverse impacts on the local environment during the storage period.



Passmore Avenue Site prior to building interim storage mound. (1994)



Passmore Avenue Site after construction of interim storage mound. (1997)

Port Hope, Ontario: Expenditure \$421 k

The LLRWMO continued to monitor the environment at historic waste sites in the Town of Port Hope. Ongoing environmental monitoring and site inspections will identify whether any further actions are needed at these sites before a permanent disposal facility becomes available. The Construction Monitoring Program, initiated in 1989 to identify and remove any small volumes of contaminated soil at new construction sites in Port Hope, was also continued.



Environmental monitoring station at historic waste storage site in Port Hope.



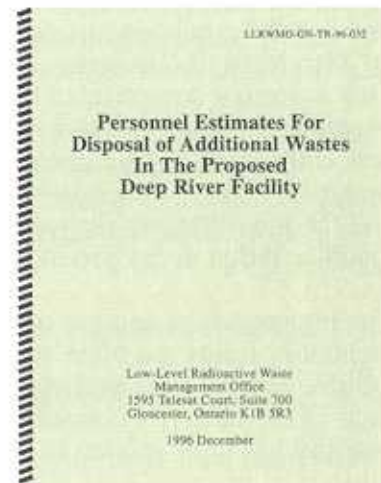
The new Canadian Tire store on a portion of property cleaned up in Fort McMurray.

**Fort McMurray, Alberta/
Northern Transportation Route,
NWT: Expenditure \$116 k**

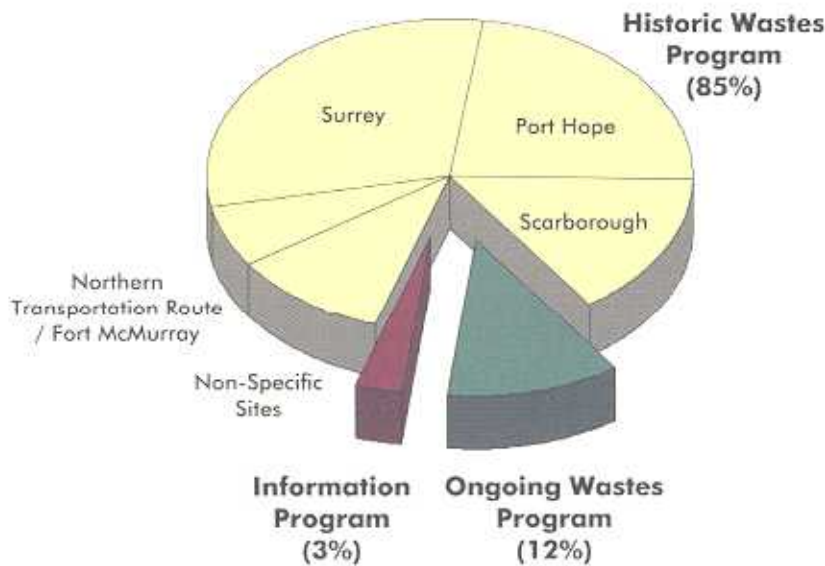
In Fort McMurray, part of the former Northern Transportation Company Limited (NTCL) property, which was cleaned up in 1993 and 1994, was restored this year for commercial development. This portion of the property was redeveloped by the new owner, to become the site of a Canadian Tire Store.

Ongoing Waste: Expenditure \$209 k

The Minister of NRCan initiated negotiations with the Town of Deep River towards establishing a low-level radioactive waste disposal facility, in follow-up to the recommendations of the Siting Task Force. The LLRWMO, as technical adviser to the federal negotiating team, provided information and data, including estimates of personnel, to support the negotiations.



**1996/97 LLRWMO Funding from NRCan
(Total \$1.8 M)**



This figure shows the allocation of LLRWMO funding from NRCan in 1996/97. All costs shown are fully overheaded, that is, all staff and support service costs have been allocated to their respective projects. Total project costs, including funding from other sources, are detailed in the Financial Review section.

DIRECTOR'S MESSAGE

In the past two annual reports, I have highlighted factors that have contributed in large measure to the progress made by the Office in recent years at historic waste sites. Innovative technology coupled with a cooperative approach to problem solving have been, in my view, keys to reaching effective, acceptable solutions. This year, I would like to highlight environmental monitoring, including both technical advances and the importance that improving the interpretation and use of the data plays in achieving solutions.

Technical advances have solved several basic measurement problems which existed when I joined the LLRWMO in 1984. These were not due to detection limits, but arose primarily because the contaminants (both radionuclides and stable chemical elements) in historic wastes are also naturally occurring elements, and we are often looking for changes from what is natural. This is further complicated by the natural variability, in both background radiation and contaminant distribution, with location and, in some cases, time (eg. indoor and outdoor radon concentrations). The technical advances are impressive. Examples include automated gamma survey systems which reliably detect small spatial differences, portable gamma spectrometers, and the measurement devices now available for accurately measuring average concentrations of radon or radon decay products over time periods from days to months.

The interpretation and use of the data can also present technical challenges. For example, regulatory limits are often specified as a general criterion, such as a radiation dose limit in milliSievert per year (mSv/a). However, the physical measurements in the field provide data such as radioactivity concentrations in air, or in water or soil. To be useful, the measured quantity has to be related to the regulatory limit. This is also an area where I have seen substantial progress over thirteen years. Although the underlying science is complex, mathematical models, and the data for their use, are now generally available and widely used to develop "derived limits" for the physical quantities which are measured, and thus link the data to the primary limits.

Unfortunately, while the models and data may be understood by technical experts, this is often not the case for those most directly involved. These are the local residents near historic waste sites, at all project stages, and workers performing work at the site. It is vitally important that they be provided with understandable information on the extent, or lack, of environmental impacts and health risks. I believe we have made significant progress in this area, often referred to as risk communication, although "understanding" would be a more apt description of the requirement than "communication". There is no single approach or magic recipe. In some circumstances, comparisons with the range of natural background are most useful. In other circumstances, comparisons of measurements with "derived limits", or other comparative approaches, are helpful. In our experience, absolute approaches based on statistics alone (eg. "one in a million") are generally not very helpful for promoting "understanding". Although we have made progress in this area, there is no doubt that there is further need for improvement.

Overall, I have seen much progress in the technical quality of environmental monitoring information. The challenge continues to be to make it understandable to those most interested, so that we all benefit from the technical advances.

OPERATIONS REVIEW

The activities of the LLRWMO are carried out within three broad program areas, namely:

- *Historic Wastes Program*
- *Ongoing Wastes Program*
- *Information Program*

Historic Wastes Program

Historic wastes are low-level radioactive wastes for which the original owner can no longer be held responsible and which are managed in a manner no longer considered acceptable. If they are wastes for which the federal government accepts responsibility, their management comes within the mandate of the LLRWMO. Historic wastes are located at various sites across Canada.

The goal of the Historic Wastes Program is to perform cleanup and interim remedial work at historic waste sites, in order to protect human health and the environment, prior to the availability of permanent disposal facilities for these wastes. In this connection, close liaison was maintained with, and necessary technical advice was provided to, the Surrey Siting Task Force appointed by the Minister of NRCAN to locate a site for disposal of this historic waste.

Activities and achievements during 1996/97 in the specific historic waste projects are detailed below.

Scarborough, Ontario (Malvern Remedial Project)

The Malvern Remedial Project resulted in the removal of radium contaminated soils from more than 60 residential and commercial properties in the Scarborough community of Malvern, resolving a long standing concern in the community. This year, the remaining tasks for the construction phase of the project were completed, and the routine monitoring program for the interim storage phase was initiated.

The contaminated soil discovered at McClure Crescent in the Malvern community in 1980, originated from the radium dial painting industry at the time of the Second World War. Several initiatives to remove it failed when residents who lived close to proposed interim storage sites objected vigorously to the proposals. The Malvern Remedial Project (MRP), a joint Canada/Ontario project to complete the cleanup in the Malvern area, was announced in 1992 March. The main elements of the project were to complete the cleanup of soils at McClure Crescent and at a second location subsequently discovered at McLevin Avenue, to sort the soil to remove all licensable material and to store the remaining mildly contaminated soil at the sorting site until a permanent disposal site is available in Ontario. The planning and approval phase of the project was completed in 1994, with excavation of the contaminated soil taking place last year. Due to the early onset of winter, completion of soil sorting and closure of the interim storage mound were deferred until 1996.

Soil sorting was completed this year, and all equipment and the temporary building were decontaminated, dismantled, and removed. The mildly contaminated soil was sealed within a high density polyethylene (HDPE) liner, and a final compliance inspection of the interim storage

site carried out by the Atomic Energy Control Board (AECB). A request for licence termination was subsequently made to, and granted by, the AECB. The engineered mound was then covered with a layer of clean soil and the entire site was landscaped to blend with the surroundings.

A site maintenance and environmental monitoring program has been instituted and will remain in effect until a permanent disposal site is available to the LLRWMO. Results of the environmental monitoring program are posted at the interim storage mound, and published in an annual monitoring report.



A close-up of the mound showing the sign and environmental monitoring chart.

Port Hope, Ontario

The presence of widespread contamination of soils and building materials in Port Hope was discovered in the mid-1970s. A large-scale cleanup program was carried out by the AECB as the lead agency for The Federal/Provincial Task Force on Radioactivity (F/P Task Force). However, the radioactive waste storage site at the Chalk River Laboratories of AECL, to which the Port Hope wastes were transferred, had limited capacity. Cleanup work thus concentrated on developed residential, public and commercial properties. Large volumes of contaminated soil in vacant areas, and the contaminated sediments at the harbour, were left for cleanup at a later date. As well, small volumes of slightly contaminated soils, that is soils with above background radioactivity content but meeting the cleanup criteria established by the F/P Task Force, exist along some public roads and on some private and public properties. LLRWMO activities in Port Hope are directed at sites containing both large and small scale sites.

The LLRWMO continued to monitor the environment at the major historic waste sites. The purpose of this ongoing program of environmental monitoring and site inspections is to identify whether further actions are needed at these sites before a permanent disposal facility becomes available. This program thus complements and follows up from, the health risk assessment performed by federal departments for the major sites in 1994. The assessment concluded that these sites do not pose any immediate risk to public health, although actions must be taken for the long-term management of the wastes. The currently outstanding task is to complete and publish the assessment of the monitoring data in a way which relates the ongoing monitoring program results to the health risk assessment. This is underway and expected to be completed in 1997. The LLRWMO is also one of the sources of technical and analytical support to the Port Hope Community Health Concerns Committee, a community group examining the health risks associated with the presence of low-level radioactive waste in the Town.

The Construction Monitoring Program (CMP), a joint initiative of the Town and the LLRWMO, continued at small-scale sites. The program enables normal development to continue while preventing the inadvertent misuse of contaminated soil as backfill around buildings or at other locations. During the year, approximately 122 applications to the CMP were reviewed, and properties inspected as necessary. Eighteen cubic meters of contaminated soil from 3 properties was taken to the Temporary Storage Site located in Port Hope.

Fort McMurray/Northern Transportation Route

In 1992, uranium-contaminated soil and building materials were found at an unused warehouse in Fort McMurray, Alberta. The discovery resulted from an investigation of the 2,200 km water transportation route used, from the 1930s until the 1950s, to transport uranium ore from the Port Radium mine, at Great Bear Lake in the Northwest Territories, to Waterways (now Fort McMurray), Alberta for rail shipment to Port Hope, Ontario.

• Northern Transportation Route

The investigations identified an estimated 20,000 m³ of uranium-contaminated soil at eighteen sites along the Northern Transportation Route north of Fort McMurray. Sites, where people were living in close proximity to contaminated materials, were cleaned up during the investigations. In the short-term, there is no need for action at the remaining sites along the Northern Transportation Route unless the use of the properties changes. The focus has now shifted to developing, in consultation with residents of the communities and government officials, an overall plan for cleanup and long-term management of the resulting wastes, while continuing to perform any surveys or other work necessary to accommodate local land use requirements. During 1996, an environmental assessment at the Sawmill Bay site was conducted jointly by the LLRWMO and the Environmental Services Group of Royal Military College, on behalf of Indian and Northern Affairs Canada (INAC). This assessment will be used to design a cleanup of this site, the first in the Sahtu region of the northern transportation route. A presentation was made to the Sahtu Annual General Assembly and an initial meeting was held between the LLRWMO, INAC, and the Sahtu leadership. These groups constitute the Working Group that will direct cleanup operations in the Sahtu region, which covers Great Bear Lake and the Great Bear River.

• Fort McMurray

Cleanup of contaminated sites in Fort McMurray was based on the cleanup criteria and waste management plan developed in 1993 by the Fort McMurray Working Group in consultation with the community. The Working Group, which oversees implementation of the project, consists of representatives from the LLRWMO and their engineering consultant, the Regional Municipality of Wood Buffalo (which includes Fort McMurray), and the Northern Lights Regional Health Centre. The Fort McMurray Working Group is to be expanded to include representatives from Fort Fitzgerald, and South Slave, Northwest Territories.

In 1996, work focussed on completing the cleanup, verification and restoration at the former Gunnar Mines Landing, resulting in about 40 m³ of material which was placed in the LLRWMO disposal cell constructed in 1993 at the municipal landfill site. This completes cleanup work in the Lowertown area of Fort McMurray. Cleanup is still required at one site in the Waterways area of Fort McMurray. Redevelopment of one of the formerly contaminated properties in Fort McMurray began this year with the construction of a Canadian Tire retail shopping store.

Surrey, British Columbia

Approximately 4,000 m³ of contaminated soil and slag exist on two industrial properties in Surrey, BC. The principal radioactive contaminant is thorium, which was contained in niobium ore imported during the 1970s and which remained in the slag following smelting. Cleanup work during the 1980s resulted in the material being placed in interim storage on both sites pending disposal. The LLRWMO contracts annual inspections and maintenance of one of these facilities, the other being the responsibility of the owners.

The Surrey Siting Task Force (SSTF), established by the Minister of NRCan to locate a disposal site for this material, prepared and submitted its final report to the Minister. The LLRWMO continued to provide administrative and technical support to the SSTF by technical review of reports such as that for the environmental assessment of disposal options. In preparation for disposal, the LLRWMO carried out additional site verification/contamination delineation activities at one of the sites (the Anvil Way site), and completed the cleanup plans for the waste storage facilities. Discussions were also held with British Columbia regulatory officials for approval of these cleanup plans and the process for demonstration of regulatory compliance.

Non-specific Sites

• Small Scale Cleanups

In addition to remedial work at the major historic waste sites, the LLRWMO undertakes cleanup of small-scale historic waste occurrences as required. These usually involve buildings used in the past in connection with the radium industry, and include cleanup of old radium dial inventories or small volumes of contaminated soil or building materials. The majority of this work is part of a cooperative program with the AECB to locate and collect inventories of radium-containing materials. In many cases, radium contamination, ranging from minor to widespread, has occurred at these premises. During the year, radiation surveys were carried out at three properties in Ontario. No cleanups were conducted during the year.

• LLRWMO Central Storage Facility

Wastes from small scale cleanups, and small amounts of AECB-licensable materials from some of the major sites, are transferred to an LLRWMO storage facility located at AECL Chalk River Laboratories. It consists of two metal clad buildings, one constructed in 1984 and the second in 1990, operated as storage warehouses. Improvements to the utilization of the existing storage space were made during the year; however, additional storage capacity will still likely be required within two years. Technical and financial assessments of various alternatives for extending storage capacity were conducted.

Ongoing Wastes Program

Ongoing wastes are low-level radioactive wastes (LLRW) which are produced from operational activities of generators who are currently in business. The generators are thus responsible for the management and disposal of these wastes.

The goals of the Ongoing Wastes Program are to provide NRCAN with comprehensive analysis of requirements for disposal services and facilities, and technical assessments and advice related to the development of national policies and strategies for the disposal of these wastes.

During the year, the Minister of NRCAN made two key announcements related to the future disposal of radioactive wastes in Canada. One outlined a comprehensive national policy framework, and the other initiated negotiations by the government with the Town of Deep River for establishing a disposal facility there. LLRWMO staff participated as members of the federal negotiating team for the proposed Deep River Project, and provided technical data and information to NRCAN's consultant, Ernst and Young, in developing an analysis of local economic impacts from the proposed project. In particular, a study was carried out by the LLRWMO on the type and number of on-site project personnel required for such a facility.

The LLRWMO also continued to provide technical analyses to NRCAN to support implementing the policy framework.

Information Program

The goals of the Information Program are to provide general information about low-level radioactive waste management and to carry out communications activities in support of specific historic waste projects.

In Port Hope, the LLRWMO responded to requests for information from the public and the media through the local Field Services Office.

Communications requirements of the Malvern Remedial Project (MRP) continued as a major activity for the Information Program. The project office provided information directly to visitors and as required for real estate transactions for properties in the Malvern area.

Communications activity along the Northern Transportation Route focussed on ensuring that local political leaders, the media, and the public were informed of plans and progress. This included interviews for a radio program based on the work at Sawmill Bay, Northwest Territories.

The preparation of technical papers and their presentation at scientific conferences is another component of the Information Program. Seven papers were published during the year.

Administrative Management and Support Services

The LLRWMO is operated by AECL through a cost-recovery agreement with Natural Resources Canada, the federal department which provides the funding and establishes national policy on radioactive waste management. Administratively, the LLRWMO operates as a division of the Physical and Environmental Sciences unit of AECL.

The current organizational structure for administrative management, and for administrative support and services, was established in 1992/93, with minor refinements since then to reflect changing needs. The LLRWMO functions as a small project management-oriented organization as reflected in the organization chart shown in Appendix A.

The National Office is located in Gloucester, Ontario. Technical Program Managers and senior Project Managers report directly to the LLRWMO Director, and have substantial autonomy within project budgets approved through the Business Plan. Administrative support is provided efficiently through a combination of internal staff for specific functions required on a full-time, dedicated basis and external services provided by other units of AECL on a pro-rated or direct user-pay basis, or purchased directly from external suppliers. Field support and laboratory services which can be provided internally in a more economical or expeditious manner, are consolidated through the Field Services Office, located in Port Hope (PHFSO). The PHFSO operates on a cost recovery basis and charges its services to LLRWMO projects at a fully overheaded rate. It also provides the same services to other organizations, such as government departments, where appropriate, on a cost recovery basis.

The LLRWMO participates in the AECL Environmental Plan and other AECL programs to maintain and improve the quality of its work. The QA program is an important part of demonstrating compliance with the requirements of the five AECB licenses that the LLRWMO holds (for sites in Port Hope, and for specific projects and activities at other sites).

FINANCIAL REVIEW

General

Until FY 94/95, funding for the LLRWMO was separately established within the reference level of NRCan, through Treasury Board approval. Since FY 95/96, funding is provided directly from the NRCan operating budget.

NRCan transfers funds to AECL through a cost recovery agreement (a Memorandum of Understanding) for the operation of the LLRWMO. The major planning document is the annual Business Plan, submitted by the LLRWMO for approval by NRCan prior to the start of each fiscal year. The Business Plan takes account of NRCan priorities to be accommodated within the available funding. Adjustments to priorities during the year are accomplished through quarterly progress reviews held between LLRWMO staff and staff of the Uranium and Nuclear Energy Branch of NRCan.

The books of account and the financial control and information system of the LLRWMO are consistent with AECL financial policies and control. They provide reasonable assurance that reliable and accurate financial information is available on a timely basis. The financial statements in this Annual Report present fairly the financial positions and the results of operation of the LLRWMO as of 1997 March 31.

The following paragraphs compare actual expenditures with the Business Plan, and provide a summary of expenditures by major program areas. Appendix B provides additional details on the allocation of costs to major program areas and a comparison to costs for the preceding four years.

Actual Expenditures Compared to Business Plan

Until FY 95/96, the LLRWMO funding was grouped under two main types: *core funding* and *project funding*. Core funding activities were those associated with routine operation of the LLRWMO and its committed programs. Project funding activities were those required for waste disposal or interim remedial work at specific major historic waste sites and which usually required substantial funding compared to routine operations. For financial planning and reporting from FY 95/96, this grouping is no longer used, although it remains possible to redistribute the totals to the old format for comparison. Thus, activities in FY 96/97 were grouped under the three major program areas of the LLRWMO, namely

- *Historic Wastes*
- *Ongoing Wastes*
- *Information*

This grouping reflects the three distinct areas within the mandate of the LLRWMO, and has also been adopted in reporting progress in the Operations Review section of this Annual Report.

Expenditure planning and tracking within the AECL financial reporting system is based on assigning a work project (WP) number to each major item of expenditure. Table 1 provides a summary of the types of expense with associated work projects (WPs). The types of expense are grouped together following the format mentioned above.

Table 1: Work Project (WP) Numbers & Description of Expenses

LLRWMO Mandate	Program	Description of Expenses (Subprograms/Projects)	WP No.
Resolve historic waste problems that are a federal responsibility	Historic Wastes	<i>Site Specific Historic Waste Projects:</i>	
		- Scarborough	576
		- Port Hope	578
		- Surrey	577
		- Fort McMurray/Northern Transportation Route	200
		<i>Non-Specific Sites Historic Waste Projects:</i>	580
Establish, as required, user-pay service for ongoing LLRW disposal	Ongoing Wastes	- Technical Assistance to NRCAN	579
		- Studies and Assessments	
		- Inventory Reports	
Address general public information needs	Information	- General Public Information	588
		- Technical Information	
	Administrative Management and Support Services ⁽¹⁾	310 ⁽¹⁾	
			- Salary Costs for Overhead Activities
			- Support Services and Facilities
- Miscellaneous Expenses, including			
- Net Balance from Port Hope Field Services Office (WP 562)			
- Net Balance from Cost Recovery from Non-NRCAN Users of Services (WP 558)			

⁽¹⁾ WP 310 collects those charges which are of a general overhead nature. Administrative management and support services which can be directly attributed to a WP are charged against that WP.

Table 2 provides the financial summary for funding received from NRCAN in 1996/97, with a graphical display in Figure 1.

Table 2: 1996/97 Financial Summary for NRCan Funding (\$M)

	WP Code	Business Plan	Business Plan Revision	Actual Expenditure
<i>Historic Wastes Program</i>				
- Scarborough (Malvern Remedial Project)	576	0.219		0.211
- Port Hope	578	0.331		0.326
- Surrey	577	0.260	0.360	0.426
- Fort McMurray/Northern Transportation Route	200	0.160		0.092
- Non-Specific Sites	580	0.120		0.150
Subtotal: Historic Wastes Program		1.090	1.190	1.205
<i>Ongoing Wastes Program</i>	579	0.090		0.165
<i>Information Program</i>	588	0.060		0.044
Administrative Management & Support Services	310	0.460 ⁽¹⁾		0.397
TOTAL NRCan Funding		1.700	1.800	1.811

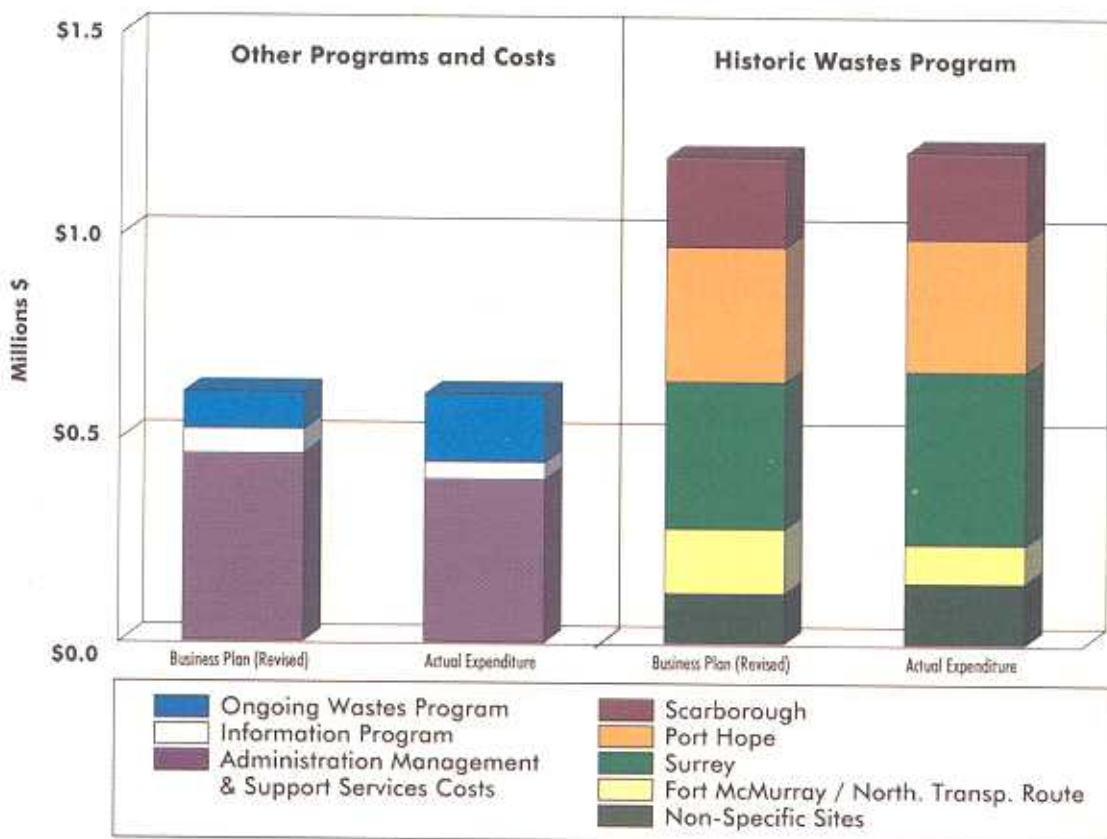
⁽¹⁾ Including balances from PHFSO operation and non-NRCan cost recovery projects.

The approved base budget was \$2.0 M. This was reduced by \$0.3 M to reflect the expenditures, over the budget for FY 95/96, incurred for the Malvern Remedial Project. The available budget for FY 96/97 was thus \$1.7 M, which was subsequently increased to \$1.8 M to accommodate additional requirements for the Surrey Project. The \$2.0 M base budget continues to reflect reduced NRCan funding resulting from government program review.

The Business Plan also included \$1.018 M in funding estimated from non-NRCan sources, primarily from the Government of Ontario in connection with the cost sharing agreement for the Malvern Remedial Project (MRP), Scarborough, Ontario. Smaller amounts were estimated for cost recovery from several historic waste site owners and from Indian and Northern Affairs Canada to provide cost recovery radiological survey services for an environmental restoration project at an old uranium tailings site in the Northwest Territories.

As noted in the preceding paragraph, requirements for the Surrey project were higher than estimated (\$426 k vs \$260 k original estimate). A portion of this could be accommodated from other work projects; however, the current funding level provides little flexibility, and additional funding of \$100 k was thus necessary to maintain the project schedule so that the Surrey Siting Task Force (SSTF) could issue their final report.

Figure 1: Financial Summary for NRCan Funding for 1996/97



Other project expenditures were generally in line with original estimates. Actual expenditures were slightly less than forecast in the following cases:

- for restoration of the previously cleaned up site in Fort McMurray (WP 200);
- in overhead costs (WP 310) due to the contribution to overheads from cost recovery from non-NRCan funding.

Expenditures were slightly more than forecast in the following cases:

- for non-specific historic waste sites (WP 580), due to the work done to utilize more efficiently the existing storage space at the LLRWMO storage buildings at CRL;
- for technical analyses and staff time costs in support of NRCan activities on the Deep River disposal project (WP 579).

The overall expenditure was \$1.811 M compared to the budget of \$1.8 M. The small difference of \$11 k was posted as accounts receivable by AECL.

Additional funding from non-NRCan sources was \$0.932 M, compared to the forecast of \$1.018 M. The major difference was due to the MRP — all planned work was accomplished at an actual expenditure of \$756 k compared to an original estimate of \$858 k. Other cost recovery work was about as forecast, with an expanded scope of work for Indian and Northern Affairs Canada (INAC) at the old Rayrock mine site and less work at LLRWMO historic waste sites.

Table B2 and Figure B2 in Appendix B provide additional details on non-NRCan funding.

Overall, the ongoing cooperation between the LLRWMO staff and the Uranium and Nuclear Energy Branch staff of NRCan has resulted in a flexible and cost-effective approach to changes in priorities. Funding from other sources, particularly for the Malvern Remedial Project, has also been crucial to maintaining progress. During most of the years of the LLRWMO's existence, resolution of the technical and social issues required to initiate projects at historic waste sites has controlled schedules. This continues to be mostly the case; however, funding availability is now the controlling factor in some cases.

Summary of Expenditures by Program Areas

The LLRWMO mandate has three major program areas - *historic wastes*, *ongoing wastes* and *information*. For comparison of expenditures in these program areas, the Administrative Management and Support Services costs of Table 2 (ie. \$0.397 k) have been allocated to the above program areas on a prorated basis. Table 3 shows a summary of the allocation by program area and is the basis for the graphical summary shown in the Highlights section of this report. Supporting details are contained in Table B3 of Appendix B, including the rationale for prorating.

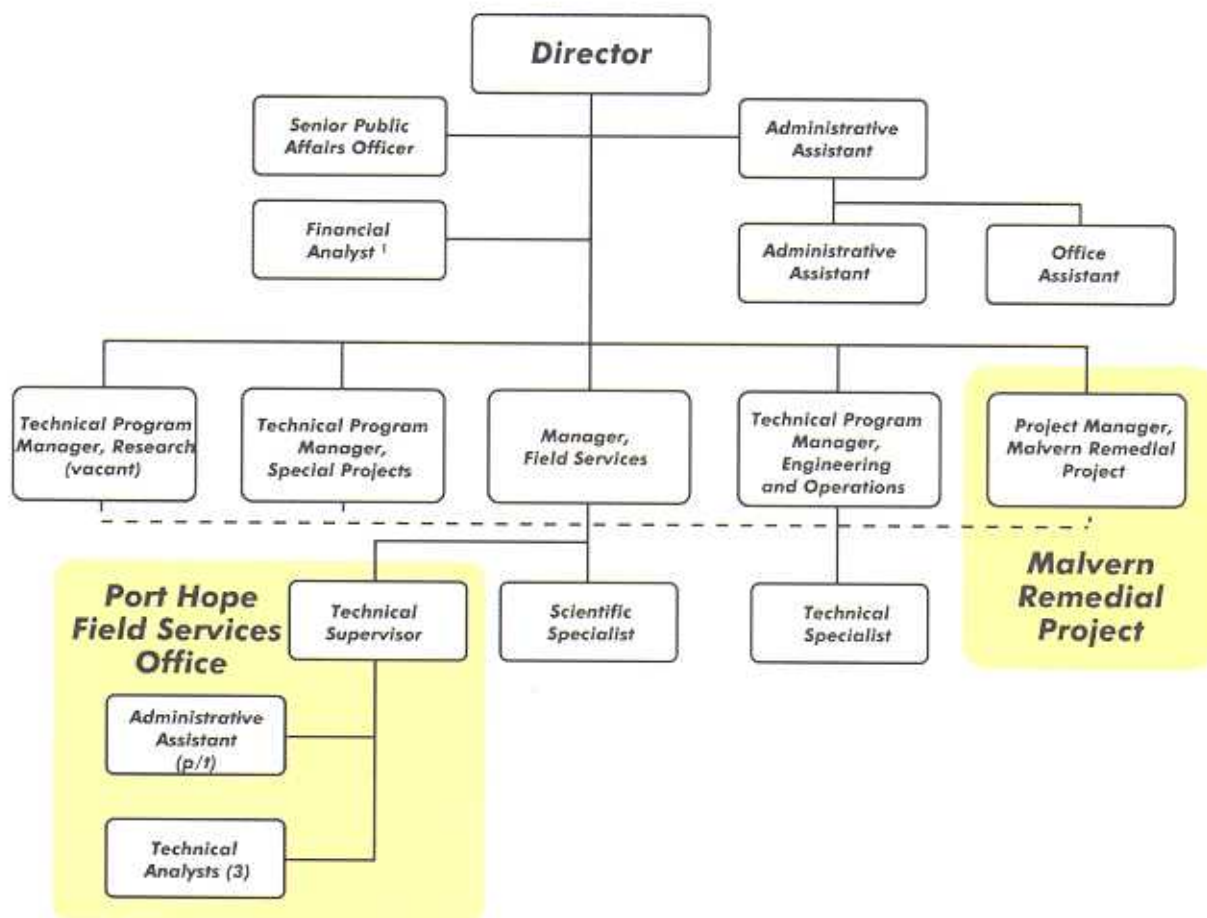
Table 3: Summary of 1996/97 LLRWMO Expenditures of NRCan Funds by Program Areas (\$M)

Program Areas	WP	Expenditures	Percent
<i>Historic Wastes Program</i>			
- Scarborough (Malvern Remedial Project)	576	0.270	15
- Port Hope	578	0.421	23
- Surrey	577	0.545	30
- Fort McMurray/Northern Transportation Route	200	0.116	06
- Non-Specific Sites	580	0.190	11
Subtotal: Historic Wastes Program		1.542	85
<i>Ongoing Wastes Program</i>	579	0.209	12
<i>Information Program</i>	588	0.060	3
TOTAL		1.811	100

It can be seen that over 85% of the funds from NRCan were utilized in direct support of historic waste projects, reflecting the consistently high priorities assigned to historic waste cleanups.

APPENDIX A

LLRWMO Organization Chart (as of 1996 April 01)



¹ Attached from AECL Finance
(p/t) Part Time

TABLE A1 - LLRWMO Staff List (1996 April 01)

Location	Position	Incumbent
National Office (Ottawa)	Director	R.W. (Bob) Pollock
	Sr. Public Affairs Officer	B.J. (Brad) Franklin
	Administrative Assistant	L.D. (Lorraine) Delaney
	Administrative Assistant	T.A. (Teena) Valentonis
	Office Assistant	M.I. (Monique) Rhéaume
	Financial Analyst ⁽¹⁾	S.E. (Sylvie) Beauchamp
	Manager, Field Services	B.A. (Barry) McCallum
	Technical Program Managers,	
	- Special Projects	P.L. (Pab) De
	- Research	(vacant)
	- Engineering & Operations	R.L. (Bob) Zelmer
	Technical Specialist	R.C. (Bob) Barker
	Port Hope Field Services Office	Scientific Specialist
Technical Supervisor		M.J. (Mark) Gardiner
Administrative Assistant (p/t)		S.A. (Sharon) Pickering
Technical Analyst		D.M.(Dale) Huffman
Technical Analyst		E.P. (Ted) Rowden
Technical Analyst		S.L. (Susanne) Ledgard
Malvern Remedial Project	Project Manager	B.S. (Bhajan) Dosanjh

⁽¹⁾ Attached from AECL Finance
(p/t) Part Time

APPENDIX B

B1. Comparison of Expenditures to Prior Year Expenditures

Table B1 shows a comparison of actual expenditures against approved funding for the last five years, from 1992/93 to 1996/97. This is graphically shown in Figure B1.

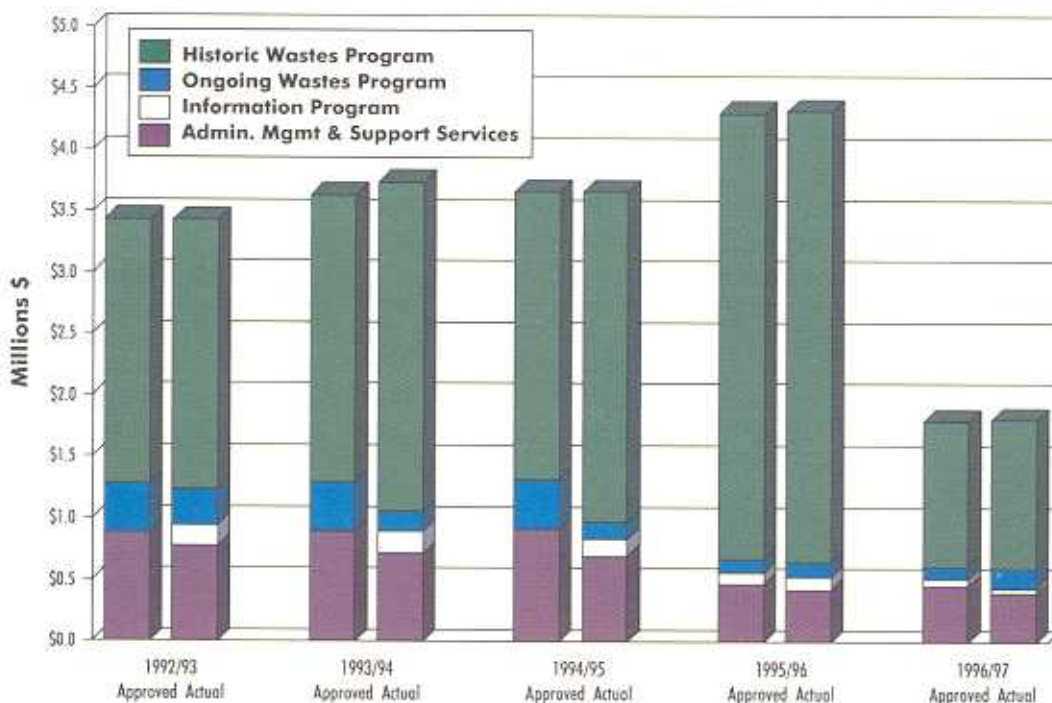
Table B1: Breakdown of LLRWMO Actual Expenditures Versus Approved Funding (\$ M) From 1992/93 to 1996/97

Programs Areas	1992/93		1993/94		1994/95		1995/96		1996/97	
	T.B. ¹ App'd	Actual	T.B. App'd	Actual	T.B. App'd	Actual	NRCan App'd	Actual	NRCan App'd	Actual
1. Historic Wastes Program										
- Scarborough	0.000	0.170	1.300	0.417	1.300	0.985	2.125	2.544	0.219	0.211
- Port Hope	0.800	0.313	0.500	0.064	0.000	0.372	0.425	0.470	0.331	0.326
- Surrey	0.600	0.341	0.000	0.116	0.000	0.197	0.365	0.301	0.260	0.426
- Ft McMurray/Northern Transportation Route	0.000	0.822	0.000	1.728	0.000	0.433	0.245	0.252	0.160	0.092
- Non-Specific Sites	0.250	0.550	0.250	0.352	0.250	0.695	0.170	0.101	0.120	0.150
Subtotal: Historic Wastes Program	1.650	2.196	2.050	2.677	1.550	2.682	3.330	3.668	1.090	1.205
2. Ongoing Wastes Program	0.400	0.287	0.400	0.172	0.400	0.143	0.110	0.122	0.090	0.165
3. Information Program	0.000²	0.172	0.000	0.174	0.000	0.139	0.090	0.100	0.060	0.044
4. Administrative Mgmt & Support Services	0.882²	0.773	0.899	0.714	0.916	0.699	0.470	0.429	0.460	0.397
Total original Treasury Board/NRCan approval	2.932	3.428	3.349	3.737	2.866	3.664	4.000	4.319	1.700	1.811
Subsequent Government- Wide Cost Reduction Program	(0.200)		(0.200)		(0.200)					
Subtotal: Initial Budget	2.732		3.149		2.666		4.000		1.700	
NRCan - Additional Funding	0.700		0.495		0.995		0.300		0.100	
TOTAL	3.432	3.428	3.644	3.737	3.661	3.664	4.300	4.319	1.800	1.811

1. Treasury Board approval for five-year funding ended in fiscal year 1994/95.

2. Includes Information Program budget (and was reported as "Staffing and Support Services, Core Funding, in 1995/96 LLRWMO Annual Report).

Figure B1: LLRWMO Actual Expenditures versus Approved Funding (from 1992/93 to 1996/97)



As mentioned in the Financial Review section, until 1994/95 all expenditures were reported under two main categories: *core funding* and *project funding*. Beginning in 1995/96, reporting was lined up to match the three elements of the mandate of the LLRWMO: *Historic Wastes Program*, *Ongoing Wastes Program*, and *Information Program*. However, for the purpose of comparison, the expenditures for FY 1992/93 to 1994/95 were redistributed, to the extent practical, to show entries under the three LLRWMO programs.

It should be noted that costs in FY 1995/96 and 1996/97 for administrative management and support services were reduced substantially. This was due to the fact that the LLRWMO National Office staff time which could be reasonably attributed to specific projects was directly charged against those projects, instead of being charged to the LLRWMO overhead account. This provided a fairer picture for both project and overhead costs. Also, core funding previously included two program costs: *Ongoing Wastes Program* and *Information Program*. In addition, it included activities required to meet commitments arising from AECB licenses, legal agreements, and other mandatory needs, which were, since FY 1995/96, charged directly to the relevant historic waste projects.

Between 1992/93 and 1994/95, the LLRWMO initial budget (original Treasury Board approval less government-wide cost reduction program, ie. *Subtotal: Initial Budget*, in Table B1) averaged \$2.8 M per year. High priorities have been consistently assigned to historic waste cleanups and additional funds, averaging \$0.7 M per year over this period, were provided by NRCan to enable major cleanup projects to proceed quickly when the opportunity became available. Program review reductions, to a base budget of \$2 M per year, were implemented in FY 95/96, but were more than offset by project specific funding for the MRP (initially \$2.0 M, subsequently \$2.3 M). FY 96/97 thus reflects the first year where the impact of the funding reduction is apparent. Historic waste project funding is substantially reduced, and a significant fraction is required for ongoing environmental and construction monitoring programs, particularly in Port Hope. There will, consequently, be an increased reliance on project specific funding, even for relatively small projects, if cleanup projects are to make progress when opportunities become available.

B2. Funding From Non-NRCan Sources for 1996/97

A substantial portion of the cost of some LLRWMO projects was provided by organizations other than NRCan. This additional funding is shown in Table B2 and graphically presented in Figure B2.

Table B2: Summary of Expenditures Versus Funding from NRCan and Non-NRCan Sources for 1996/97 (\$ M)

Program Areas	F U N D I N G		
	NRCan	Non-NRCan	Total
1. Historic Wastes Program			
- Scarborough	0.211	0.756 ⁽¹⁾	0.967
- Port Hope	0.326		0.326
- Surrey	0.426		0.426
- Fort McMurray/Northern Transportation Route	0.092	0.013 ⁽²⁾	0.105
- Non-Specific Sites	0.150		0.150
Subtotal: Historic Wastes Program	1.205	0.769	1.974
2. Ongoing Wastes Program	0.165		0.165
3. Information Program	0.044		0.044
4. Administrative Management & Support Services	0.397	0.163 ⁽²⁾	0.560
TOTAL	1.811 ⁽³⁾	0.932	2.743

Non-NRCan Funding Sources

⁽¹⁾ Government of Ontario - Management Board Secretariat

⁽²⁾ Non-NRCan Cost Recovery Work

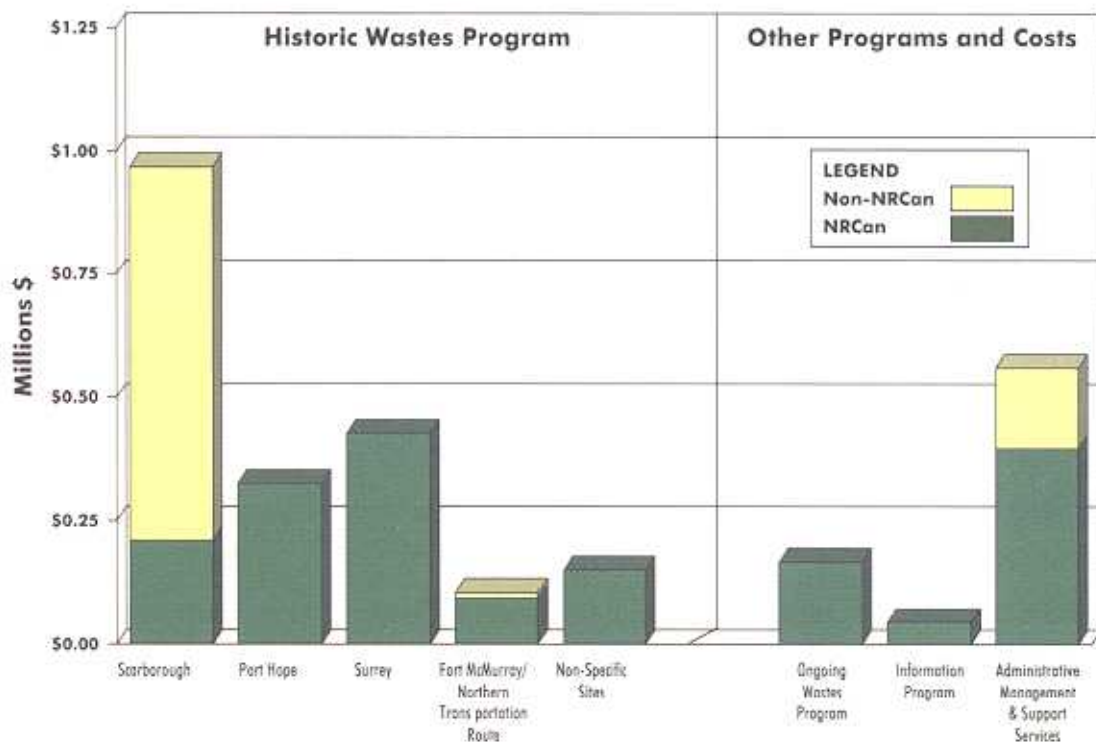
⁽³⁾ \$11 k accounts receivable from NRCan, to be invoiced in FY 97/98

In FY 96/97, the total expenditure by the LLRWMO was \$2.743 M of which approximately \$0.932 M was provided by non-NRCAN sources. The major sources of non-NRCAN funding were:

- \$0.756 M from the Management Board Secretariat of Ontario under a cost-sharing agreement between Ontario and Canada covering the Malvern Remedial Project;
- \$0.176 M from Indian and Northern Affairs Canada and from owners of historic waste sites. A standard approach exists for the sharing of costs with private owners at historic waste sites.

The Malvern Remedial Project represented about 27% of the LLRWMO expenditures in FY 96/97.

Figure B2: Contribution of NRCAN and Non-NRCAN Funding to LLRWMO Expenditures for 1996/97



B3. Details of Breakdown of Expenditures by the Three Program Areas

Table B3 shows the detailed breakdown of expenditure for the three LLRWMO program areas under two broad categories: work project (WP) directs and work project (WP) indirects.

Table B3: LLRWMO Expenditures of NRCAN Funds by Major Program Area for 1996/97 (\$k)

Program Areas	WP Code	WP Directs	W P I n d i r e c t s		Total ³
			Project Mgmt ¹ Costs	Overhead ²	
1. Historic Wastes Program					
- Scarborough (Malvern Remedial Project)	576	211	22	37	270
- Port Hope	578	326	35	60	421
- Surrey	577	426	44	75	545
- Fort McMurray/Northern Transportation Route	200	92	9	15	116
- Non-Specific Sites	580	150	15	25	190
Subtotal: Historic Wastes Program		1,205	125	212	1,542
2. Ongoing Wastes Program	579	165	16	27	209
3. Information Program	588	44	6	10	60
TOTAL		1,415	147	250	1,811

¹ Technical program and project management salary costs (WP 310)

² Administrative management and support services non-salary overhead costs (WP 310) distributed to WPs on a prorated basis.

³ Costs incurred by work projects funded by non-NRCAN are not included in this table; expenditures through Port Hope Field Services Office sources are included in Project Directs.

Work Project Directs

These are expenditures charged directly to work projects, such as external contracts, Port Hope Field Services Office labour and materials, project management staff time, etc.

Work Project Indirects

These costs are initially collected within WP 310. These are Administrative Management and Support Services costs incurred through the National Office, as they cannot be attributed to WPs directly. For the purpose of comparison among program areas, these costs are then redistributed among WPs on a prorated basis, the basis being the Project Directs Costs.

- **Project Management Costs**

These are *salary costs* for technical program, project management and administrative personnel at the National Office.

- **Overhead**

These are costs for *non-salary* routine operation of the LLRWMO National Office. They consist of space rental, contribution to AECL overhead, training, computers including software, QA coordination, office supplies, travel for administrative purposes and other miscellaneous costs.