EXPERIENCE OF THE LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT OFFICE WITH EARP

B.J. FRANKLIN
AND
R.W. POLLOCK

Low-Level Radioactive Waste Management Office
Atomic Energy of Canada Limited
1595 Telesat Court, Suite 700
Gloucester, Ontario. K1B 5R3

Abstract

The Low-Level Radioactive Waste Management Office (LLRWMO) was established by the federal government in 1982 to carry out the government's responsibilities for low-level radioactive waste (LLRW) management in Canada. The LLRWMO mandate includes the resolution of historic waste problems which are a federal responsibility. Assessment of LLRWMO projects in accordance with the federal Environmental Assessment Review Process (EARP) has been a long-standing requirement, both as a matter of AECL policy and because the work is federally funded.

Several projects have required interim storage at, or near, the original waste site. This aspect, interim storage, can be controversial, and is the primary focus of this paper. Specifically, the paper describes LLRWMO experience with environmental assessment, including public consultation as an integral part of the assessment process, for projects from 1983 to the present which have involved substantial volumes of contaminated soil.

The Low-Level Radioactive Waste Management Office

The Low-Level Radioactive Waste Management Office (LLRWMO) was established by the federal government in 1982 to carry out the government's responsibilities for LLRW management in Canada. The LLRWMO is operated by Atomic Energy of Canada Limited (AECL) through a cost recovery agreement with Natural Resources Canada (NRCan), the federal department which provides the funding and establishes national policy for LLRW management. Assessment of LLRWMO projects in accordance with the federal Environmental Assessment Review Process (EARP) has been a long-standing requirement, both as a matter of AECL policy and because the work is federally funded.

The LLRWMO mandate includes the resolution of historic waste problems which are a federal responsibility. Historic wastes are defined as wastes for which the original producer can no longer reasonably be held responsible and which are managed in a manner no longer considered acceptable. In general, these wastes are in the form of either bulk soils or building materials, contaminated with natural radioactive elements such as radium or uranium. Although progress is being made, with the exception of one site in the north for the disposal of a local inventory of mildly contaminated soil (ie. material not requiring an AECB licence for possession), there are currently no permanent disposal sites in Canada for LLRW. Cleanup projects undertaken by the LLRWMO thus also include interim storage of the wastes. Small volumes of waste are transferred to an existing warehouse-type facility, operated for the LLRWMO by AECL at the Chalk River Laboratories. This is not a practical approach for larger volumes of contaminated soil, and several projects have required interim storage at, or near, the original waste site. This aspect, interim storage, can be controversial.

LLRWMO Experience In Siting LLRW Storage/Disposal Facilities

There are many past examples in Canada in which government and technical experts have tried to implement projects without prior consultation with the community. This is often referred to as the DAD (Decide, Announce, Defend) approach, and it is marked by many past failures. The events subsequent to the discovery of radium-contaminated soil in the Malvern subdivision of Scarborough in 1980 are one such example. Several proposals to move the soil were unsuccessful due to vigorous public opposition to the proposed storage sites. In one, the LLRWMO undertook an extensive public information program in 1983, in parallel with environmental screening of a plan to move the contaminated soils to a storage site at a location, designated by the Ontario government, within Scarborough. This initiative was opposed by a citizens' group, precipitating a trial of the technical issues, which extended over three years in federal court. The case was eventually decided in favour of the decisions reached by the LLRWMO through the EARP process, which would have allowed the relocation of the wastes. However, in the interval, the Ontario government had offered to purchase the affected properties in Malvern, and subsequently announced plans to create a future natural environment park, including the area of the proposed storage site, which effectively ruled out its use for storage of the contaminated soil [1, 2].

More recently, the LLRWMO has been undertaking projects with the active support of communities (Figure 1). Several major projects have been performed within Port Hope since 1987. These have relied on public consultation concerning the problem to be solved, prior to defining the detailed technical solution. The community consultation process included small neighbourhood meetings, discussions with council, and public meetings and opportunities to comment on the draft environmental assessment. All comments were addressed in the final environmental screening report, and the end result of the processes were Council resolutions requesting that the projects proceed. This cooperative approach has resulted in two major projects involving cleanup and on-site storage in licensed facilities of up to 30,000 m^3 of contaminated soils, and the establishment of a Construction Monitoring Program based on the availability of a temporary storage site within the town for contaminated soils arising from the program.

Processes which differ in detail, but which share the broad principle of a cooperative approach to problem solving, have now resulted in projects to resolve the long-standing problem in Malvern and to initiate cleanup promptly at recently discovered sites in Fort McMurray, Alberta. In both cases, technical issues such as cleanup criteria were addressed and resolved cooperatively by those with a common interest in solving a shared problem. In Scarborough, however, much more extensive public interaction was required to reach general consensus on the cleanup and management of the resulting wastes. The Public Liaison Committee (PLC) played an important and integral role in ensuring that community views and concerns were considered in developing and assessing the Malvern Remedial Project. To help it participate in the project's technical considerations, the PLC retained its own technical consultant and had a representative attend all meetings of the Technical Advisory Committee. To ensure public input was adequately considered in project planning, the chair of the PLC was a member of the project's Steering Committee. However, and in spite of the extensive consultations and general consensus reached prior to the decisions under the EARP Guidelines Order, legal action was initiated by several owners of nearby properties to block use of the proposed temporary storage site. The legal action was subsequently resolved through successful negotiations, with an enhanced landscaping plan to visually reintegrate the site into the surrounding area being an important component of the agreement. Key facts concerning the Malvern Remedial Project are found in Table 1 [3].

Contaminated soils and buildings caused by the historical transport of uranium ores and concentrates were discovered in Fort McMurray in 1992. Cooperation between the municipal government, the local health authority, and provincial and federal government departments resulted in the successful implementation of a cleanup project there in 1993. The approach taken was to form a Working Group, consisting of representatives from all organizations having a primary interest or responsibility, to plan and oversee the implementation of the project. A community consultation program, carried out through the Working Group, contributed to the development of a technically sound cleanup and waste management plan and assessment in accordance with EARP. This program included a well advertised and attended open house in the community, preparation of a draft environmental screening report, and incorporation of community responses into the cleanup and waste management plans prior to finalization [4].

As part of the investigation of the historical transportation route, radiological surveys were also carried out at transfer points along the 2,200 km water route, used to transport the uranium ore from the mine on Great Bear Lake in the Northwest Territories to Fort McMurray. Verbal briefings of the findings were made immediately at each community. Areas where people were living in close proximity to contaminated soils were cleaned up during the investigations, in consultation with property owners, native leaders and local government officials. This occurred at three sites, where small cleanups were done and the wastes temporarily stored. The overall findings of the investigations were presented to the communities involved in 1994/95. In the short term there is no need for interim action at the remaining sites along the northern transportation route unless the uses of the properties change. Future work will include developing, in consultation with residents of the communities, native leaders and government officials, an overall plan for cleanup and long-term management of the resulting wastes, while continuing to perform any surveys or other interim work necessary to accommodate local land use requirements.

Lessons Learned

It is not surprising that initial attempts to move contaminated soil, in the early 1980s, failed. They incorporated valid technical solutions in that they could have moved the soil and contained it in a manner which would have protected public health and the environment through good engineering practices, and would not have contravened any regulations. They provided good technical answers to the technical questions being asked. They were accompanied by information programs which portrayed them as complete, or largely complete packages, and they failed because, in spite of a willingness on the part of the proponent to share all the technical logic with anyone who cared to listen, there had been little, if any, acceptance by the local community as part of the project planning process. These failures also increase the time and effort required to successfully implement a new project. This is because, in effect, the initial step becomes a climb out of the hole that has been dug in the past

Using the Malvern Remedial Project as an example, the public was involved in the process early and intensively through the PLC, newsletters, public meetings and a readily-available store-front office. Most of the questions being asked were not really technical questions although, as noted earlier, the PLC participated in technical discussions and decisions. People considering the impact of a potential storage site asked about things like how thick the walls would be, what sort of trucks would be used, what dust suppression measures would be in place, and who would monitor. What they were trying to find out was whether the project would pose any hazard to them, their families, their property and their way of life. The lesson is that the proponent will not achieve a satisfactory outcome unless it is recognized that satisfactory answers are arrived at only if the concerned public has had a hand in working them out. This was the approach used for this project [5, 6, 7, 8].

Having provided easy access for the public to project information, and having established public mechanisms for public participation in decision making, the level of public participation which actually took place, if considered as a percentage of the population of Scarborough, or even of the Malvern community, was small. It is certainly true that, during the period when this project was taking place there were other concerns which may have distracted people from the issue of contaminated soil, but it may also be true that demonstrating a willingness to include those from the community who wished to be involved in planning and decision-making, in itself, reduces public anxiety and, therefore, overall participation.

To borrow some phraseology from Dr. Peter Sandman of the United States, what earlier projects had treated as risk was, in the public's perception, a combination of hazard and outrage. Hazard can be calculated and is a technical issue. Outrage is completely different and is, Sandman argues, far more important. The earlier attempts to move the soil had been technically satisfactory but had outraged the public. This time the community actually helped develop the project and could have stopped it in its tracks, had it not been satisfied.

Processes involving extensive public consultation cost money, but so did the earlier processes which failed, and it can be argued that, particularly if lengthy court battles can be avoided, public consultation becomes a bargain. The consultation process in support of the MRP added in the order of ten per cent to the cost of the technical requirements, and this may be considered typical in a major project. Spending money on process will not, of itself, bring success unless the technical approach is sound and the public is involved early and in a meaningful way. It is

also important to devote considerable effort to pursuing and documenting the response to all technical questions and issues raised during the consultation process.

Regardless of the process, and the time taken to implement it, some amount of opposition to your project may remain at the end of the assessment phase. The opposition which remained in the Malvern project was amenable to settlement by negotiation. The lesson here is that the public is not homogeneous, and public consultation must be responsive to the concerns of all parties, by considering them seriously and by being willing to incorporate the results of that consideration into an evolving project plan.

In Malvern, the consultation process lead to the development and implementation of a project which resolved a long-standing issue. It included finding a site, within an urban area, to which radioactively contaminated soil could be transferred for sorting and removal of small quantities of material with licensable amounts of contamination, followed by interim storage of the remaining mildly contaminated soil. It incorporated the principles of safety and environmental protection, openess, fairness and of shared decision-making including, in particular, a community-lead discussion on siting. It thus differed from previous processes, not only in terms of its principles, but also in that it was successful.

REFERENCES

(1) FRANKLIN B.J., "Community Relations In Support Of Remedial Programs At Historic Low-Level Radioactive Waste Sites In Canada", Paper presented at the International Association For Impact Assessment, University of Illinois at Urbana-Champaign, 1991 June 7-11.

(2) FRANKLIN B.J., "Public Involvement In Remedial Work Programs At Historic Low-Level Radioactive Waste Sites, Recent Canadian Experience", Paper presented at the Department of Energy Environmental Restoration Conference, Environmental Remediation 1991 - "Cleaning Up The Environment For The 21st Century", Pasco, Washington, USA, 1991 September 8-11.

(3) FRANKLIN B.J., MARTINI M., "Development Of A Remedial Action Plan For Radioactively Contaminated Soil In An Urban Area, A Case Study", Paper presented at the International Association For Impact Assessment, Shanghai, China, 1993 June 11-15

(4) POLLOCK R.W., McCALLUM B.A., FEDORAK B., SCOTTEN R., MacKENZIE A. "A Cooperative Approach To Conducting An Environmental Cleanup Project - Experience Of The Working Group For The Fort McMurray Historic Uranium Cleanup Project", Paper presented at the Fourth International Conference on Safe Communities, Fort McMurray, Alberta, 1995 June 6-8.

(5) ACRES INTERNATIONAL LIMITED, "Report M93-05, Revised Environmental Screening of the Malvern Remedial Project (Draft For Public Review)", prepared for the Malvern Remedial Project, 5259 Dorchester Road, Niagara Falls, Ontario, L2E 6W1.

(6) ACRES INTERNATIONAL LIMITED,"Report M93-07, "Addendum to the Revised Environmental Screening of the Malvern Remedial Project", issued by the Technical Advisory Committee and the Public Liaison Committee for Acres International Limited, 259 Dorchester Road, Niagara Falls, Ontario, L2E 6W1.

(7) ACRES INTERNATIONAL LIMITED."Report M93-08, "Public Comments on the Revised Environmental Screening of the Malvern Remedial Project", issued by the Technical Advisory Committee for Acres International Limited, 259 Dorchester Road, Niagara Falls, Ontario, L2E 6W1.

(8) AECL RESEARCH, "Project Register And Initial Assessment Report (PRIAR), Environmental Analysis And Assessment Section, Whiteshell Laboratories, Pinawa, Manitoba, R0E 1L0

TABLE 1: KEY FACTS CONCERNING THE MALVERN REMEDIAL PROJECT

Date that contaminated soil was discovered: - McClure Crescent - McLevin Avenue	 November, 1980 April, 1990
Beginning of current project	March, 1992
Acquisition of soil sorting/temporary storage site	September, 1993
Start of excavation	June 1, 1995
Number of properties cleaned up: - residential - proposed for commercial/residential development	 68 3
Volume of soil removed	16,600 m^3
Quantity of sod installed (McClure Crescent area site)	9,650 m^3
Duration of soil removal/restoration	6 months
Volume of soil and artifacts containing licensable concentrations of radium being shipped for storage in the LLRWMO warehouse at Chalk River (est.)	50 m^3
Final volume of mildly contaminated soil in temporary storage mound (est.)	7,700 m^3
Volume of clean soil segregated out during sorting process	8,850 m^3
Cost of MRP to end of FY '95/96, including planning	$7.9 million
Estimated total cost to completion, excluding final disposal	$8.5 million
Estimated future cost for transportation and disposal of mildly contaminated soil ($300 - $1,000 m^3)	$2.3 - $7.7 million
Additional disposal cost if clean soil had not been segregated out ($300 - $1,000 m^3)	$2.7 - $8.9 million
Approximate value of properties cleaned up: - residential - proposed for commercial/residential development	 $10.2 million $20 million
Number of lost-time accidents	0

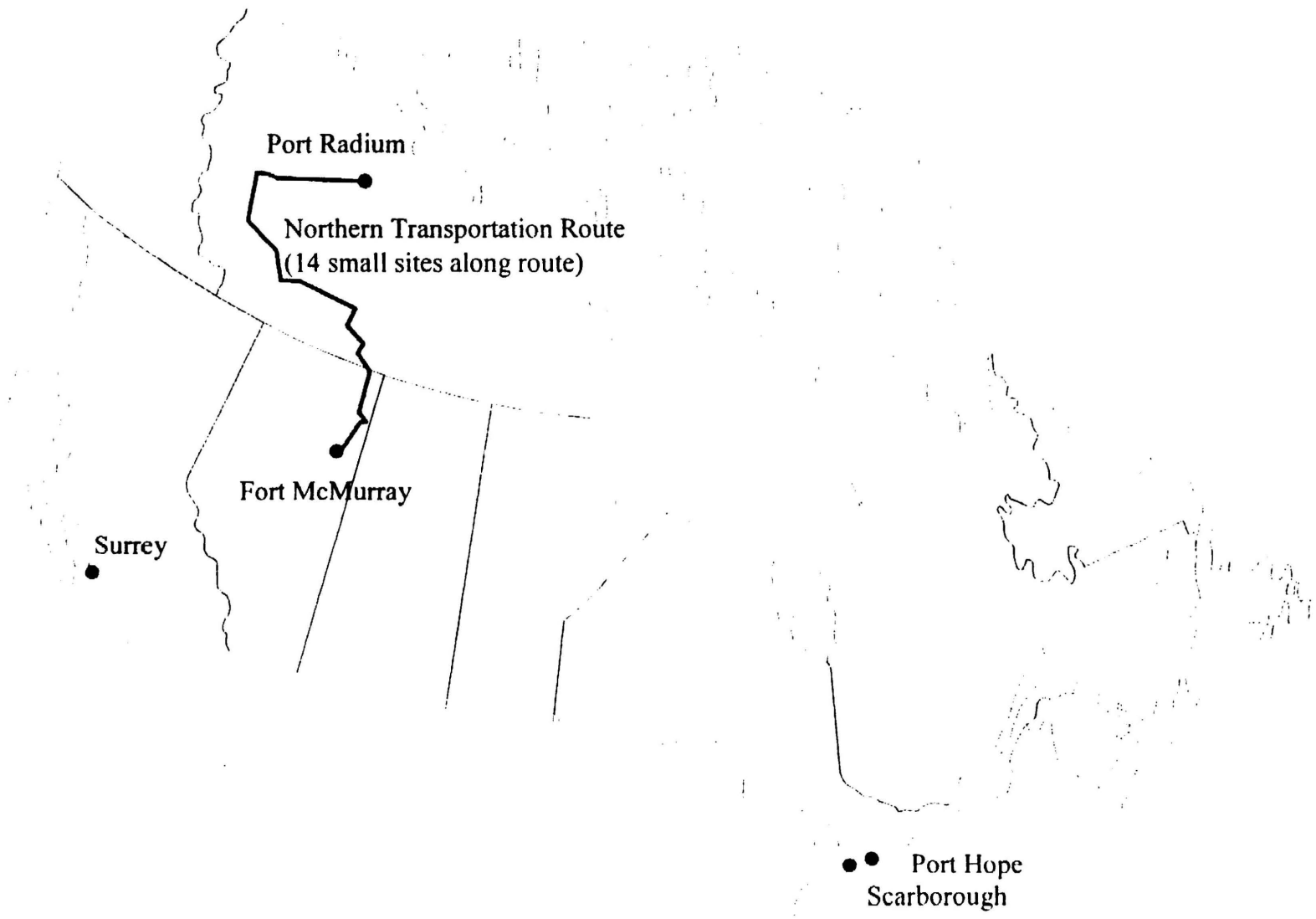

FIGURE 1: MAJOR HISTORIC WASTE AREAS IN CANADA BEING MANAGED BY THE LLRWMO