

# **Lessons Learned**

## **On Community Involvement in the Remediation of Orphaned and Abandoned Mines**

### **Case Studies and Analysis**

**February 2003**

**A report of the**

**National Orphaned/Abandoned Mines Initiative (NOAMI)**

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## EXECUTIVE SUMMARY

The National Orphaned and Abandoned Mines Initiative (NOAMI) was established by Mines Ministers in September 2001. Its objective was to make progress, on a multi-stakeholder basis, in evaluating issues, challenges and opportunities associated with rehabilitating problematic orphaned and abandoned mine sites in Canada. A subgroup of this committee was established to address the issue of community involvement, under the following objective:

*To develop a plan to foster community involvement in decision-making about closure and reclamation standards, and to ensure that targeted end-use and reclamation standards are acceptable to local communities.*

The Task Group commissioned a preliminary study to characterize key issues and identify potential case studies, and subsequently, a second report that would evaluate lessons learned on community involvement for three mine sites: Deloro Mine (Ontario); Giant Mine (Northwest Territories) and the Mount Washington Mine (British Columbia). Community involvement processes at sites in the U.S. were also investigated.

### METHODS:

Community contacts for each site were chosen to reflect a diversity of community perspectives. Interviews were conducted with a representative selection of the community and governments. Questions focused on the following categories: Site Background; Community Involvement Process; Community Involvement in Site Remediation and Related Work; and Long-term Outlook. A shorter survey was used with additional community members, to gain a sense of the general public's perception of the remediation process. Summary and analysis of the interviews and surveys were without attribution, in order to maintain confidentiality of those interviewed. The research on U.S. experiences with community involvement included a review of the U.S. Environmental Protection Agency's (EPA's) Superfund Community Involvement Program and public participation initiatives at other contaminated sites in the country. A literature review of relevant web sites, reports, documents, media, and academic papers was completed for both the case studies and the U.S. research.

Lessons learned were evaluated based on key factors that contribute to effective communication and decision-making, such as trust and respect, accountability, transparency, technical resources, training, capacity building, facilitation, and equity.

### CASE STUDIES

#### Deloro, Ontario:

A succession of mining, smelting, chemical and pesticide production, over a period of 100 years, has left the area around Deloro (and downstream) contaminated with metals, radioactive materials, PCBs, bulk fuel and chemicals. The Care Delivery Network Project asserts that cancer rates and birth abnormalities in the area are high in Hastings County. In 1979, the site was abandoned following a clean-up order from Ontario Ministry of Energy and Environment (MOEE), leaving MOEE as the manager of the site.

There have been four court cases related to the site. In one, a community member was compensated for the death of her husband (lung cancer); in the second, a Class action suit was initiated for \$55 million in damages against MOEE, MNDM, Ministry of Health, Attorney General of Canada, Canada Eldor Inc., Atomic Energy Control Board, BOC Canada Ltd. (ongoing); and in the third, a charge was made against the Ontario government for allowing damage to fish habitat. This case ended in 2001, and MOEE was found to have demonstrated due diligence during the

time frame of the charges. Following this decision, the fourth case, which charged the Ontario government for "unlawfully discharging/permitting the discharge of a contaminant (radon) into the natural environment" was withdrawn since the problem pre-dated MOEE involvement.

Public pressure has been exerted to have the site cleaned up; to receive compensation for damages to health and property value; and to have a more transparent process for community involvement in decisions made about remediation of Deloro. In 1997, a Public Liaison Committee was established by MOEE (in conjunction with two government technical committees), with MOEE staff serving as the committee chair. This structure has been perceived as a conflict-of-interest, as MOEE is also responsible for the site remediation. Health studies and environmental monitoring studies have been met with controversy, as well.

#### Giant Mine, Northwest Territories:

The Giant Mine in Yellowknife, NWT, began producing gold in 1948, and with it, arsenic trioxide dust. Since the 1950s, tonnes of the dust have been stored in underground chambers on the mine site, adjacent to Great Slave Lake. Yellowknife and the surrounding area have elevated levels of arsenic that some claim is from the years of gold roasting, which sent arsenic and sulphur dioxide up the stack and over the surrounding land.

When Royal Oak Mines was declared insolvent in 1999, the Royal Oak Project Team (and subsequently the Giant Mine Project Team) was established to manage the properties abandoned by Royal Oak. The Team has been looking at remediation possibilities for the arsenic and the mine site, and is now in the process of consulting the public on the options. Some members of the public, however, perceive that it was included rather late in the process, and this has led to some mistrust between the community and the government.

#### Mount Washington, British Columbia:

Mount Washington Mine was a small, open-pit copper mine that operated for less than three years in the mid-1960s. While its operations were brief, the mine left a serious acid mine drainage problem behind. Elevated copper levels have contributed to the destruction of the fishery in the Tsolum River – a loss that has been estimated at \$2 million per year.

The Tsolum River Task Force was formed with the overall goal to “restore the Tsolum River watershed to historic levels of health and productivity.” The Task Force model was extremely effective in bringing together all stakeholders to discuss issues in and solutions for problems in the Tsolum River watershed. The Task Force included members from different levels of government (provincial and federal), community environmental organizations, and the mining, fishing and forestry industries.

Before the Task Force's funding ran out, it was highly effective in restoring fish habitat, monitoring water flows, and mapping the watershed. It was less successful in getting remediation work done at the mine site, and as such, copper levels remain elevated in the river.

### **LESSONS LEARNED FROM CANADIAN AND U.S. EXAMPLES**

This study revealed a number of lessons, common to the Canadian and U.S. case studies, related to community involvement in the remediation of contaminated sites. The following is a selection of the key lessons:

#### **Benefits of Community Involvement**

- Community involvement leads to better decisions when it comes to the remediation of contaminated sites. In some cases, community involvement also leads to lower remediation costs.

## **Barriers to Community Involvement**

- People living near contaminated sites may be hesitant to trust a government that failed to prevent environmental contamination. As a result, lack of community trust in government often becomes a major barrier to participation in a government-led process.
- Communities want to have “meaningful” input into decisions related to the remediation of contaminated sites. They may not participate in a process if there is no opportunity for two-way dialogue or no possibility to influence the decisions.
- There may be social, economic, political, economic, historical, cultural, and health-related barriers that affect the willingness or ability of a community member to participate in a process related to mine site remediation.
- Disillusionment with processes that do not adequately reflect community composition, or that fail to resolve conflicts in a respectable manner, may also diminish participation and prevent community members from becoming involved.

## **Overcoming Barriers to Community Involvement**

- Building trust between community members, government and others will likely be necessary if community involvement processes are going to be successful. Trust may be built when community members see that some of their priorities and concerns will be addressed within a process.
- Communities are not homogeneous entities. As a result, it is likely that a number of communication tools and strategies will have to be used to disseminate and gather information, and educate community members. Extra effort should be made to ensure that the information is distributed beyond “those most willing to hear it” and that input is received from more community members than “those who are easiest to hear from.”
- Some of the information related to the remediation of contaminated sites is extremely technical. Consequently, efforts should be made to convey this information in an easy-to-understand format. Otherwise, large segments of the community will not have the knowledge to understand the issues and will be unable to fully participate in discussions related to remediation.
- In many of the case studies examined for this report, a lack of capacity to decipher and utilize technical reports and data was seen as a barrier to meaningful participation in discussions concerning the remediation of contaminated sites. Funding should be made available to help community groups hire technical advisors to help them better understand the scientific data. This will enable the community members to make more-informed decisions related to remediation options.
- Capacity-building efforts that increase community participation in remediation work can both empower the community members and better enable them to understand the challenges faced in the remediation of contaminated sites.
- Health and social capacity building efforts may be necessary as a parallel track to the technical capacity building. Wellness centres, literacy programs, programs with youth, health support initiatives, re-training programs, etc., can help to improve the ability of community members to participate fully in decisions that affect them.

## **Lessons Related to Formal Community Involvement Processes**

- The nature of a community's involvement in a process should be made explicitly clear to participants up front. This is necessary to reveal differences in expectations of the level of influence that the community members will have on the remediation decisions. Failure to do so may result in community frustration and increased distrust in the process if, and when, their expectations are not met.
- Community involvement mechanisms should include broad representation of the community and a diversity of views.
- Early involvement in planning and decision-making can help to take citizens out of a reactive position, and may offer them a more meaningful opportunity for engagement in discussions of options, tradeoffs, and consequences.
- Actions to prevent high rates of participant turnover should be implemented. These actions could include: a process for dealing with conflict; financial support for community members' expenses; babysitting services; technical assistance to community members; paid staff to do the administrative work that volunteers cannot accomplish; and defined end-points for committees.
- Agency accountability within a public participation process is essential. The credibility of the process may be undermined when agencies do not respond (or fail to respond in a timely manner) to the public's input, suggestions, or recommendations.
- A lack of fairness in the process (e.g., unequal time allowed for different viewpoints to be heard) can diminish the credibility of the process.
- It is important that conflicts are resolved in a timely manner that is both respectful and fair. Effective facilitation of meetings can be critical to working through the conflicts that will likely arise when a diversity of individuals come together in one process.

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**Appendix D:** Interview Summaries on Community Involvement for: Deloro Mine, Ontario; Giant Mine, Yellowknife; and Mount Washington Mine, British Columbia



## 1.0 INTRODUCTION

The National Orphaned and Abandoned Mines Initiative (NOAMI) Advisory Committee was established by Mines Ministers in September 2001. Its objective was to make progress, on a multi-stakeholder basis, in evaluating issues, challenges and opportunities associated with rehabilitating problematic orphaned and abandoned mine sites in Canada. A Task Group under this committee was established to address the issue of community involvement, with the following objective:

*To develop a plan to foster community involvement in decision-making about closure and reclamation standards, and to ensure that targeted end-use and reclamation standards are acceptable to local communities.*

The Task Group commissioned a preliminary study to characterize key issues and identify potential case studies, and subsequently, a second report that would evaluate lessons learned on community involvement for three mine sites: Deloro Mine (Ontario); Giant Mine (Northwest Territories) and the Mount Washington Mine (British Columbia). Community involvement processes at sites in the U.S. were also investigated.

After reviewing the preliminary study,<sup>1</sup> the Community Involvement Task Group commissioned this study to provide a more detailed examination of the community involvement process at contaminated and/or unsafe sites in Canada. As well, information was requested on community involvement processes used by the U.S. Environmental Protection Agency (EPA), to draw on the lessons learned by our neighbours to the south.

In this report, we first examine the community involvement processes related to three abandoned/orphaned mines in Canada. These include: 1) the Deloro Mine in Ontario; 2) the Giant Mine in the Northwest Territories; and 3) the Mount Washington Mine in British Columbia. The report continues with a review of lessons learned from community involvement in the clean-up of Superfund and other contaminated sites in the U.S. A discussion section summarizes the common themes and lessons learned from the Canadian and U.S. examples. Finally, the report concludes with a set of recommendations on further research required on community involvement in abandoned/orphaned mine site remediation.

## 2.0 METHODS

The Community Involvement Task Group and the NOAMI Advisory Committee selected three case studies to be reviewed in this report. They included: 1) the Deloro Mine in Ontario 2) the Giant Mine in the Northwest Territories and 3) the Mount Washington Mine in British Columbia. Additionally, U.S. examples of community involvement in site remediation were investigated.

For the Canadian case studies, community contacts for each site were chosen to reflect a diversity of community perspectives. Attention was paid to ensure equitable representation from community members that were currently, or had previously been, involved in the formal process. Individuals who had not been involved in the formal process, but who resided in the affected area, were also included. Interviews were conducted with a representative selection of community and government (for example, community groups, First Nations, churches, and governments with regulatory or advisory roles, etc.).

Interviews were conducted based on two formats: a long interview and a short survey. Examples of the templates used for the long interview and short survey are found in Appendix A.

The long interviews covered a range of topics on community involvement in the remediation of contaminated sites. The list of interview questions was developed based on questions and subject areas recommended by the Community Involvement Task Group of the National Orphaned/Abandoned Mines Advisory Committee. The questions were organized into the following categories: Site Background; Community Involvement Process; Community Involvement

in Site Remediation and Related Work; and Long-term Outlook. Interviews took, on average, two hours to complete.

The short survey format was used to focus the discussion on the topic of community involvement and public perception of the remediation process. The survey used a series of questions that could be answered using a ranking system, as well as space to provide further comments. These surveys have been summarized in content, but no statistical analysis was conducted (the number of short surveys was not statistically significant). The short time frame of the project limited the number of short surveys that could be conducted, as time was focused more on the in-depth interviews.

The contacts for each site are listed in Appendix C. Summaries for the interviews are compiled in Appendix D, without attribution (in order to maintain confidentiality of those interviewed). The summary chart lists all comments (which were weighted equally) from both the long and short interviews.

The case study analysis provided in the main text was compiled from the interview summaries, and literature review of relevant web sites, reports, documents, media and research papers. EPA analysis was derived from discussions with an EPA staff person; EPA Superfund case studies, and documents and information from EPA's web site; and scholarly research on community involvement initiatives, including specific case studies on public participation in contaminated communities. Resource materials used in U.S. analysis have been referenced.

The discussion on "lessons learned" was based on a comparison between the experiences of the Canadian examples, experiences of the U.S. EPA and other U.S. case studies, and literature on community involvement at contaminated sites.

The evaluation process of this research was guided by the key principles set out in the scoping report prepared by CCSG Associates for the National Orphaned/Abandoned Advisory Committee on community involvement in abandoned mine remediation.<sup>2</sup> These include factors that contribute to effective communication and decision-making, such as trust and respect, accountability, transparency, technical resources, training, capacity building, ownership, facilitation and equity.

Final recommendations have been provided to recognize the limitations of this study and suggest potential avenues for further evaluation.

## DEFINITIONS

While there is a vast literature on the distinction between *public* and *community* (community is generally a subset of public), we have chosen to use the terms public and community synonymously. *Public participation* and *community involvement* are also used interchangeably, to denote a process whereby individuals and groups may do one or more of the following: communicate; interact; exchange information; provide input around a particular set of issues, problems, or decisions; and influence or participate in decision-making.

## 3.0 CASE STUDIES

### 3.1 DELORO, ONTARIO

#### 3.1.1 Brief History

The Deloro site, situated in southeastern Ontario, is located in the Moira River watershed, which flows to the Bay of Quinte on Lake Ontario. Between 1886 and 1899, Deloro was a gold mining and smelting operation (with high concentrations of arsenic removal). During this time, there were five successive mining companies at the site (Gatling/Gold and Silver Mining Company, Canada Consolidated Gold Mining Company, Hastings Mining and Reduction Company, Canadian Goldfields Ltd., and Atlas Arsenic).<sup>3</sup> In the 1900s, radioactive waste from Eldorado Nuclear in Port Hope was brought to the site and processed for cobalt.<sup>4</sup> M. J. O'Brian (CP Rail) was responsible for the evolution of Deloro from silver and cobalt smelting to Stellite research and production. The company also diverged into chemical production and became a major manufacturer of arsenic pesticides. Deloro Stellite moved to Belleville in 1961. Ownership of the Deloro site was transferred to Erickson Construction in 1970,<sup>5</sup> which subsequently abandoned the site in 1979 following a clean-up order from Ontario Ministry of Energy and Environment (MOEE).<sup>6</sup> A number of residents told us that a red tailings flood from the site occurred in 1978 or 79, although MOEE has no record of it. In 1979, MOEE invoked Section 99 of the *Environmental Protection Act* and became responsible for, and manager of, the site.<sup>7</sup>

Aerial photographs of the early years of the mining operation show a deforested circumference around Deloro caused by smelter stack emissions. Arsenic dust emitted from the stack, and blown from waste piles, was also high in other metals and radioactive materials.

The town of Deloro is in close proximity to the contaminated area, and although the operation has long since shut down, there continues to be residual contamination in town originating from the deposition of stack emissions and dust. During the years of smelter operation, local residents couldn't hang laundry out due to deposition of stack soot that was high in metals.

When the mine was in operation, immigrant workers had the worst jobs, but the health and safety of all Deloro workers was compromised by high levels of metals (particularly lead and arsenic) and radioactive materials. The broader community was also affected. Between 1953 and 1957, there was a high incidence of respiratory cancer and three deaths.<sup>8</sup> In 1974, the number of Hastings county deaths from cancer and lung disease was 119% greater than the provincial average.<sup>9</sup> According to the Care Delivery Network Project, cancer rates and birth abnormalities in the area remain high in Hastings County.<sup>10</sup>

The site has had environmental problems as a result of dam instability and overflow of tailings (especially with spring freshet). Water and sediment of the Moira River, Young's Creek and wetlands have been known for their contamination since the 1960s, when MOEE Water Resources Commission analysed samples that were high in arsenic. Community members report that Young's Creek valley was red and the creek ran red in the 1950's and 60's. Also in the 1960s, dead fish were removed from Moira Lake shores daily, and cows died from drinking the water of Moira River. Sampling in 1970 found, in addition to the metals and radioactive materials, toxic compounds from chemical plant, PCBs, bulk fuel, and herbicides.

Both the town of Deloro and the surrounding areas have been affected economically by the contamination. For example, in Deloro, property values have been adversely affected, and declining tax revenues have affected town services in Deloro. Amalgamation forced the closure of the town office, and public access to the Library and Community Centre have been affected. Tourism at Moira Lake has declined. There have, however, been some jobs created related to remediation (e.g., jobs in water treatment, heavy equipment operation, and some regional consulting work).

The Deloro mine site is 650 acres<sup>11</sup>, and divided into four areas for clean-up and closure: 1) industrial area (smelter, refinery, research and chemical laboratories); 2) red mud tailings; 3) Young's Creek; and 4) former mining areas.

The Ministry of Northern Development and Mines (MNDM) is usually responsible for mining related sites, but MOEE took over in 1979 and has continued to take the lead. In the 1980s, MOEE installed a water treatment facility, which reduced arsenic levels by 80%.

Clean-up costs of Deloro are currently estimated at \$25 million. Remediation activities to date include: hazardous waste disposal; upgrading of the arsenic treatment plant; capping shafts; and demolishing smelting and refining infrastructure. Seventeen million has already been spent. The National Contaminated Site Remediation Program contributed \$1 million for capping shafts.

Since radioactive material is regulated under federal legislation, any further clean-up at Deloro will require a federal environmental assessment (EA).<sup>12</sup> (The province was previously exempted from conducting an EA). This new federal EA requirement could cause between a two to five-year delay in remediation activities, and it could cost as much as \$500,000 to carry out the requirements of the EA process.

### **3.1.2 Nature and Level of Community Involvement**

Deloro has not been in operation since 1961. Since that time, there has been increasing awareness about the extent and nature of the contaminants from the Deloro site, and concern over the ongoing impacts to health and environment.

Legal action has been taken in an effort to have the site cleaned up, and to receive compensation for damage to health and property values. When Ted Galloway, a worker who drove radioactive material from Port Hope, died of lung cancer, his wife was given compensation. Many say there should be compensation for the lost health of the workers and their families as well. More recently, three court cases have created pressure to have a more transparent process for community involvement in decisions made about remediation of Deloro:

- 1) In 1998, a class action suit was initiated for \$55 million in damages plus legal costs against MOEE, MNDM, Ministry of Health, Attorney General of Canada, Canada Eldor Inc., Atomic Energy Control Board, and BOC Canada Ltd. The volunteer commitment to this case has been extensive, at 40 hours per week for three years, and has brought together a number of Deloro residents to express their concerns.
- 2) In 1997, the Environmental Bureau of Investigations (EBI) charged the Ontario government for allowing damage to fish habitat, based on sample analysis conducted by an independent community group. The Attorney General took over prosecution of this court case in 1999. The EBI court case ended in 2001, and MOEE was found to have demonstrated due diligence during the time frame of charges.
- 3) In 1998, the Environmental Bureau of Investigations (EBI) charged the Ontario government for "unlawfully discharging/permitting the discharge of a contaminant (radon) into the natural environment", this happened to be on the site of Ted Galloway's house in Deloro village. This case was withdrawn following the 2001 decision on the case outlined in 2 above since the problem pre-dated MOEE involvement.

Public Liaison Committee meetings were suspended during the period June 1999 to March 2001 for the ministry to focus their efforts on the court case.

Contamination in Deloro has been prevalent for a long time. Children used to play on arsenic piles. It was expressed that some community members have "blindness on," as they don't want to admit that they brought up their children in contamination that could harm them. Many Deloro residents, however, remain concerned that their health is being compromised by the

unremediated site. They watch any government intervention to see if there is cause for concern, and their fear was heightened when workers came to fix a gas line wearing hazard suits to do the excavation work. There are concerns, as well, because when ground is dug up in Deloro it is disposed on-site as hazardous waste (but only once it is disturbed). MOEE says that the material is not hazardous, but is just solid waste, and that the hazard suits are required by a ministry protocol established to prevent the spread of contamination in the environment by managing excess material from construction/utility related activities.

Many community members want the opportunity to relocate if the remediation fails to address their health concerns in a timely manner. Others don't give credence to the possibility of health impacts and want to stop talking about it so that property values will recover.

The first Environmental Assessment Act exemption for MOEE was received in 1981, and included conditions to keep the public informed. In 1992, the concept of a public liaison committee was documented but not initiated until 1997. In 1998, MOEE was further exempted from the requirement to conduct an Environmental Assessment of its remediation (using the Security Account Project Exemption). Furthermore, to expedite the clean up, MOEE - after discussions with the Public Liaison Committee and a posting on the Environmental Bill of Rights Registry - was exempted from the formal public hearing process, with the understanding that the Ministry would consult with stakeholders.

#### **3.1.2.1 Public Liaison Committee Membership**

In 1997, MOEE initiated a public process to involve government and community members in the Deloro remediation project. There are three project liaison groups: The Technical Liaison Committee and the MOEE Technical Committee, both of which are made up of government members, and the Public Liaison Committee, which has community member representation.<sup>13</sup>

Members of the Technical Liaison Committee represent any municipal, provincial or federal agency that is involved in permitting aspects of the remediation project (the federal Departments of Fisheries and Oceans and Environment Canada, the provincial ministries of Natural Resources, Northern Development, Environment, and Labour, the Coast Guard and Quinte Conservation Authority, Atomic Energy Canada, Ontario Clean Water Agency).<sup>14</sup> The MOEE Technical Committee members are from internal departments of MOEE, and they provide technical advice and help with regulatory requirements. These committees operate independently with the facilitation of a consultant.

The initial convening session of the Public Liaison Committee (PLC) was by invitation to selected community members from MOEE. Reeves and councillors of the watershed were asked to attend and to provide suggestions for potential committee members. MOEE selected initial members, but anyone can attend PLC meetings. Many of the participants are senior members of the community, which does not represent a broad cross section of the community diversity. Some members interviewed felt they were encouraged to participate and felt no resistance, while others with dissenting views were not told when the meetings were to be held, and media were not allowed to come to initial meetings.

There has been some turnover of membership. It can be difficult for newcomers to get up to speed on the issues, and there is no process to help in this regard. Recent meetings seem less well attended, which has been attributed to a variety of factors including lack of trust in the health and environmental studies and the resulting conflict among the committee members. Others feel that their input does not have a direct link to technical decisions and the review of remedial options – a sense that is confirmed, since they see very few results. Some feel the committee is functioning reasonably with no resistance.

### **3.1.2.2 Public Liaison Committee Structure, Funding and Protocols**

The Public Liaison Committee (PLC) was initiated in 1997, with a consultant to guide the process. The consultant has remained a part of the process. The cost for the consultant, which is paid by MOEE, is approximately \$10,000 per meeting. Volunteer expenses for the PLC are not paid, but some of the reeves and councillors attend as part of their job.

Meetings are held quarterly, with the technical meeting during the day and PLC meeting in the evening. PLC meetings are open to the public but are not advertised. The minutes of the meetings can be obtained if requested.

Time commitment for PLC members averages five hours per month, and this includes the review of materials and attendance at the meetings. A bigger time commitment, however, is required when reports are being prepared and reviewed. In contrast, community members who oppose the PLC process have been working towards solutions as though it were a full-time job. Technical Liaison Committee members, meanwhile, contribute approximately four days per year.

The PLC meetings are chaired by a MOEE staff member (appointed by MOEE), who works with the consultant to conduct the meetings. Many are concerned that this appointment is a conflict of interest, since MOEE is currently responsible for the impacts related to the site. Most view the chair not as neutral or unbiased, but rather, the chair is seen as controlling the process. Many suggested that an independent chair would be more appropriate and would greatly improve the credibility of the process.

Uncertainty around the accountability of the chair has led to unrest within the PLC. For example, conflicts arose when outspoken environmentalists felt their concerns were not being addressed. Some viewed the environmentalists as outsiders meddling in the process, and this brought about negative feelings and diminished trust. At another meeting, media and a range of community members addressed the chair with their concerns about the lack of accountability. It was subsequently decided that future conflicts of this nature would be resolved by appointing a chair at that meeting, so that the MOEE staff person will not have to chair a conflict in which he is implicated.

The PLC is supposed to be a forum for ongoing dialogue and information sharing, a means to provide a sounding board for MOEE, and a formal process for feedback from the community. Roles for the committee were discussed at the first meeting in June 1997 and again in 2001, but many involved describe that the aims and objectives for the PLC are not clearly defined. Many past and present members consider that the primary objective of PLC is to allay public fear – a publicity gesture aimed to decrease the explosive potential of the situation. The PLC is set up for presentations and taking comments, not for listening and responding to public concerns early on. Some say the PLC is “an absolute waste of time,” set up to make announcements with a “do nothing attitude.” Government representatives, on the other hand, say there is community input at every stage in an open process.

Decisions are made by consensus rather than formal votes. Many members say no decisions are actually made by the PLC members. Others say that this is because there are no decisions to be made, since there are never finalized remediation plans. There is no process for making resolutions or recommendations. This lack of formal structure for making resolutions and decisions limits community trust that their input is being adequately considered. Added to these concerns are uncertainties around the accountability of the consultant and MOEE staff chair, and their ability to ensure that community priorities and outcomes are addressed in the technical committees.

There is no direct contact between PLC and the technical committees. Instead, the consultant and MOEE staff act as intermediaries between the committees. In 1998, the PLC asked for a joint

meeting with Technical Committee but this has not happened to date. Recommendations from the PLC are passed on to the Technical Committee through the MOEE staff and consultant. The consultant then builds a decision matrix based on input from all three committees. It has been indicated that technical decisions are twisted to make it appear like they reflect community priorities, but that they are actually decided in advance of the PLC input.

There have been some problems getting the message out to the broader community, although when received, communication materials have been described as useful and accessible. MOEE communications staff prepares a web site, fact sheets, and update bulletins. Studies are available in the libraries. Some of the documents have been delivered door-to-door. There is an ongoing process to explain technical information in plain language. Some say the glossy technical reports are easy to understand but not very credible. Meanwhile, technical reports on the health study were presented in charts and graphs that were difficult to understand. The conclusions didn't seem to correspond with the sample analysis, and the data were not well explained.

In summary, the court case has been somewhat effective at opening up the process and increasing transparency. Some of the structural problems with the PLC are getting better, but people still have little trust in the process. The process needs broader support as discussions are still based too much on conflict instead of collaboration. An iterative process is time-consuming but is necessary to build trust; otherwise the public remains sceptical and won't be convinced by data provided.

### ***3.1.3 Community Involvement in Health Studies, Environmental Monitoring and Choice of Remedial Options***

A survey was sent out by the local municipal council to its constituency to determine main concerns and what action the community members wanted. There was a high level of response to the survey, but the council has not yet acted on the results.

Trent University study groups have conducted a variety of studies and monitoring over time. In response to community concerns, a meeting was convened at Trent University to discuss the results of their studies. Other topics discussed included contamination and effects associated with contamination. The meeting included academics, researchers, community members, and MOEE staff (and was funded by academic sources).

There have been numerous environmental monitoring and health risk studies conducted in the Deloro area, and a selection of these are discussed below. Some of these have presented conflicting information, leaving many community members worried, confused, and lacking trust in the data.

There is low-level radiation found for miles in circumference around Deloro, but many community members describe frustration that the full details for current monitoring activities and results are not publicly available. The Deloro Village Environmental Health Risk Study (1999) is in various libraries around the area. When this study reported low-level radioactive slag in the village, steps were taken by the provincial government to remove this material to the Deloro Mine Site, but the community does not have access to follow-up monitoring activities. Deformed frogs and genetically damaged plants have been found in the area, which raises concerns about the radiation levels. Also, lower plant species diversity (3-5 types instead of 70) is thought to be a result of contamination impacts.

A 1986, MOEE survey shows an average of 723 ppm arsenic in Deloro soils (and the extent of radioactivity was also determined). It was a technical report prepared for monitoring and abatement of arsenic in Moira River. Some say the results of this study were clearly conclusive of the levels of contamination, but that the study was buried. Similarly, in 1980, analysis showed high radiation in slag and waste piles, and 700 ppm arsenic in Moira Lake sediment.

In 1998, the Moira River study provided invitations to 600 people in the study area to review the draft report. It was presented in an open house and comments were received as community members reviewed results. Public consultation was conducted in 2000, and the report was released in 2001. Results of the study determined no adverse affect on aquatic life or residents' health. Community members questioned the interpretation of the results – which claimed there was no adverse effect – when fish health and reproduction had decreased, and there were high metal concentrations in the sediments. It was felt that it was not a very credible interpretation of the data. There was a public advisory committee for this project but it didn't meet very often and didn't meet before the results were announced publicly.

Health risk studies have been met with similar community concern.

In 1998, MOEE initiated the Deloro Health Risk Study. The Public Liaison Committee asked for off-site contamination to be investigated. A Health Study Committee was struck, comprised of a subcommittee of PLC and additional participants chosen to cover a more specific mandate. The committee met five times. A total of 90% of the community members participated in study. Most said the study did not involve the community members well enough in devising questions, or determining the approach and priorities for the study. For example, some wanted plant uptake to be analysed from their garden foods, since high levels of arsenic have been found in gardens in Deloro. Test analysis comparing plant uptake of some vegetables planted in Deloro as compared to typical Ontario soil had been conducted. Some thought the resultant methodology to be unclear.

In 1999, the Ministry of Health and the County Health Unit conducted the health study. The local people and MOEE representatives have different versions of how this study was conducted. Urine was sampled for arsenic, but this gives only a very short-term view of contamination. Hair samples give a longer-term view of exposure to arsenic, but were not taken as part of the study. There are conflicting views on the most appropriate analysis methods for long-term environmental exposure as compared to short-term exposure in the work place. Some also said samples were taken at the wrong time of year to show greatest exposure. Similarly, some interviewees said dust samples were initially collected from high up in houses in December, which does not provide an indication of the highest possible exposure (since December is not the dustiest time of the year), but MOEE reps said the "swipe samples of interior surface dust were collected from areas which would not likely be cleaned on a regular basis...sampling was completed during dry and dusty conditions. Outdoor air and dust samples were also collected and evaluated."<sup>15</sup> A follow-up study using vacuum collection in the summer showed much higher arsenic and other metal levels.

The health study focused on a moment in time and has been criticized for ignoring past contamination from living near or working on the site (no family history was discussed). No past residents were surveyed, nor were death records compiled from those who moved out of the area. Further, some were concerned that it ignored future exposure that could happen as a result of drinking water, dust, or food contamination as it was based on an assumption that the site conditions would not change.

The health study found no significant health risk for total exposure. The summary indicates that the village is contaminated but safe. But, thirty properties were heavily contaminated. Some were told to wear gloves and a mask while gardening.

The findings did little to allay the fears of the community. Some community members were skeptical of the "no significant health risk" findings, and saw the subsequent publication of guidelines for fish consumption and a warning to not drink the water near the mine site as confirmation of their fears. The MOEE explanation for these warnings is illustrative of the chasm separating the realities inhabited by the affected community and government bureaucracies, "The Deloro Village Environmental Health Risk Study did not address fish consumption as it is a non-issue in this study. The Moira River Study looked at fish in detail and confirmed that the existing fish consumption guidelines...are appropriate. These guidelines are published jointly by the Ontario Ministry of the Environment and the Ontario Ministry of Natural Resources every two



years. Fish consumption advice has been provided to anglers in Ontario since 1977. No drinking water warnings were issued with respect to the Deloro Village Health Risk Study; however, a drinking water reminder was issued with respect to the Moira River Study for people who lie between the mine site and the outlet of Moira Lake and take river or lake water for drinking without treatment."

The study was peer reviewed, although some of the reviewers couldn't get the review done in time, due to the very short timeline for comments. The Deloro Health Risk Study was released in July with one day's notice to those most affected. This did not provide them with adequate time to review the results before the public meeting. Some felt that the health study was intended to put a rosy picture out before the court case, so the study may have been rushed to get the results out in time. MOEE maintains that their efforts to release the results as quickly as possible stemmed from requests of the PLC, the sub-committee of residents and the community. Many community members were sceptical of the results, of MOEE, and of the process. It has been suggested that funding should be made available to have independent verification and analysis of study results. A reserve fund should be available to choose studies reflecting community priorities. It would help to have independent experts who have been mutually agreed upon. Community members have to live with the results presented because they can't afford to get their own analysis (but don't actually trust results and interpretations presented).

Remedial work to date has included the capping of shafts; a site survey; covering of tailings; filling mine shafts; fence building; and, in the 1980s, the building of a water treatment facility that reduced arsenic by 80%. Some community members expressed concern that waste materials had been deposited in the shafts. Community members feel they have been informed of these actions rather than involved in the decisions.

MOEE is diligently following the public process and expresses general support for active community involvement in the Deloro remediation project. It is felt by MOEE that more data are needed before a remediation plan can be created. Some say the studies (36 different reports) aren't well integrated, so it is difficult to arrive at conclusions. Additionally, the process doesn't provide adequate means for community involvement to help guide in the interpretation of the study results. Most now feel that there is a need to commit to a remediation plan. The remediation plan keeps being delayed, first by process and studies, then by the court case, and now by the federal EA. As one citizen claimed, "it is time to get the job done and get out of here."

#### **3.1.4 Current Status**

MOEE is close to estimating cost of clean up. But not much has happened over the last two years – only minimal containment and treatment.

MOEE is committed to funding the clean up by "default," with little resources committed by industry or federal funds. There are, however, no funding guarantees (although budgets are planned on a three- to five-year timeline). Consequently, many community members have little confidence that there will be enough funds committed and available for a full clean-up of the site.

Community members are concerned that the site might become zoned as a hazardous waste site, which would allow a variety of contaminants to be brought in from outside communities.

It is anticipated that the PLC will be scaled back when remediation is actually started.

The federal environmental assessment is ongoing. There is a priority need to remediate radioactive material.

#### **3.1.5 Lessons Learned**

The chair must be chosen to be accountable to all and fully independent. Conflicts within the process cannot be adequately resolved without an unbiased chair.

A lack of a structure for providing resolutions from the Public Liaison Committee to the Technical Committees gives the appearance that the process is not transparent. Furthermore, it makes it appear that the decision-makers are not accountable to the PLC when determining remedial options. This limits trust in the process, and community members are less likely to have confidence in reports and decisions.

Community involvement from the outset can help set priorities for use of available financial resources. Some community members may prefer to be given the opportunity to be relocated (rather than live with the ongoing potential health impacts), than to have money allocated for certain remedial options.

An iterative process is time-consuming but is necessary to build trust; otherwise the public remains skeptical and won't be convinced by data provided.

Funds should be made available to community members so they can gain clear technical information and independent verification. This could increase both the credibility of health and monitoring reports and community confidence in the results.

## **3.2 GIANT MINE, YELLOWKNIFE, NORTHWEST TERRITORIES**

### **3.2.1 Brief History**

Giant Mine is a gold mine located five kilometres north of Yellowknife, Northwest Territories. The first claims for what is now the Giant mine were staked in 1935 by Baker and Muir for Burwash Yellowknife Mines Limited. In 1937, Giant Yellowknife Gold Mines incorporated and acquired the claims and continued work through the 1930s and 1940s. In 1943, Frobisher Exploration Company acquired operating control of Giant Yellowknife Gold Mines and the Giant property, and in 1948, gold production began at the Giant mine.<sup>16</sup>

From 1948 until 1999, the Giant Mine used a roasting operation for its gold ore. During this process, arsenic, in the form of arsenic trioxide, and sulphur dioxide, were emitted. From 1948-1951, no pollution control devices were used and as much as 7,300 kg/day of arsenic trioxide went up the stack. In 1951, an electrostatic precipitator was installed to reduce emissions, and in 1959, a baghouse dust collector was installed to reduce emissions to a few hundred kilograms per day.<sup>17</sup> This filtered the arsenic trioxide dust, which was collected and put in five underground chambers built to contain the dust, and in 1976, it was also put in mined-out stopes (areas from which ore had been extracted). Later another 5 chambers were built to hold the growing amount of arsenic trioxide. The arsenic trioxide dust was added to the underground chambers until 1999. Today, 237,000 tonnes of the dust are stored underground on the Giant Mine site.<sup>18</sup> A drainage and pumping system catches mine water, which is treated.

The mine had a series of owners in the last fifty years, including Falconbridge and Giant Resources Limited. In 1990, Royal Oak Resources purchased the interests of Giant Resources Ltd. and Pamour Inc. and in the following year, amalgamated with companies in Pamour and Giant Yellowknife groups. Royal Oak operated the mine from 1990 until April 1999 when it was placed in receivership. On December 13, 1999, the federal court conveyed Royal Oak's Northwest Territories properties to the Department of Indian and Northern Affairs (DIAND).

In December 1999, DIAND sold the Giant Mine assets for ten dollars to Miramar Mining Corporation, who already operated the Con Mine on the other side of Yellowknife. The company resumed production at the Giant Mine in January 2000. In the deal with Miramar, DIAND retained responsibility for pre-existing environmental liabilities on the property, including the underground arsenic trioxide dust. Miramar is currently operating the Giant mine at a quarter to a third of Royal Oak's production and has stopped the roasting of the gold ore (and thus stopped the production of arsenic trioxide dust). The ore is instead hauled to the Con Mine site where the arsenic is stabilized and put in a tailings pond.

Since 1970, the Government of the Northwest Territories (GNWT) has administered the surface lease, but DIAND has all liabilities for underground (including the stored arsenic trioxide) as well as enforces the water license for the Mackenzie Valley Land and Water Board (MVLWB). The responsibility for non-water related surface liability needs to be negotiated. In the meantime, GNWT and DIAND have agreed to cost-share work that is clearly land related.

DIAND and GNWT have jointly funded some surface clean up at the site, including removal of metal debris, barrels, batteries, waste oils, reagent chemicals, and contaminated soils on site. There is some debate about who is responsible for the surface clean up once Miramar ceases operations. Miramar has to give federal government one month's notice of shut down at which time Miramar is responsible for assuring compliance of the property for an additional six months. After that time, complete liability falls back to government. GNWT has initiated negotiations with DIAND as to whether GNWT has any responsibility. So far negotiations have not progressed. The cost of only the surface clean-up is estimated at \$8-17 million.

Since the time of Royal Oak's insolvency, DIAND has been looking at ways to rehabilitate the mine site and deal with the underground arsenic. They set up the Royal Oak Project Team to manage the properties abandoned by Royal Oak – Giant Mine and Colomac Mine. In 1999,

however, due to the complexities of the issues involved, and the resources needed to deal adequately with each, responsibility for the Colomac Mine site was given to the Contaminants Division of DIAND and the Giant Mine site to the Giant Mine Project Team.

Miramar Giant Mine Limited (MGML) holds the Giant Mine Water Licence and is directly responsible for compliance with its Terms and Conditions, including the submission of an Abandonment and Restoration Plan (A&R Plan) and an Arsenic Trioxide Management Project Description to the Mackenzie Valley Land and Water Board (MVLWB). MGML presented an A&R Plan to the MVLWB in the fall of 2001. In agreeing to retain the liability for the environmental state of the Giant Mine at the time of its sale to MGML, DIAND committed to assist in the preparation of the As<sub>2</sub>O<sub>3</sub> Management Project Description. Subsequently, DIAND's GMPT assumed full responsibility for preparing the Project Description, but it is still MGML's legal responsibility to submit it to the MVLWB.

### ***3.2.2 Nature and Level of Community Involvement***

While there has been community concern with the health and environmental effects of the arsenic produced by the mine for almost the entire life of the mine, there has been very little formal community involvement in issues around Giant Mine. Much of the concern over the years has been from the emissions (both arsenic and sulphur dioxide). Although there have been no emissions since 1999, community members still worry about the effects and levels of arsenic in the soils, water, and food chain. They are also concerned about the safety of the 237,000 tonnes of arsenic trioxide dust stored underground.

The community members of Yellowknife and the Dene communities of Ndilo and Dettah have been concerned with the health and environmental effects of arsenic as long as the mine has been operating. Long-term residents of the three communities tell stories of the smell and taste of sulphur and arsenic as far back as the 1950s.<sup>19</sup> The Yellowknives Dene elders remember that in the early 1950s, two children died drinking melt-water from snow that was contaminated with arsenic. Around the same time, some dairy cows and a team of sled dogs in the community also died.

In the 1970s, Yellowknife residents were tested for arsenic poisoning, and when results showed relatively high levels, a task force was set up (by the Canadian Public Health Association). Subsequently, the intake point for water for Yellowknife was moved, as levels of arsenic in drinking water were high. Further reductions in stack emissions were recommended but never happened. The Task Force released a final report in 1977.

Elders of the Yellowknives Dene report that there have been significant changes in local fish, wildlife and berries, and they believe that cancer rates have increased among their community since the gold mines began operating. They no longer trust the food and water supply on their lands near the mine site, and now report traveling 15 miles away to hunt, fish, and gather berries. Many community members won't fish out of Back Bay, as they are concerned about the amount of arsenic in the sediments of the Bay and Baker Creek.

In 1971, the first meeting of Ecology North convened. It brought together a group of concerned citizens, specifically organizing around issues at Giant Mine. Ecology North has since become active around a number of issues and do not focus as much of their energies on the mine.

A multi-stakeholder group, Yellowknife Arsenic Soils Remediation Committee, was established a few years ago to determine potential health risks due to arsenic, in soils both on and off the mine site. This group – a committee involving governments, community groups, and industry, is almost finished its work and releases its report in the spring of 2002. To date, this has been the only multi-stakeholder effort established to deal with any issue regarding Giant Mine or the arsenic problem. As a result of this group, some soil testing has been done in the community over the last

several years, and local remediation criteria for arsenic in industrial-, recreational-, and residential-use soils are being determined.

Dene and Metis communities were both members of the Yellowknife Arsenic Soils Remediation Committee. DIAND recently funded testing on local berries that was carried out by the Dene. If remediation efforts were to proceed, they would like to be involved in the work as they feel that they have a vested interest in the work being done well, and as such feel they would do a better job than a contractor who was not connected to the land.

DIAND commissioned a report by Lutra Associates to determine the awareness of Giant Mine and the arsenic trioxide in the local population. It was found that most local residents had knowledge of “lots of arsenic” at Giant Mine, even if they were not particularly aware of specifics. Most people relied on local media, observation, and word of mouth for information rather than from official documents or technical reports. Some community members felt that “irregular and poor presentation” of information from the government and industry, and the apparent “lack of willingness to share information” with the public is the reason why they are not as informed or “confident in their knowledge as they should be.”<sup>20</sup>

Despite the government’s stance that the levels of arsenic are not a problem, the report noted that many in the community perceive “a burnt landscape, dead and unsafe vegetation, lack of fish and waterfowl, harm to animals, poor water quality, health problems, death and continued stress within the population are examples of the harm that has been done.”<sup>21</sup>

The community has observed and lived with the consequences of the above-ground effects of the arsenic (from the stack) for many years. They are less sure about the risks and effects of the arsenic trioxide dust stored underground, and they are unsure about what a clean-up would entail, but feel action should be taken.

Community members are concerned about the stored arsenic and its potential danger to the community’s water supply. The arsenic trioxide is soluble in water and there is evidence of groundwater movement through cracks in the bedrock. In the mine water pumped up to the surface, elevated levels of arsenic have been detected, indicating that leaching is taking place. While this mine water is treated before release, there is concern about the danger to the local watershed. The vaults where the arsenic is stored underground, are a kilometre from Great Slave Lake and the entire Mackenzie River watershed.

### **3.2.2.1 The Giant Mine Project Team and Community Involvement**

The Giant Mine Project Team (GMPT) has been looking into remediation at the mine site since the team was established in 1999 (some work was being done as early as 1997). They held technical workshops – to which representatives from government, community groups and First Nations were invited – in 1997, 1999, and 2001 to review and discuss management options presented to them by hired consultants. Over the three years, GMPT has commissioned several studies on the technical aspects of the mine site remediation.

In 2000, SKR Consulting was hired to oversee the major areas of arsenic trioxide assessment, with the view to finding management alternatives for the dust. SRK was asked to assess the risks to people and the environment if the dust were not managed (as a base case scenario), and then to determine alternatives that represented different ways to manage the arsenic trioxide dust. For each alternative, they were to assess and describe the method, risk and cost associated.

In May 2001, a report entitled “Study of Management Alternatives – Giant Mine Arsenic Trioxide Dust” was released. SRK came up with four types of options:

1. To leave it in the ground (freeze it; pump and treat; grout around it; etc);
2. To mine arsenic, purify and sell it;
3. To excavate arsenic and chemically stabilize it; or

4. To excavate arsenic and physically stabilize it.

The costs for these ranged from \$50-400 million, with the lowest risk and cheapest option being to leave it in the ground.

In 2001, the GMPT set up a public registry to allow community members to access reports and information about the mine remediation. Open houses have been held in 1999, 2001 and 2002, and public displays were set up on the main street or in the downtown mall in each of 1999, 2001 and 2002.

The Project Team held six community meetings in February and March 2002 – two in each community – Yellowknife, Dettah, and Ndilo – at which community members were able to ask questions and get information about the remediation plan.

In March 2002, a study by GeoNorth report (for DIAND) reported the need for a Community Liaison Committee as identified by the City of Yellowknife, participants at a Management Alternatives Workshops (held July 11-12, 2001), and members of other non-governmental organizations. In the terms of reference, DIAND acknowledged the need for a community consultative body and asked GeoNorth to research examples, identify their strengths and weaknesses and propose a model for Yellowknife. The proposed mandate of the Community Liaison Committee was identified as including “serving as a communication bridge between government and the community, as well as advising government and the community regarding research, the future use of the Giant Mine site, reclamation options, and both underground and surface clean-up of the site.”<sup>22</sup> GeoNorth also reported on the status of the Peer Review Team (PRT) that was established in mid-2001 and is now being expanded.

The Community Liaison Committee will be made up of representatives from the Yellowknives Dene, the North Slave Metis Alliance, the City of Yellowknife, local ENGOs, and the public-at-large, as well as one independent Chairperson.<sup>23</sup> While DIAND and GNWT do not intend to sit on the committee, they do intend to help establish the terms of reference for the committee. The committee will report to the community and to DIAND.

The establishing of the Community Liaison Committee is seen as the next step in process in dealing with the abandonment and reclamation of Giant Mine. Community members' responses to the work done by GMPT range from the belief that there needs to be more study and more communication of information on Giant, to beliefs that there has been more than enough study and consultation and that “we need to get on with it.” The Lutra report concludes that people want action but also want better communication and more information. It states that local residents need information on a wide range of subjects related to the issues involved in remediation – from elements/chemicals in the environment, to the impacts of arsenic in the food chain. Furthermore, the Lutra report stated that information should be presented in plain language, with relevant context, and supported by visuals.<sup>24</sup> DIAND has increased its communications and has produced and is developing brochures, media spots, and other multimedia materials.

### **3.2.3 Current Status**

The Giant Mine Project Team is continuing efforts to make move forward with the abandonment and reclamation plan in the face of a range of community views. Some feel decisions should be made and action taken based on studies and consultations already conducted, while others feel that more information is needed. There is the perception by part of the community that it was not involved in the setting of priorities for the remediation, and as such, that this attempt to get approval so late in the process must be “window dressing.” While DIAND did hold public meetings in 1999, 2001, 2002, there is still a feeling by some in the community that DIAND has already chosen the remediation option it intends to use, and that the consultations held now are to get the public to consent to it.

Despite DIAND's insistence that this is not the case, some members of the community feel that the GMPT has all but decided on the remediation option to be used. The Giant Mine Project Team, however, says it wants to involve community now to get their input in to what remediation plan to use. DIAND continues to move along with its mandate trying to balance this range of opinion.

At the time of the interviews conducted for this report (July 2002), the deadline for the Abandonment and Remediation Plan for the Mackenzie Valley Land and Water Board was October 1, 2002, and the Community Liaison Committee had not yet been set up. Many of the community members interviewed were wondering how effective community involvement would be if it must make its recommendations on such a short timeline. At time of the interviews conducted, several of the groups identified to be on the Community Liaison Committee had not been formally notified.

Since the time of interviews for this report, an extension has been requested so that DIAND can complete its community consultations. Extensive community consultations, developed and presented with the assistance of the Community Liaison Committee, will start later this fall (2002).

Some feel that if DIAND might have arrived at the same place with full community support if they had involved the public more fully sooner in the process. By not being given the chance to be involved in the early stages in order to help set priorities, some in the community are wary of the government's decisions and plans for the mine site. While the community has had numerous opportunities to be involved, the continued perception by some that more community involvement is needed persists. The GMPT acknowledges that the establishing of the Community Liaison Committee earlier in the process might have mediated this.

### **3.2.4 Lessons Learned**

While the intentions of the Giant Mine Project Team may have been to get a handle on the technical information and possible options for remediation before setting up the Community Liaison Committee, a better approach might have been to involve the community in this capacity earlier in the process. It might have resulted in the same outcome or action being taken, but with more capacity and trust built in the community. There seems to be some disagreement on what the appropriate level of community "involvement" should be, as despite the public meetings and workshops held by DIAND, there is still a substantial level of mistrust and frustration within the community. DIAND insists it has carried out consultations since the beginning, yet there is still frustration at the process and a large portion of the community claiming to have not been adequately consulted.

Despite the complicated nature of the technical aspects of the remediation, getting the community involved and "up to speed" on the technical concerns might help to build trust in the process. The community would have more understanding of the complexities of the decisions, and thus be more understanding and supportive of the government's decisions.

If communities are consulted near the end of a process to decide on remediation options, there is the risk that members will feel that the consultations at this point are merely "window dressing" for a decision that has already been made.

Involving the community from the beginning, including in the setting of priorities, may involve a considerable time commitment, but the process engenders a level of trust in the process and the agency responsible. If consultations are underway from the beginning, there should be feedback mechanisms to gauge what level of satisfaction with the process is occurring at the community level. Communities want to be consulted on issues that affect them. Having been consulted, members will be more vested in the decisions made.

### **3.3 MOUNT WASHINGTON MINE, BRITISH COLUMBIA**

#### **3.3.1 Brief History**

The Mount Washington Mine, on Vancouver Island near the community of Courtenay, BC, was a small, open-pit copper mine that began operations in 1964. Mt. Washington Copper and Cumberland Mining Company, in a joint venture, leased the base metal rights from the Esquimalt and Nanaimo (E&N) Railway and the precious metal rights from the province.

The mine operated from 1964 until the fall of 1966. Ore was milled until 1967, after which time the company went into receivership and the site was abandoned.<sup>25</sup> Today, Better Resources owns the precious metal rights, TimberWest has surface rights, and Canadian Pacific Railway has the subsurface rights.

Large piles of ore and waste rock were left on the mine site, and mill tailings were left at the mill site 4 km southeast of the mine site. The pyrite-bearing ore and sulphidic waste rock, left exposed to air and water, began generating acid mine drainage (AMD) and leached dissolved copper into Pyrrhotite, McKay, and Murex Creeks, all tributaries to the Tsolum River. The dissolved copper was then carried downstream, to the fish spawning and rearing grounds of the lower Tsolum River.<sup>26</sup> The problem of AMD was exacerbated in 1979 when Esso Resources Limited added sulphuric acid and iron-oxidizing bacteria to the remaining ore to try to extract metals. The high levels of copper, however, were not discovered until water sampling was done in 1985.

The Tsolum River historically had large salmon runs. In the 1950s, runs of 100,000 pink salmon and over 7,500 Coho were reported, as well as healthy populations of cutthroat trout, chum and steelhead salmon.<sup>27</sup> Since that time, several factors have affected the river and its aquatic life: development and logging along the banks of the Tsolum increased sedimentation in the river and its tributaries; the removal of gravel from the streambed for an airstrip at CFB Comox destroyed fish habitat; and water removal for irrigation for agriculture affected water flows and temperatures.<sup>28</sup>

Although the community was aware of the decline of fish in the river, it wasn't until 1982, when a pilot hatchery released 2.5 million pink fry into the Tsolum River and none returned, that the seriousness of the problem was discovered. Subsequent water monitoring in 1985 revealed high copper levels. The source of the contamination was the Mount Washington mine, which had been abandoned almost 20 years earlier.

While the other factors (e.g., logging and gravel removal) affected conditions in the watershed, the high levels of copper directly affected fish. The maximum recommended concentration of copper in water is 7 parts per billion (ppb)<sup>29</sup> – concentrations above this level begin to be toxic to fish. The range in the Tsolum River below Murex Creek was between 17 and 110 ppb.<sup>30</sup> Sampling directly below the mine site, in Pyrrhotite Creek, showed concentrations as high as 17,000 ppb.<sup>31</sup>

The Ministry of Environment, Lands and Parks estimated that for the Tsolum River to meet the water quality objectives stated above during the spring freshet, the reclamation should reduce copper loading from the mine site by 95%.<sup>32</sup>

#### **3.3.2 Nature and Level of Community Involvement**

Several community members were concerned about watershed issues in the Comox Valley, particularly the loss of the fishery in the Tsolum River. From the time of the discovery of high copper levels in 1985, through to 1997, the local branch of the Steelhead Society of BC (Comox Valley Chapter) began to look at the reclamation of the mine site and the enhancement of the Tsolum River as a major project.<sup>33</sup> A campaign of letter writing, media outreach, and working with federal and provincial ministries, brought community attention to the mine problem, and helped to bring about partial remediation for the mine site. Between 1988 and 1992, Ministry of Energy,



Mines and Petroleum Resources put \$1.5 million into remediation at the site. A till cover was placed over waste rock in the East dump and lower North pit. The purpose of this till cover was to prevent the infiltration of oxygen and water to the waste rock. Other projects included application and testing of an experimental asphalt emulsion/geotextile cover; and, calcium hydroxide was applied to the pit walls and floor to attempt to raise the pH and reduce metal loading. Water monitoring results from 1993 to 1996, however, revealed no reduction in copper levels, and the reclamation efforts were considered to be a failure at that time.

Yet the increased profile of the watershed concerns led to a symposium in 1992 called “Water: Lifestream of the Comox Valley” (which was organized with the assistance of the Salmonid Enhancement Task Group). A report produced following this symposium stated as one of its key recommendations:

*To create the community’s desired organization, group of bodies or system that includes a full range of water and related land use management activities involving public participation, education, planning, policy formulation, regulation, monitoring, inventory and advocacy. The organizational details should be undertaken after widespread community discussion has approved the concept. The details should be designed by a broad-based interim committee using the options presented in this report and other input.*<sup>34</sup>

As illustrated by this recommendation, there was a desire for community involvement and participation in decisions involving the area’s watershed. Subsequently, the Comox Valley Watershed Assembly was formed with the broad objective “to restore and protect water quality, and fish and aquatic habitats.”<sup>35</sup> The Assembly ran as a monthly public meeting (and still does), where any citizen could present a watershed issue with which they were concerned. Focus groups would be formed to discuss concerns, and through “co-operative problem-solving” solutions would be developed.

In 1995, a focus group called the “Tsolum Team” was formed in response to concerns raised about the health of the Tsolum River.

### **3.3.2.1 Formation of the Tsolum River Task Force (TRTF)**

The Tsolum Team held a “Healing the Tsolum” workshop in April 1997, which was attended by over 200 local residents. The next day, the Tsolum River Task Force was formed with the goal of restoring the Tsolum River to historic levels of health and productivity. The Task Force initially approached the provincial Minister of Employment and Investment and the federal Minister of Environment, both of who encouraged TRTF to apply to Fisheries Renewal BC and the Environment Youth team for funding. In the summer of that year, the Department of Fisheries and Oceans gave the Task Force two years worth of funding (\$270,000) for the Tsolum River Restoration Project, which was to deal specifically with fish habitat restoration on the Tsolum. Since the funding was from DFO, it was targeted specifically at activities and research falling under DFO’s mandate, but the TRTF was free to find other funding for projects outside of that mandate. Other contributors to the TRTF were: Environment Canada; Fisheries Renewal BC, BC Ministry of Energy and Mines, BC Ministry of Environment Lands and Parks, Youth Options BC, Regional District of Comox-Strathcona Area C, BC Hydro, and Comox Valley Commercial Fishermen.

### **3.3.2.2 Task Force Membership**

The TRTF was a multi-stakeholder advisory group made up of representatives from various groups and agencies. Stakeholders identified were: various government agencies (provincial: Ministry of Employment and Investment – Energy and Minerals Division, and Ministry of Environment, Lands and Parks (MELP); federal: Department of Fisheries and Oceans, and Environment Canada); fishing industry (Pacific Trollers Association); forest industry (TimberWest and the International Woodworkers of America); mining industry (Better Resources Ltd.,

Canadian Pacific Railway, North Island Exploration, Westmin Resources); First Nations (Kwakiutl Territorial Fisheries Commission); local representatives (Comox Valley Naturalists Society, Comox Valley Watershed Assembly, Courtenay Fish and Game Club, Comox Valley Project Watershed Society, Farmers Institute, Merville Area Residents and Ratepayers Association, Oyster River Watershed Management Committee, and Steelhead Society); and elected representatives (MP, MLA, and Comox Strathcona Regional District Area C Director).

No groups identified were excluded from the process, and in the Terms of Reference of the Task Force (see below), it was stated that any person or organization could apply to the Task Force Steering Committee for membership on the Task Force. The First Nation committee involved, Kwakiutl Territorial Fisheries Commission, eventually quit attending Task Force meetings. This was not because of any conflict, but rather because the Fisheries Commission moved north on Vancouver Island.

### **3.3.2.3 Task Force Structure, Funding and Protocols**

On November 7, 1997, the Tsolum River Task Force adopted the Terms of Reference. TRTF's mission and purpose was defined as "restoring the Tsolum River watershed to historic levels of health and productivity."<sup>36</sup>

TRTF formed a steering committee and six working groups. Representatives from each working group would sit on the steering committee and attend monthly meetings. The six working groups, formed around particular areas of concern, would provide scientific and technical advice to the steering committee, and monitor the progress of restoration projects. The six working groups were:<sup>37</sup>

- Stock Enhancement
- Acid Mine Drainage and Mine Reclamation
- Habitat Restoration and Assessment
- Flows and Storage
- Water Monitoring
- Media and Community Relations

As stated above, the Task Force was open to the general public insofar as any community member could ask to be involved. People from the general public were asked to participate, and the working groups facilitated this process, as it was easier to get people involved in the more focused working groups.

The Task Force's funding allowed for two paid positions: one full-time coordinator, and one half-time administrative staff person. The coordinator managed restoration projects, supervised project staff, assisted the working groups in developing project plans, and reported to the Steering Committee on the progress of restoration projects. The coordinator also produced the final report of the Task Force, entitled *State of the Tsolum River: A Comprehensive Report on Work completed by the Tsolum River Task Force, April 1997-March 1999*.

The administrative staff person was responsible for setting up meetings, keeping Task Force members informed of meetings and other administrative information, and typing up and distributing minutes. While members' time for meetings was donated and only some travel expenses were covered, it was the paid staff that made the meetings possible (e.g., did all the set up, arranged meetings, and printed up and distributed minutes). Task Force members reported this as being crucial not only to the effectiveness of the committee but also to its wider profile in the community. Staff made sure minutes were available on the TRTF web site, and that media were informed of TRTF's activities.

The TRTF adopted some aspects of the Comox Valley Watershed Assembly's organizational model. Decisions were to be made by consensus whenever possible, with attempts being made to meet all Task Force members' interests and concerns. If consensus could not be achieved, a vote on any issue would require the approval of two-thirds of those members present. The

Steering Committee would meet, on average, once a month, though the working groups and the Steering Committee would meet more often as the projects dictated. Working groups would bring forward ideas for projects to be approved by the Steering Committee.

Task Force members were generally very satisfied with how the meetings were run. They had access to experts and legal counsel, and most felt they were there to learn from each other. Despite the different areas of expertise on the Task Force, no one interviewed felt silenced or discouraged from speaking at the meetings. Task Force members who felt they held minority views still admitted to being given the opportunity to express their opinions. The success was due in part to professional facilitation at most of the meetings. TRTF was set up to represent a wide array of views and perspectives, and members of the Task Force understood this. Having a facilitator/mediator run the meeting helped this process. All members of the Task Force reported that the structure allowed for conflict to be dealt with fairly.

Members of the TRTF reported that they felt they all had the same goal, and this focus helped when differences arose. The Task Force was “the best community action group” they had. Members felt that they learned together, and that the multi-disciplinary nature of the Task Force accurately reflected all of the issues in this “watershed problem.”

With the various government agencies on the Task Force, the community was kept up-to-date on water monitoring information and was given information on technical reports regarding possible mine site remediation.

The TRTF achieved a great deal in the two years it operated, particularly with respect to habitat restoration, stock enhancement, mapping, water monitoring, and watershed management. Late in 1997, Project Watershed provided Streamkeepers training to interested local residents, and the Tsolum River Streamkeepers Group was formed. These volunteers worked to protect fish habitat in the Tsolum River watershed. In 1998, the Task Force lobbied to have Tsolum and the Puntledge Rivers declared BC’s most endangered rivers, raising the profile of TRTF’s efforts in the broader community.

#### **3.3.2.4 Process Stalls**

With respect to mine site remediation, however, the process has been far less effective. Water monitoring in 1998 revealed a 50% reduction in copper levels. Some felt this was the result of the remediation work that occurred on the mine site from 1988 to 1992, though this has not been conclusively proven. Despite this good news, the Task Force had not come to any decisions about further remediation work at the mine site. SRK Consultants had been hired to look at mine site remediation, but there was some conflict between MELP and Environment Canada on how to proceed. In 1999, TimberWest began looking at using wetlands to treat contaminated water, but no action has been taken.

While having all stakeholders, including the government, on the Task Force was very useful for the sharing of information and ideas about possible solutions, the process began to slow down when no government agency or industry would take responsibility and take action. According to some TRTF members, the process “ground to a halt.” It is unclear whether this is because there was no political will within government, no funding to cover the cost, or whether rumours of legal action taken by Environment Canada against the site owners were true.

The level of frustration was high. Part of the problem may be that community members believed government was at the table with a view to taking some action. Expectations were raised that something would be done. MELP maintained they were there only in an advisory capacity, but this may not have been understood by members of the Task Force. Some government members felt the community stopped pressuring the Ministers for action once the Task Force was meeting – if this was the case, it may indicate that the community members felt their desires for action were being relayed to the decision-makers via the government members on the TRTF.

Many community members felt that the inaction after all the work of the TRTF was a “breach of public trust.” Members had enthusiastically put in all this time, but in the end, nothing was done. The momentum was lost and the community was left with a huge sense of disappointment and frustration. Many felt the provincial government failed by not coming up with the money to do something.

When the Task Force was operating, there had been some optimism about finding a solution and implementing a plan. But by the end of the TRTF, it seemed to be “spinning its wheels,” especially with respect to the mine site remediation. Despite the fact that copper levels have decreased and that some habitat has been restored, there are still copper “spikes,” i.e., occasional releases of large amounts of copper to the river, which will prevent the full return of salmon to the Tsolum. Remediating the mine site, therefore, is a crucial to restoring the Tsolum River.

The community at large was generally supportive of Task Force. When it was operating, members said they couldn’t go anywhere in the valley and not be asked about what was happening with the Task Force. In terms of capacity building within the community, the Task Force was an extremely useful tool in bringing together all the interested groups. These channels of communication can be used for other problems that arise in the community as well.

Some members felt that leadership was lacking, especially when it came to implementing a plan. One member complained that “total democracy” doesn’t work because no one takes leadership and gets things going. While most of the committee disagreed with this and thought that the decision by consensus was a good method, there was widespread frustration with the lack of action.

One government Task Force member felt the barriers to the remediation were the complexity of the question, and the question of who would do the work. It was felt that the government or industry should be responsible, but acknowledged that the community got involved precisely because nothing was being done. It was also believed that funding for such a Task Force was essential, but that this funding shouldn’t be targeted and under the mandate of one government agency. While they worked around it, the DFO mandate did limit the focus of the Task Force. More importantly, it needed to be decided who or what agency would be ultimately responsible for the site, and from where the funds for implementing a plan would come.

### **3.3.3 Current Status**

When the Tsolum River Task Force’s funding ran out, the Tsolum River Restoration Society (TRRS) was formed (in the spring of 1999) to continue the work. The society’s funding is not as stable as the TRTF’s, and tends to be granted on a project-to-project basis. While there is one paid coordinator, the society does not have the same level of funding and relies heavily on volunteer support. As with many non-governmental organizations, much time is put into the acquisition of funding, and this diminishes the amount of work done to further the goals of the society.

The Tsolum River Restoration Society does not run the same type of multi-stakeholder meetings as the Task Force, although through the community capacity that was built through the TRTF many of the established communication channels are still used.

The Society’s projects include fish counting, enhancement projects, and water storage and augmentation. The funding cuts in the province have affected TRRS and its ability to carry out its projects. The loss of funding for Fisheries Renewal BC and Urban Salmon Habitat Programs (USHP) has left many of the watershed stewardship community groups without funding to continue habitat restoration. Federal funding has also been cut (e.g., Habitat Restoration and Salmonid Enhancement and Public involvement Programs), and as a result many fish stocking programs now have to be done without funding.

TRRS works with the Ministry of Water, Land and Air Protection (previously MELP) and Environment Canada on water quality monitoring of the Tsolum, but again, funding for the monitoring program is an on-going concern. In 2001, TRRS paid half of the yearly monitoring costs (which totaled \$8,800) and MELP and Environment Canada paid the other half.

The combination of funding shortages, volunteer burn-out, and frustration at the lack of action has meant that the society is less effective than the Task Force, particularly with respect to communicating to the larger community. Community members, particularly those involved with the Task Force, are “disheartened, frustrated, disappointed, and disgruntled.”

Although the Society focuses on habitat restoration, it is willing and eager to help with the mine site remediation if action is taken by industry or government. Since the Tsolum River Task Force ended, the community has been waiting to see if any action will be taken at the mine site.

Environment Canada has declined to comment on the Mt. Washington mine, as “it is the subject of an Environment Canada Inspector's Directive.” Some community members have heard that Environment Canada is using fisheries legislation to force work to be done by TimberWest and CPR. The community is unclear as to what is happening with this apparent legal action.

### **3.3.4 Lessons Learned**

As a Task Force, the TRTF was very successful as it brought together all the stakeholders and allowed for a discussion of issues to take place. It enabled different community members and organizations to share information and to present their concerns about the Tsolum River. Four key reasons for its success that were repeatedly noted by Task Force members were:

- 1) Having paid staff to keep the administrative tasks done (setting up meetings, communicating with members, distributing minutes, and communicating with wider community) was crucial to making the Task Force work. It took the burden off of the Task Force members and lessened the problem of “volunteer burn-out.”
- 2) In terms of building trust, it is important to get community involved and all parties communicating early on. Setting the priorities at the beginning, and having the common goal “to restore the Tsolum River to historic levels of health and productivity” kept the Task Force focused.
- 3) Using professional facilitators at meetings so everyone had a chance to speak and that all interests were represented greatly helped the meetings. This is especially important when there is a wide range of interests represented at the table and the issues are complex.
- 4) Working groups can be an effective way to run a Task Force if there are multiple and complex issues involved. A member from each working group sits on the Steering Committee and this reduces the length and depth of detail discussed at Steering Committee meetings.

Funding is crucial, and it should not be tightly targeted especially when the issue is complex. In this case, DFO is to be credited for setting up the Taskforce; the funding was necessarily tied to the mandate of the agency. If possible, however, joint funding or funding from a more broadly based agency, should be made available that allows for assessment and implementation of complex remediation projects.

It is important to have community involvement early on so that they understand the complexity involved in the decision-making. It is important to have access to technical and legal experts, and for everyone on the Task Force to be committed to understanding one another. Yet it must not be used as a stalling tactic, keeping industry or government from taking action.

It is important to have government agencies and industry represented at the table to ensure information is shared and that the community understands the complexity of the issues and decisions to be made. It should be made clear in what capacity the government and other members are on the Task Force so expectations are not unrealistically raised. If jurisdiction is unclear, this should be discussed at the onset. Community members may place unrealistic expectations on individual bureaucrats at the table who do not have the power to make the decisions the community is hoping for.

The general public, including community groups, needs to recognize, especially when it relates to government funding, that bureaucrats cannot make arbitrary decisions to allocate public funds. The allocation of public funds and/or acknowledging responsibility for the reclamation of orphaned/abandoned mines by government is often a political decision. If expectations get raised but no action ends up being taken, frustration levels and burn-out can heighten and leave committee members disheartened and frustrated.

### 3.4 LESSONS LEARNED FROM COMMUNITY INVOLVEMENT AT U.S. CONTAMINATED SITES

In the United States, the U.S. Environmental Protection Agency (EPA or the Agency) has had more than a decade of experience with community involvement in contaminated site remediation.

In 1980, the federal government began its Superfund program, which was designed to enable clean-up of inactive hazardous waste sites and protect public health and the environment from releases of hazardous substances.<sup>38</sup> It was not until 1986, however, that EPA began to focus on community involvement in Superfund clean-up efforts.

The 1986 *Superfund Amendments and Reauthorization Act* required EPA to develop community involvement provisions to ensure that the public be informed of the proposed actions at a Superfund site, as well as to encourage public participation in the Superfund process. In response, EPA created a Superfund Community Involvement program, which provides the public with information about site conditions and clean-up activities, and

*most importantly, it promotes participation in the environmental cleanup decisions directly affecting community health and livelihood.*<sup>39</sup>

In the past decade, EPA has learned many lessons with respect to improving community involvement at some of the most highly contaminated sites in the country.<sup>40</sup> They have developed tool kits and guidance documents, as well as numerous case studies related to public or community involvement.<sup>41</sup>

There is also a growing body of scholarly research in the U.S. on public participation in decision-making. In particular, a recent study examining public participation in contaminated communities illuminates many of the complex issues that must be grappled with when communities and governments confront the task of remediating contaminated sites.<sup>42</sup> The following discussion draws on some of the key lessons learned from EPA's experiences, and on literature on public participation in decision-making in the United States.

#### 3.4.1 Benefits of Community Involvement

Research in the U.S. has shown that public participation can provide the essential community-based knowledge, information, and insight that may be lacking in expert-driven processes. It can also enhance the efficiency of administrative decision-making; contribute to conflict resolution; create support for and acceptability of agency actions; facilitate implementation of decisions; and generally, lead to more rational and legitimate decisions about risk.<sup>43</sup>

The U.S.-based National Research Council and the Presidential/Congressional Commission on Risk Assessment and Risk Management have suggested that public participation will lead to "better" decisions.<sup>44</sup>

This suggestion was substantiated by interviews with EPA staff involved in clean-up efforts at Superfund sites.<sup>45</sup> The following are a sample of EPA staff comments:

***The community task force made a significant contribution to the clean-up effort.***<sup>46</sup>

***Significant community involvement in the risk assessment led to a better product and increased public confidence in the project.***<sup>47</sup>

***Getting the public more involved is the right thing to do and will usually lead to better decisions.***<sup>48</sup>

***If you sincerely seek information or support from a community you will almost always get something worthwhile.***<sup>49</sup>

In several cases, “better decisions” decreased the costs associated with the clean-up projects.

At the East Fork Poplar Creek Superfund Site, citizens argued that the level of risk reduction called for in the regulators’ proposed clean-up plan did not justify the \$168 million price tag. The community opted for a remediation strategy that reduced the clean-up costs to \$8 million. The government’s remediation program manager said that even without such substantial dollar savings, the \$250,000 that they spent on community involvement work would have been worthwhile in terms of citizen goodwill and satisfaction with the outcome.<sup>50</sup>

Similarly, a multi-stakeholder “Coordinating Council” at the Pine Street Barge Canal Superfund Site provided a mechanism for active community involvement in decision-making. The work of the Council led to development and acceptance of a far less costly and less intrusive remediation alternative that won support from all stakeholder groups in the community.<sup>51</sup>

**Lesson: Community involvement improves the quality of remediation decisions, and may reduce the clean-up costs.**

### **3.4.2 Barriers to Community Involvement**

EPA has discussed a number of barriers that may affect public participation in multi-stakeholder process.<sup>52</sup> Barriers may include:

1. Political reasons: e.g., due to an existing power structure or community dynamic, citizens believe they will be unable to significantly influence issues.
2. Economic circumstances: e.g., citizens cannot afford the time or do not have the resources to participate substantively in the process.
3. Historical reasons: e.g., past inaction or inadequate attention to the issue has led to a “too little, too late” attitude.
4. Social background: e.g., citizens have not been exposed to these types of community interactions or processes before (feel intimidated).
5. Cultural reasons: e.g., “the problem was a result of god’s will.”
6. Problems related to information: e.g., they receive inadequate information and/or explanations of background and technical material, inadequate minutes from meetings, overwhelming amounts of reading (feel intimidated).
7. Conflict-related issues: e.g., there is either a lack of or too much controversy surrounding an issue (“it’s not worth my time,” or “I don’t like conflict”).

Lack of community trust is often cited by EPA and others as a major barrier to participation. For example:

A century of dumping of industrial wastes in Chattanooga Creek created one of the most polluted creeks in United States. For years, residents had complained about the contamination of the creek, along with odours, fumes, and air pollution associated with the local industrial facilities. In 1980, the Tennessee Valley Authority identified 53 toxic substances in the creek, with some above EPA guideline levels. Despite clear evidence of serious environmental contamination, state and local agencies were slow to respond. Residents interpreted this inaction as an absence of agency concern for the public welfare. This history made it difficult for community residents to trust and respect government agencies.<sup>53</sup>

**Lesson: There are numerous barriers to public participation.**



### **3.4.3 Overcoming Barriers to Community Involvement**

#### **3.4.3.1 Build Trust**

EPA has recognized that even though the process of building trust can be time-consuming and daunting, trust is integral to effective community involvement.<sup>54</sup>

One successful EPA trust-building effort occurred at the Leadville Superfund Site:<sup>55</sup>

In 1983, EPA began planning a Superfund clean-up of the California Gulch mining site in Leadville, Colorado. The Agency's efforts were met with years of community resistance. In 1995, the Colorado legislative representative from the community was suggesting that EPA staff be "hanged at the city limits." Today, however, EPA is working in partnership with local leaders to complete a clean-up at the site.

A number of EPA initiatives in Leadville eventually led to the understanding and trust needed to move forward on the site clean-up. The situation started to improve after EPA hired a Community Involvement Coordinator (CIC). The following is a summary of the lessons on trust-building learned by the CIC:

- You can't be an occasional visitor – you must be in the community on a regular basis, listening and responding in a neighbourly way, and take the time to build relationships.
- You increase your chances of success if you pay close attention to what the community is worried about and what they perceive to be the primary threats. Deal with these issues along with the problems that are on your agenda (e.g., while EPA's priority was reducing the possibility of child ingestion of lead, the EPA team began to focus more attention on improving stream quality and fishing/recreational opportunities; and EPA showed respect for Leadville's mining heritage by working with the town to develop an historic preservation plan that would help guide clean-up decisions.)
- It's important to avoid the temptation to lecture the community, and to not have the attitude that you are there to save it.
- It was useful to supplement public meetings by sitting down with residents in their homes and talking with (not to) them, and meeting with county officials to listen to their concerns and to exchange ideas.

#### **3.4.3.2 Focus on Communication With and Outreach to the Community**

In the past, government agencies have often targeted their communication efforts at one group, whom they thought represented the community. This has led to frustration on the part of the larger community. The following example demonstrates this problem:

In 1992, the U.S. Agency for Toxic Substances and Disease Registry (ATSDR) entered the community of Chattanooga to conduct a health study related to the Chattanooga Creek Superfund site. ATSDR implemented some public outreach, communication, and education efforts in the community of Chattanooga. But its primary focus of communication was with a local university environmental group called Stop Toxic Pollution (STOP). STOP members interacted with the agency and also organized a community-wide meeting at which ATSDR distributed fact sheets. STOP members, however, were considered to be "outsiders" in the community, due to the fact that most were university students who were not from Chattanooga. Given the group's perceived "outsider" status, ATSDR's reliance on STOP as a focus for and convener of agency outreach activities was problematic, as it angered community residents who did not identify with that group. For a time, this frustration on the part of the larger community impeded ATSDR efforts to communicate with the affected community.<sup>56</sup>

The EPA has found that it is often the groups most likely to be affected by a decision who will be the most difficult to reach.<sup>57</sup> At the Waste Inc. Superfund site, the Agency employed special efforts to overcome this barrier:

At the Waste Inc. Superfund Site in Indiana, EPA encountered high levels of distrust from the community because the Agency had begun work without giving the community an opportunity to participate in the decision-making process. In an attempt to break through the community mistrust, EPA formed a partnership with a local organization called the Minority Health Coalition (MHC). Rhonda Lee from the MHC began to work as a community leader, assisting EPA by identifying interested residents and other key stakeholders, and communicating with the community (particularly hard-to-reach citizens). Lee drew on her experiences of working with the community to help EPA better understand the community's needs and ways to communicate effectively with the community. Through this approach, EPA increased its efforts to involve community in decisions at all levels.<sup>58</sup>

**Lesson: Extra efforts may be necessary to ensure that the message is heard by all community members.**

U.S. government agencies have used a variety of communication tools and strategies to reach community members who have different levels of interest, concern, and technical expertise:

The Colorado Department of Public Health and Environment's (CDPHE's) outreach efforts with respect to the Rocky Flats contaminated site is a good example of how an outreach program catered to the preferences and abilities of the community. For the general public, the CDPHE communicated information via a quarterly newsletter, periodic fact sheets, and special reports, as well as face-to-face at quarterly public meetings. It also designed a variety of activities to address the different levels of interest, concern, education, and scientific/technical knowledge in the community. For example, for citizens most comfortable with written information the agency developed ten technical topic papers to answer frequently asked questions and to explain complex scientific and technical issues in a simple, clear, and concise way. For citizens who wanted a more active role and/or who had particular interest in the public exposure studies, the agency worked with HAP to establish a Citizens' Environmental Sampling Committee.<sup>59</sup>

The Pine Street Barge Canal Coordinating Council had an extensive outreach program related to its community participation process:<sup>60</sup>

1. All meetings were open to the public and citizens were encouraged to express their views.
2. All upcoming meetings were announced in the local newspaper.
3. Council's deliberations were widely reported in the Burlington Free Press, and many meetings were broadcast on the local cable system's public access channel.
4. Council members reported on a regular basis to their "wedge" or constituency by disseminating information from the Council at meetings of other community groups. They also gathered input from these groups as feedback for the Council.
5. A Council newsletter was published on a periodic basis.
6. Whenever a specific benchmark or important decision was reached (e.g., decision to conduct additional studies, or when a report was released) the Council made a special effort to get the word out to the public-at-large through local media.

Some additional suggestions and examples of useful communication tools and strategies that have come out of our U.S.-based research include:

- It is especially critical to convey information related to community health in a timely manner. For example, at the Montrose-Del Amo waste site, EPA's biggest challenge was to

address community fears about possible adverse human health effects from years of DDT and rubber production. When EPA discovered bowling-ball-sized chunks of DDT-contaminated fill in two residential yards, they instituted what was in their view a time-critical removal action. But they did not simultaneously develop an adequate risk communication message. This fueled existing community fears, suggesting to the community that it was at a high risk of exposure. The community experienced further frustration because often there was no quick information available; information was only provided after the community asked the right questions; or information was too technical or inconsistent (e.g., data was sometimes provided in parts per million, while at other times it was in parts per billion). For already fearful residents, confusing or inconsistent information easily sparked mistrust. Due to the prior history of problems with other regulators, the residents often interpreted miscommunications by the EPA as deliberate attempts to withhold information or mislead the community.<sup>61</sup>

- Outreach mechanisms must find a way to go to the community, rather than expect the community to come to them, e.g., hold meetings or information sessions in conjunction with regularly scheduled community activities.<sup>62</sup>
- It may be useful to broadcast meetings on a local radio station or public TV station. For example, in the New Bedford Superfund community process, there was suspicion that the stakeholder group was simply a “mouthpiece” for the EPA and industry. Televised meetings prevented perceptions of back-room bargaining.<sup>63</sup> While this was useful for increasing the credibility of the process, the televised sessions were not the right mechanism for communicating information back to the public. The televised meetings were too lengthy for most people to follow.
- Web sites, although a useful tool, are not perfect (not everyone has access to the Internet; web sites do not always operate correctly; they do not allow for meaningful public input; and it can be time-consuming to download material from them).<sup>64</sup>

**Lesson: Information should be communicated in a timely way, and in manners that are accessible and understandable to the entire community**

There are a variety of mechanisms and methods to provide information to community members. Some of the methods focus solely on the one-way provision of information from the government to the community, or, in the case of community surveys and interviews, the conveyance of information from community to government.

Public meetings are often perceived as venues for agencies to “present, explain and defend” decisions that they’ve already made, rather than as opportunities to enter into meaningful dialogue and shared decision-making with the community.<sup>65</sup>

In all of U.S. case studies reviewed for this report, there was a mechanism put into place to foster two-way communication, i.e., provide the public with a chance to ask questions, raise concerns, express opinions, and interact with other community members and government. And as will be described later, an iterative process, where EPA provides responses to community input, is important to ensure agency accountability to the process.

**Lesson: In addition to communicating messages to the public, meaningful community involvement requires a mechanism that enables two-way dialogue.**

### **34.3.3 Allow for Independent Verification of Data**

Community members may not have a great deal of confidence in the analysis of scientific data that are presented to them. People living near contaminated sites may be hesitant to trust the work of a government that failed to prevent (and, indeed, was sometime responsible for creating) environmental contamination.<sup>66</sup> The public may also be distrustful of scientific and technical experts from a variety of public and private institutions who have been slow to acknowledge hazards and quick to minimize risk — often preferring to wait for more scientific evidence before taking action deemed to protect the public interest.<sup>67</sup>

The lack of confidence in data may be well founded. The U.S. National Research Council has acknowledged that science is not value-neutral or objective, especially in terms of how it makes assumptions, frames problems, or, at times, reports findings.<sup>68</sup> Others have reported on how science and technical expertise can be politicized, and how the interpretation of scientific data cannot be isolated from the personal, social, and political context of the individual providing the interpretation.<sup>69</sup>

The task of increasing public confidence in scientific data may require that research be conducted or verified by an independent source. This proposition has been substantiated by EPA's research. In an EPA review of eight agency regulatory negotiations, the Agency found that 80% of the controversial issues were successfully negotiated or resolved through the presentation of objective data and/or analysis. In many cases, credibility of the "objective data" meant that the data were produced or confirmed by a source other than EPA.<sup>70</sup>

**Lesson: Credibility of scientific information may require that it be independently collected or verified.**

### **3.4.3.4 Create Funding and Initiatives for Community on Capacity Building**

The data associated with mine-site remediation are often highly technical, and there can be overwhelming amounts of data produced. EPA acknowledges that without outside expertise, groups with non-technical backgrounds can be significantly disadvantaged in their ability to participate effectively in decision-making.<sup>71</sup>

One tool that EPA developed to enable Superfund communities to have the capacity to understand and use technical data to better make decisions comes in the form of Technical Assistance Grants (TAGs).<sup>72</sup> These grants are made available to community groups to hire experts to review technical issues associated with contaminated sites. Not only has this effort proven to be a considerable success in making it easier for community groups to interpret data and understand technical issues, it has also improved dialogue with EPA, enabled the community members to educate other nearby residents about the issues, and has established credibility of the groups involved.<sup>73</sup>

The Pine Street Barge Canal Superfund site was a technically complex site, and public opposition to EPA's first proposed remedy was mainly due to technical issues related to gaps in data collection at the site. Consequently, understanding complex data and technical issues was critical for meaningful community involvement. Community representatives said they had all the technical assistance they needed because the group received a TAG from EPA that allowed them to hire their own technical advisor to analyse the site data. One of the community members interviewed said the TAG was critical because it enabled the community to be an equal player in deliberations on technical issues.<sup>74</sup>

At the Summitville Mine Superfund site in Colorado, the community's technical advisor (hired through a TAG grant) submitted comments to the EPA that resulted in changes to the site reclamation plan.<sup>75</sup>

**Lesson: Technical assistance for community members levels the playing field and enables the community to participate more fully in decision-making. It may also lead to improvements in remediation plans.**

Involving community members in actual technical work can both empower and provide community members with a more complete understanding of the complexities of the scientific issues involved in clean-up and related issues. They are then able to convey this information to the broader community.

At the Rocky Flats Superfund site in Colorado, a Citizens' Environmental Sampling Committee (CESC) was created out of a recognition of the inadequacies of the existing soil sampling records and the lack of public trust in the work conducted by governmental agencies and their contractors. The Colorado Department of Public Health and Environment (CDPHE) worked with the state-initiated Health Advisory Panel (HAP) to establish the citizen-based committee to conduct a soil sampling study. Concerned citizens and community organizations were invited to select sampling sites, a sampling methodology, and the analytical laboratory. CESC members were also asked to analyze the data and write a report of the results. CDPHE arranged for Colorado State University to present soil sampling demonstrations so participants could learn sampling techniques. The agency also arranged a tour of a radiological sciences laboratory at the University so members could see how soil samples are analyzed. Committee members had full decision-making authority. They selected topics and experts for educational presentations and selected the sites for sampling. It was an innovative and empowering approach to both public participation and capacity building.

By involving members of the community in the actual work of a risk assessment at the Palmerton Zinc Superfund site, EPA not only gained helpful information (e.g., public input resulted in some valuable corrections to data in the draft risk assessment report), but also established a high level of public confidence.

**Lesson: Including community members in the hands-on investigations and remediation work increases community capacity and trust in a process**

### ***3.4.4 Formal Community Involvement Processes***

#### **3.4.4.1 Nature of Involvement**

EPA suggests that initial discussions should be held with a community to clarify the type of process to be used, what the goals will be, and what the process can and cannot accomplish.<sup>76</sup> This is necessary to reveal differences in expectations. Failure to do so may result in a serious erosion of public trust in a government department or a particular process.

In Rocky Flats, CO, the Future Site Use Working Group (FSUWG) was established to create a mechanism to enable different parts of the community to work together to study options available for future site use and to make informed recommendations to the Department of Energy (DOE) and other agencies on this issue. FSUWG was charged with identifying opportunities and constraints for the future use of the site. Many participants interpreted this as meaning the group's recommendations would actually influence final decisions made by government officials.

The agencies, on the other hand, believed that the purpose of community involvement activities was to enable them to hear and consider community views, but that the ultimate decision was their responsibility.

When DOE made no formal response to the group's recommendations, members perceived it as a lack of respect for the group's efforts and an indication that the agency was not trustworthy. When DOE later circulated documents that were seen as having significant divergence from the group's recommendation, there was considerable anger and public outrage. It was seen as a violation of public trust.<sup>77</sup>

**Lesson: The community should be made aware of the purpose of the participation process – before they enter the process.**

On the issue of multi-jurisdictional overlap at contaminated sites in the United States, Ashford and Kerr (1999) found that the complex pattern of multi-agency involvement is both a source of confusion for the community, as well as an opportunity for interagency coordination, cooperation and synergy.<sup>78</sup>

The following examples of interagency cooperation illustrate some successful interagency efforts:

In Saltville, Virginia, representatives from two federal agencies (EPA and ATSDR), and the state environmental agency created a joint decision-making process for the clean-up of contaminated sites in the town, and coordinated their communications and citizen participation efforts (e.g., public meetings). The Team met monthly, and made all decisions by consensus. The Team also had decision-making authority, and their decisions were not second-guessed or reversed by their agencies. This helped enhance accountability and credibility with the local community.<sup>79</sup>

In Bartlesville, three federal and two state agencies created a Task Force to coordinate activities with respect to community health issues related to zinc smelting operations. By working together, agencies were able to accomplish some tasks more efficiently, e.g., ATSDR funded the state to the blood lead studies, eliminating the necessity of having to go through its own peer review process before results could be released.<sup>80</sup>

**Lesson: Multi-jurisdictional overlap can create confusion in the community. It may also provide an opportunity for interagency coordination, cooperation and synergy.**

#### **3.4.4.2 Membership**

A study conducted by EPA entitled *Stakeholder Involvement and Public Participation* concluded that the greater the diversity of perspectives included, the more likely the process and resulting products will be perceived as credible by the community.<sup>81</sup>

Other research suggests that even in cases where the processes appear to have good community representation, it is important to consider whether the participants adequately represent the views and values of the larger, unorganized, inactive, and non-participating public.<sup>82</sup>

For example, at the Sandia Laboratory Site in Albuquerque, a Steering Committee of local residents was responsible for publicizing openings on the Community Advisory Board (CAB), and creating a list of potential members from the respondents. The Steering Committee sought to recommend delegates who represented a broad political and demographic spectrum. The CAB members were appointed by the Department of Energy (DOE).

Although appointed to represent the community, many members of the CAB did not feel comfortable with this role. They said they could not speak for the community, even

though the agency and facility assumed they did. In the words of one member, “DOE would say, ‘we need the public to tell about these things and you, the board, represent the public.’ But we don’t represent the public because we were appointed by DOE.” Another member noted that, “They [Sandia Lab] go around and say the CAB endorsed it and therefore the community supports it. This is not necessarily true.”<sup>83</sup>

**Lesson: Membership should include broad representation that reflects the diversity of viewpoints in the community.**

Increasingly, public participation is being distinguished from stakeholder involvement.<sup>84</sup> A major difference between the two types of involvement is that public participation generally does not differentiate between different members of the public. Stakeholder involvement processes, on the other hand, tend to be more targeted in their membership,<sup>85</sup> with the resultant criticism that stakeholder processes can sometimes eliminate the “fringe elements” or dilute the influence of the most severely impacted members of the community, who are often the least powerful as well.<sup>86</sup>

The Lead Steering Committee demonstrates how a targeted or pre-selected involvement process served to reproduce inequalities in a community.<sup>87</sup>

This case involves heavy metal contamination of the West Side of Bartlesville, Oklahoma, a community with a large proportion of low-income and minority (African-American) residents. The West Side had long endured a disproportionate burden of environmental hazards within the larger community of Bartlesville, and they wielded little political power within the large Bartlesville community. The state environmental agency established the Lead Steering Committee as a mechanism for two-way communication between the involved public agencies and the public. Members were appointed by the state agency, after trying to identify the “major players” in the community at a public meeting. The primary purpose of the committee was to get information out to the community, and as a result, members of the local media were appointed. Some members of the affected West Side community felt under-represented on the committee. Some committee members from the West Side reported a continued sense of a power imbalance, noting their views were not respected or taken as seriously as those of other members.

**Lesson: Community members easily recognize and may be critical of public participation mechanisms that leave out or mute the voices of community members.**

#### **3.4.4.3 When to Engage the Community**

The Li Tungsten Superfund process is an excellent example of how early and meaningful public involvement can lead to a better clean-up. The Li Tungsten site was selected by EPA to test the effectiveness of early community involvement in the Superfund clean-up process.<sup>88</sup>

The Li Tungsten Community Task Force, which included residents, business interests, local environmental organizations, potentially responsible parties, and local and state governments, was organized prior to the initiation of the remedial investigation. The Task Force provided assistance and input to EPA on the best approach for dealing with soils, sediments and groundwater contaminated by 40 years of tungsten-products manufacturing. The main lessons learned by the EPA from this test case were that:

- Formation of the Task Force at the outset allowed the membership to see the Superfund process from beginning to end, which greatly reduced the misunderstanding that leads to distrust and lack of community cooperation.
- The Task Force made a significant contribution to the clean-up effort through early scoping of issues and dissemination of information to the community. Also, the Task

Force involvement improved the quality of the Remedial Investigation report and substantially influenced EPA's feasibility study deliberations.

- The public has useful knowledge. The risk assessment was improved because of the Task Force's input on how the property had been used and the anticipated future land uses.

The literature supports the premise that public involvement should begin early in the decision-making process, as problems are being defined and formulated.<sup>89</sup> This can help to take citizens out of a reactive position; offer them meaningful engagement in discussions of options, tradeoffs, and consequences; and, as seen from the following example, build trust between the participants.

*The Albuquerque Environmental Justice and Superfund Summit* is an example of community involvement at the planning stages of a process. The summit is considered to be a groundbreaking effort at building partnerships and creating dialogue among a broad range of interests.

The purpose of the summit was to develop solutions to the contamination issues faced by Albuquerque's San Jose neighbourhood. The summit was planned, designed, sponsored, and implemented through a collaborative process that included community organizations, government, and industry. Each group had reasons to participate and collaborate.

Involving such a large number of disparate groups in a single planning process was difficult and time-consuming, but those involved were committed to shared decision-making and community-building, even if it occurred at the expense of efficiency. The open, collaborative nature of the Summit's planning process has led to a spirit of mutual respect, a commitment to continue to improve communication among often contentious groups, a recognition of the value and validity of the different forms of knowledge, and enhanced trust between and among the different community groups and government agencies.<sup>90</sup>

The literature also suggests that public participation activities should not be initiated if decisions have already been made and there is no possibility that the public can influence them.<sup>91</sup> If the public is involved only after decisions have been made, it is highly likely that they will believe the process lacks credibility.

At the Pine Street Barge Canal Superfund Site, EPA released a \$50 million cleanup plan that had not been the result of community input. There was general agreement that the presentation of this plan left the Agency's credibility with the community in tatters. Eventually, community acceptance of a remedy was gained, but this occurred only after they were able to become actively involved in decision-making through a Coordinating Council.<sup>92</sup>

**Lesson: Community involvement should occur early in the process, and definitely before decisions are made.**

#### **3.4.4.4 Factors Affecting the Success of Community Involvement Processes**

Agency accountability to a public participation process is essential. The credibility of the process may be undermined if agencies do not respond (or fail to respond in a timely manner) to the public's input, suggestions or recommendations. This was seen in the Rocky Flats FSUWG example, above. When the DOE failed to formally respond to FSUWG's recommendations, members perceived DOE as being untrustworthy, and lacking respect for the group's efforts.<sup>93</sup>

In their *Stakeholder Involvement and Public Participation* report, EPA lists a number of lessons learned with respect to Agency accountability:<sup>94</sup>

1. When public input and concerns are voiced, the Agency needs to be able to clearly



- explain how that advice will be used.
2. If the Agency makes a decision that is at odds with community input, it should explain to the community why the decision was made.
  3. The Agency should expect that community members will strongly desire to re-state and argue their position. Thus, EPA needs to have a clear, flexible process that allows room to further debate the Agency's decision.
  4. EPA should be open to the possibility that the decision may require changes before being considered final.
  5. These efforts will send a signal to the community that the public's input truly is valued. Without such measures, the credibility of the public participation effort may be lost.

There may be a need to provide training to regulators who are involved in stakeholder and public participation processes. It was recognized by EPA that Agency staff would greatly benefit from training in both the value and use of these activities, and also in how to conduct themselves in the processes.

It may be important for governmental officials who are in the position to make or influence decisions to attend and participate in community involvement activities and events. Community members in some of the case studies questioned an agency's interest and commitment to the public participation process and to shared decision-making when only low ranking personnel participated in a process or attended meetings.<sup>95</sup>

<b>Lesson: Governmental agencies' accountability to and support for a process are essential.</b>
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Consistency in membership is often cited as extremely important in achieving timely progress toward goals. For example, members of the Pine Street Barge Canal Coordinating Council have acknowledged that low turnover in membership helped to foster the trusting relationships necessary to reach a consensus agreement.<sup>96</sup>

Consistency, however, may be difficult to achieve in some community processes. Both community members and government employees can suffer from "burn-out," which can be induced by the large time commitment that so many formal processes require. It may also be brought on by an inability to deal with conflicts that arise.

In EPA's Montrose-Del Case Study, there was high government turnover because of the stress and challenge of addressing the social issues that went hand-in-hand with the contamination.<sup>97</sup>

At the Montrose-Del Amo Waste site, a citizen's group requested an extensive permanent relocation of residents after bowling-ball-sized chunks of DDT-contaminated fill were found in two residents' yards. EPA management believed that relocation was unnecessary. The on-site EPA team, which wanted to be responsive to the community and build credibility, found themselves in a very difficult situation. Eventually an agreement was reached to temporarily relocate 30 families during the cleanup excavation work. When the excavation was completed, it was difficult for the on-site EPA team to get the residents to move back. EPA team members were often overwhelmed by these and other social issues. Out of all of the government departments involved in the project, they were the only ones with any community involvement training, and as a result, they bore the brunt of citizen interaction. The incidence of EPA staff burn-out and subsequent team turnover was high, which frustrated the community, who felt they were continually having to get new staff up to speed.

In addition to affecting the success of a process, a high turnover rate of governmental staff participating in community involvement processes may contribute to a perception that the agency is inconsistent and incompetent. Both high staff turnover and conflicting information from different staff members caused many citizens in St. Louis to lose confidence in the Department of Energy.

In the words of one community member: "It seems like DOE is very confused...and it seems like you are always dealing with new people."<sup>98</sup>

**Lesson: High rates of participant turnover can lead to frustration, and decrease the credibility of the process.**

EPA case studies also indicate that openness and transparency can significantly influence public trust and willingness to participate in the process. The following example shows how an open risk assessment process increased the Agency's credibility within the community, and also led to a better risk assessment process.

For close to 100 years, two zinc-smelting plants operated outside the town of Palmerton, Pennsylvania. Contamination from these operations included more than 30 million tons of smelter residues, and contaminated ground and surface waters. Some community members and potentially responsible parties questioned EPA's assertions that contamination within the community was related to the zinc operations. They claimed, rather, that the contamination was attributable to lead paint, gasoline, cigarettes, etc. When EPA successfully "fingerprinted" the metals contamination, proving its industrial origins, the Agency had a clear opportunity to move forward with their cleanup efforts. Instead they decided to involve the stakeholders in a risk assessment exercise. This exercise was conducted in an extremely open and transparent manner. Regular meetings were held in the community and EPA offices, and minutes of these meetings were published in a newsletter. And data, methodology, issues and concerns were freely shared and discussed. The exchange of technical data was so complete that both EPA and the community had sufficient information to do their own risk assessments. EPA not only gained helpful information (e.g., the community's assessment resulted in some valuable corrections to data in the draft risk assessment report), but also established a high level of public confidence. No one complained about the process or felt blind-sided by results. Although not everyone was pleased with the conclusions of the risk assessment, no one felt left out of the process.<sup>99</sup>

Even if meetings are open to the public, they can be run in ways that severely limit the ability for certain viewpoints to be heard. For example, if time is not specifically allocated for public comment, tight control of public meetings can exclude public participation. This can anger community members who view the meetings both as information sessions, and as venues for intra-community communication. In the words of one St. Louis resident:

*By the time your opportunity to talk comes around, your energy is dissipated...the bulk of the people leave before the public gets to talk. So by the time you get to the part where you could learn from your neighbors, people aren't there.*<sup>100</sup>

**Lesson: Openness and transparency can lead to a better process.**

There are different approaches to coming to group decisions. Some of the case studies provide examples of consensus-based decision-making, while others have employed a voting structure.

Neither of these is a clearly preferred option, as there are pros and cons associated with both approaches. The main lesson coming out of the review of these mechanisms is that no matter which approach is taken, it must be viewed by the participants as being fair.

Reaching consensus is time-consuming and may be frustrating, but it may lead group cohesiveness,<sup>101</sup> and to decisions that are more acceptable to the broader community.

While most EPA Community Advisory Groups do not operate by consensus, members of the Pine Street Barge Canal Coordinating Council adopted a consensus-based decision-making process. All participants in evaluation interviews agreed that although the consensus process was costly and time- and resource-intensive, and frustrating for

participants, the benefits to the community outweighed these additional costs. The community was empowered by becoming a partner in decision-making at the site, and the community agreed on a remedy acceptable to all parties. And all stakeholders agreed that it probably was the only way the group could have reached an agreement acceptable to all parties involved.<sup>102</sup>

Several factors specific to the Pine Street Barge Canal site may have made consensus-based decision-making the appropriate choice.

- The community included an unusual coalition of community groups, environmental groups and potentially responsible parties.
- All segments of the community were united in opposition to EPA's first clean-up plan.
- All of the Council members were fully committed to the same goal, i.e., reaching a mutually acceptable agreement and remedy.
- There was virtually no turnover in Council membership over the five-year process, which provided the opportunity for members to build trusting relationships that enabled them to reach agreement.
- The EPA was flexible and diligent in its efforts to make the consensus process work. Council members praised EPA staff for their ability to do this work in the context of a regulatory role that was not necessarily conducive to consensus-based decision-making.

A voting structure has the potential to move the process along in a more efficient manner. There is the concern, however, that an imbalance of power in the membership may not provide adequate representation of the interests of affected community.

Our review has revealed a couple of useful examples of how groups have attempted to address this power imbalance:

*The Bartlesville Coalition* of three community groups – each with different agendas – came together to apply collectively for an EPA Technical Assistance Grant. The three groups selected their own representatives for membership on the Coalition. Two of the groups represented the affected West Side community, while one of the groups represented business interests of the wider community. To better reflect the interests of the affected community, the two West Side group were given two votes to the business-group's one.<sup>103</sup>

*Rocky Flats Local Impacts Initiative (RFLII)* is a broad-based group with representatives from cities, counties, interest groups, the Chamber of Commerce, Rocky Flats employees, the Steelworkers union, affected landowners, the Department of Energy, and the Rocky Flats plant contractor. Neither the DOE nor the plant contractor has voting rights. And as a means of providing a voice for constituents not aligned with the above organizations, three "at large" positions were created, each having full voting rights.<sup>104</sup>

<b>Lesson: Efforts must be made to ensure that processes are conducted in a fair and equitable manner.</b>
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Effective facilitation can be critical to working through the conflicts that arise in multi-stakeholder or community involvement processes.<sup>105</sup>

In the Pine Street Barge Canal case study, "Neutral, third-party facilitation was essential to guide deliberations of the community advisory group at this contentious site, where multiple segments of the community and of the regulatory community were present at the table."<sup>106</sup> The lessons on facilitation conveyed by this case study were that:

- Carefully consider whether you need someone to fulfil the role of mediator or facilitator, and choose a candidate with that specific skill. Be clear about which role you expect

that individual to play.

- A skilled facilitator will prepare agendas, keep meetings on agenda and discussions on track, record important points and decisions for participants, help the group resolve conflicts that arise and come to closure on important issues and milestones during the process of reaching its goals.
- One size does not fit all. If possible, allow the community to interview more than one candidate so they can choose someone with whom they are comfortable.

EPA also stresses that early facilitation is important, especially if the process includes a number of participants representing a variety of different viewpoints or interests. If facilitators are brought in only after troubles are apparent, “it may not erase troubling developments that have already emerged.”<sup>107</sup>

<b>Lesson: Conflict resolution mechanisms and quality facilitation is extremely important to ensure that conflicts do not seriously hamper the process.</b>
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## **4.0 LESSONS LEARNED FROM THE CANADIAN AND U.S. RESEARCH**

The following discussion draws on some of the key lessons learned from the three Canadian case studies, the U.S. EPA's experiences with community involvement processes, and some selected studies that deal with public participation and contaminated sites.

The general themes and topics discussed below were chosen because they were common to both the Canadian and U.S. research. Some examples are provided, and references are made to some of the case studies that include illuminating examples of the points being made.

At the end of the discussion section, all of the lessons learned from the Canadian case studies and the U.S. examples are listed.

To gain full appreciation for the breadth and complexity of issues that need to be considered when establishing community involvement processes, however, readers are encouraged to read the Canadian case studies and the Lessons Learned from the U.S. in their entirety.

The discussion is divided into four sections:

- I. Benefits of Community Involvement;
- II. Barriers to Community Involvement;
- III. Overcoming Barriers to Community Involvement; and
- IV. Lessons Related to Formal Community Involvement Processes

### **I. BENEFITS OF COMMUNITY INVOLVEMENT**

Our case studies and lessons learned by the U.S. Environmental Protection Agency (EPA) indicate that community involvement leads to better decisions when it comes to the remediation of contaminated sites. Community members can provide local knowledge, information, and insight that may be lacking in expert-driven processes. In some cases, community involvement also leads to lower remediation costs.

### **II. BARRIERS TO COMMUNITY INVOLVEMENT**

It cannot be assumed that limited participation in a public process means that the community members are not interested in or concerned about the subject. There are a number of reasons why community members may not participate in a process.

People living near contaminated sites may be hesitant to trust a government that failed to prevent environmental contamination. As a result, lack of community trust in government often becomes a major barrier to participation in a government-led process.

Disillusionment with processes that do not adequately reflect community composition, or that fail to resolve conflicts in a respectable manner, may also diminish participation and prevent community members from becoming involved.

The scope of the process may prevent certain groups within a community from becoming involved. For example, community members who are concerned primarily about health and relocation issues may not want to become involved in a process that is solely focused on determining the best reclamation option. (See Deloro Case Studies)

Furthermore, if there is an indication that input from the community is not going to be meaningful, e.g., decision-makers have already made up their minds, and public participation is mere "window dressing," community members may choose to expend their energies elsewhere.

Finally, health, social, economic, political, economic, historical, cultural, and other factors may affect the willingness or ability of a community member to participate in a process related to mine site remediation.

### **III. Overcoming Barriers to Community Involvement**

There are several key areas that require attention when attempting to overcome barriers to community involvement in a process. These are summarized below.

#### ***Building trust***

Although building community trust can be a time-consuming and challenging process – especially if there is a history of conflict or mistrust – it is unlikely that community participation mechanisms will be successful without it. Consensus-based processes, if conducted well, may be able to facilitate the understanding required to generate trust among members of a diverse community or multi-stakeholder group. Trust may also be built when community members see that some of their priorities have been addressed along with government priorities. (See U.S. Lessons, Leadville Superfund example)

#### ***Communicating with the public***

Communities are not homogeneous entities. As a result, it is likely that a number of communication tools and strategies will have to be used to disseminate and gather information, and educate community members. Extra effort should be made to ensure that the information is distributed beyond “those most willing to hear it” and that input is received from more community members than “those who are easiest to hear from.”

Some of the information related to the remediation of contaminated sites is extremely technical. Consequently, efforts should be made to convey this information in an easy-to-understand format. Otherwise, large segments of the community will not have the knowledge to understand the issues and will be unable to fully participate in discussions related to remediation. The more technical information, however, should still be made available to those interested in delving into the data.

When information concerning contamination becomes available, it is important to disseminate this information to the community as soon as possible. Careful attention must be paid to communicating this information in a way that does not incite fear in the community.

#### ***Building capacity in the community***

Citizens and communities require resources, knowledge, and skills in order to “level the playing field” and ensure that they can contribute to a process in a meaningful way.

Community members are often distrustful of the scientific studies conducted by government or industry. To increase the credibility of the data, there may be the need to provide the community with the resources to have the studies independently verified.

In many of the case studies examined for this report, a lack of capacity to decipher and utilize technical reports and data was seen as a barrier to meaningful participation in discussions concerning the remediation of contaminated sites. There are community members who have the desire and ability to understand these issues, if the time is taken to help explain the science to them. This can either be done within the community process itself, or by providing resources to community members to hire technical advisors to help them make sense of the information (e.g., in the U.S., citizens have access to EPA funding for technical assistance grants to hire technical advisors. We are not aware of any similarly government-funded technical assistance program in Canada).

By providing mechanisms for increasing the understanding of the technical complexity of contaminated sites and remediation options, community members may gain a greater respect for the challenges faced by regulators and other stakeholders. This, in turn, may create an environment where innovative solutions can be developed to address the multitude of issues existing at these sites.

Sometimes health and social capacity building efforts may be necessary as a parallel track to the technical and process-oriented capacity building. Wellness centres, literacy programs, programs with youth, health support initiatives, re-training programs, etc, can help to improve the ability of community members to participate fully in decisions that affect them.

Capacity-building efforts that increase community participation in remediation work (e.g., Citizen's Environmental Sampling Committee in Rocky Flats, CO) can both empower the community members and better enable them to understand the challenges faced in the remediation of contaminated sites. Often, it will lead to increased public confidence in the remediation efforts. (See U.S. Lessons, Rocky Flats example)

#### **IV. LESSONS RELATED TO FORMAL COMMUNITY INVOLVEMENT PROCESSES**

For any given community it is likely that certain processes and mechanisms for community involvement will be more successful than others. As mentioned above, there are many barriers to community involvement, and different types of processes may do a better or worse job at overcoming these barriers.

There are a variety of processes and mechanisms available to involve communities in the task of deciding how to remediate a mine site. This report does not attempt to recommend a particular type of community involvement process, as this will vary depending upon the particular community and the purpose of the community involvement. For example, if the purpose is to obtain community input on a particular remediation option, then surveys and public meetings may be the right mechanisms. If, however, community approval of a remediation option is being sought, then a more formalized process involving dialogue, evaluation mechanisms, and a decision-making protocol may be required.

The following discussion will provide some examples of, and lessons learned from, different types of community involvement processes, but the main thrust of the lessons learned will be to elucidate themes that can guide in setting up or improving existing community involvement processes.

##### ***Nature of Involvement and Roles of the Participants***

Vocal and critical community activists concerned with health and environmental issues related to contaminated sites have demanded more than one-way communication (e.g., sitting and listening to agency officials at large public meetings). Public meetings have been perceived as venues for agencies to present, explain and defend their decisions already made, rather than as opportunities to enter into meaningful dialogue and shared decision-making with the community.

The nature of a community's involvement in a process should be made explicitly clear to participants up front. This is necessary to reveal differences in expectations of the level of influence that the community members will have on the remediation decisions. If the community role is not defined, community members will have their own expectation of what the process can achieve. And if these expectations fail to be met, there will likely be a serious erosion of community trust in the decision-makers and the process.

Inevitably, there are a number of governmental agencies and levels of government involved in remediation of contaminated sites. Within a process, representatives of the various levels of government have different roles and responsibilities. These may include:

- Providing advice/assistance to the group (e.g., about what to monitor, the extent of clean-up, the methods used for clean-up, etc.);
- Acting as one of the several parties attempting to reach a decision or make recommendations; or
- Retaining the ultimate decision-making authority. As decision-maker, the regulator may be acting as a trustee of public health and environment (i.e., searching for just and equitable solutions), or as the fiduciary agent for society as a whole (i.e., searching for cost-effective solutions).

Often, neither the governments nor the participating public is clear about the role that the various government officials are playing in the process. This may lead to confusion on the part of community members. And, if these roles are not clarified, there may be expectations raised or assumptions made on the part of the community.

This occurred with the Tsolum River Task Force. Some community members may have believed that one of the government agencies represented on the Task force had decision-making authority, or was at least communicating with those who had. But the role of the government agency in this case was in an advisory capacity only. As a result, community members became frustrated when no action was taken. (See Mt. Washington Case Study)

### ***Membership***

There is general acknowledgement by government and community representatives of the importance of creating community involvement mechanisms that include broad representation and a diversity of views. Special attention must be paid to whether or not the membership of a process adequately represents the views and values of the larger, unorganized, inactive, and non-participating public.

It is not a simple task to ensure that a diversity of views is heard in a decision-making process. As mentioned above, there are many barriers preventing the participation of some community members. For example, there may be a huge time commitment required in voluntary community involvement processes. The barrier of a large time commitment may result in a disproportionate influence of those community members who have the time to devote to the issues.

Efforts must be made to help the community members address these barriers. If it is clear that there are segments of the community not participating in the process, extra effort should be made to reach out to and accommodate those voices that would otherwise go unheard.

Decisions on who participates and how participants are selected can significantly affect both the perception and the reality of the fairness, independence, and representativeness of that process. For example, if the committee is hand picked by government, some members may be of the opinion that it does not reflect the full composite of the community and concerned citizens. Consequently, there may not be enough community buy-in for the process. A new selection process may need to be developed to better reflect the diversity of the community.

### ***When to engage the community***

The majority of case studies that were examined stressed that early involvement in participatory processes is very important.

Early involvement can help to take citizens out of a reactive position, and may offer them a more meaningful opportunity for engagement in discussions of options, tradeoffs, and consequences.



It is especially important to engage the community members who are most affected by contamination early in the process, so that their priorities can be heard. This also creates the opportunity for the affected community members to better understand the full complexity of the issues that are being addressed in the remediation efforts. That way, if their priorities are not addressed immediately, they may not be so quick to discredit the process.

The Li Tungsten Superfund example illustrates that early and meaningful public involvement can lead to increased trust and cooperation on the part of the community. It also demonstrates that community members can make a significant contribution to remediation decisions. (See U.S. Lessons)

### ***Key factors affecting the success of community processes***

Regardless of whether the processes are government-driven (e.g., structure and purpose of the group is defined by the government) or group-driven (e.g., where the group decides on a process, goals, membership, and rules of conduct or operation), there are certain process-related factors that may affect the credibility and success of a participatory mechanism. Some of these factors are outlined below.

- Agency accountability within a public participation process is essential. The credibility of the process may be undermined when agencies do not respond (or fail to respond in a timely manner) to the public's input, suggestions, or recommendations. (See U.S. Lessons)

There may be a need to provide training to regulators who are involved in stakeholder and public participation processes. It has been recognized by EPA that Agency staff could greatly benefit from training in both the value and use of these activities, and also in how to conduct themselves in the processes.

- Consistency in membership is often cited as affecting both the credibility of the process, and the ability of process to move forward. A consistent membership may be difficult to achieve as both government employees and community members can suffer from "burn-out." This may result from a large time commitment to the process; an inability to deal with conflicts that arise; or, in the case of Mt. Washington, frustration when expectations are not met.

Actions to prevent participant turnover should be implemented. These actions could include: a process for dealing with conflict; financial support for community members' expenses; babysitting services; technical assistance to community members; paid staff to do the administrative work that volunteers cannot accomplish; and defined end-points for committees.

Training for government staff (or all participants) on topics such as listening and communication, negotiation, consensus building, and the use and value of community involvement processes may also help to increase a commitment to the process. Also, processes for bringing in new members will help to minimize the time required to "bring them up to speed."

- Issues of openness and transparency can significantly influence public trust and willingness to participate in the process. For example, two court cases have created pressure to have a more transparent process for community involvement in decisions made about remediation of Deloro. Conversely, at the Palmerton Superfund site, initial community distrust of the government was overcome by the open sharing of technical data and by transparency in how the risk assessment was conducted. This led to increased public confidence, and public comments also resulted in important corrections to the data. (See Deloro Case Study and U.S. Lessons)
- A lack of fairness in the process (e.g., unequal time allowed for different viewpoints to be

heard) can diminish the credibility of the process.

- It is important that conflicts are resolved in a timely manner that is both respectful and fair. Our review of both the Canadian and U.S. case studies reveals that effective facilitation of meetings can be critical to working through the conflicts that inevitably arise in multi-stakeholder or community involvement processes.

## 5.0 LIST OF LESSONS LEARNED

The following list includes all of the lessons learned from the three Canadian case studies and the analysis of U.S. experiences. The source is referenced at the end of the lesson.

### **BENEFITS OF COMMUNITY INVOLVEMENT**

Community involvement improves the quality of remediation decisions, and may reduce the clean-up costs. (U.S.)

Bringing together all the stakeholders allows for a discussion of issues to take place, which enables different community members and organizations to share information and to present their concerns. (Mount Washington)

### **BARRIERS TO COMMUNITY INVOLVEMENT**

There are numerous barriers to participation. (U.S.)

Funding should not be tightly targeted especially when the issue is complex. Having the DFO mandate focus the groups work on habitat restoration meant time and energy had to be spent getting other funding to deal with mine site reclamation. (Mount Washington)

The exclusion of the community in the financial decision-making process undermines the entire community involvement process. Ultimately, the community acts only in an advisory role and has no real power in final decisions made by government.

When an antagonistic dynamic becomes part of the process, the conflict should be resolved in a way that restores community trust and confidence in the process. Otherwise, the process will become invalidated by lack of contribution from and credibility with the broader community. Public perception becomes very hard to change, and strong participation is lost.

Voting members out of meetings may facilitate progress in decision-making, but this also alienates a large portion of the general public.

People need real power and choice in decisions that affect them. For example, an offer for remediation of residential property could include choices such as relocation, compensation, or remediation.

### **OVERCOMING BARRIERS TO COMMUNITY INVOLVEMENT**

#### **Building trust**

It is important to get community involved and all parties communicating early on. Setting the priorities at the beginning, and having a common goal helps maintain focus. (Mount Washington)

It should be made clear in what capacity the government and other members so expectations are not unrealistically raised. If jurisdiction is unclear, this should be discussed at the onset. If expectations get raised but no action ends up being taken, frustration levels and burn-out heighten, leaving community/committee members disheartened and jaded with the process. (Mount Washington)

An iterative process is time-consuming but is necessary to build trust, otherwise the public remains skeptical and data doesn't change minds. (Deloro)

Involving the community from the beginning, including in the setting of priorities, may involve a considerable time commitment, but the process engenders a level of trust in the process and the agency responsible. (Giant)

## **Communicating**

Extra efforts may be necessary to ensure that the message is heard by all community members. (U.S.)

Information should be communicated in a timely way, and in manners that are accessible and understandable to the entire community (U.S.)

In addition to communicating messages to the public, meaningful community involvement requires a mechanism that enables two-way dialogue. (U.S.)

Study results and peer reviews of those studies need to be transparent. It is not sufficient to only release study summaries and study interpretations.

## **Building Capacity**

Credibility of scientific information may require that it be independently collected or verified. (U.S.)

Funds available to community members to gain clear technical information and independent verification could increase the credibility of health and monitoring reports, and community confidence in results. (Deloro)

Technical assistance for community members levels the playing field and enables the community to participate more fully in decision-making. It may also lead to improvements in remediation plans. (U.S.)

It would be useful to have funds for the community to hire independent assistance that has no vested interest to review and interpret study results and legal documents such as waivers.

It is important to have access to technical and legal experts, and for everyone on the committee to be committed to understanding one another. Yet it must not be used as a stalling tactic, keeping industry or government from taking action. (Mount Washington)

Despite the complicated nature of the technical aspects of the remediation, getting the community involved and “up to speed” on the technical concerns might help to build trust in the process. The community would have a greater understanding of the complexities of the decisions, and thus be more understanding and supportive of the government’s decisions. (Giant)

Including community members in the hands-on investigations and remediation work increases community capacity and trust in a process (U.S.)

In addition to a process focused on site remediation options, parallel-track processes can help to address the broader realm of health and social concerns of communities affected by contamination (e.g., community capacity building, wellness centres, re-training initiatives, etc.).

## **FORMAL COMMUNITY INVOLVEMENT PROCESSES**

### **Nature of Involvement and Roles of the Participants**

The community should be made aware of the purpose of the participation process – before they enter the process. (U.S.)

Multi-jurisdictional overlap can create confusion in the community. It may also provide an opportunity for interagency coordination, cooperation and synergy. (U.S.)

Working groups can be an effective way to address the multiple and complex issues involved. A member from each working group sitting on a steering committee reduces the length and depth of detail discussed at steering committee meetings. (Mount Washington)

Goals, timelines and sunset clauses for committees and programs may help maintain volunteer energy by having a visible end-point. Recognition of volunteer effort is important.

New members need an open mind and a way to leave baggage and personal agendas behind them in order to contribute in a meaningful way.

The chair must be chosen to be accountable to all and fully independent. Conflicts with the process cannot be adequately resolved without an unbiased chair. (Deloro)

### **Membership**

Membership should include broad representation that reflects the diversity of viewpoints in the community. (U.S.)

Government agencies and industry should be represented at the table to ensure information is shared and that the community understands the complexity of the issues and decisions to be made. (Mount Washington)

Community members easily recognize and may be critical of public participation mechanisms that leave out or mute the voices of community members. (U.S.)

Consistency in membership facilitates timely progress toward goals and can also help to bring new members up to speed.

There is a steep learning curve and capacity building that is necessary for new members to get involved in the process. Actions to prevent turnover of participants should be implemented.

### **When to engage the community**

Community involvement should occur early in the process, and definitely before decisions are made. (U.S.)

Community involvement from the outset can help set priorities for use of available financial resources. Some community members may prefer to be given the opportunity to be relocated (rather than live with the ongoing potential health impacts), than to have money allocated for certain remedial options. (Deloro)

Have community involvement early on so that they understand the complexity involved in the decision-making. (Mount Washington)

While the intentions of the Giant Mine Project Team may have been to get a handle on the technical information and possible options for remediation before discussing it with the community, a better approach might have been to involve the community earlier in the process. It might have resulted in the same outcome or action being taken, but with more capacity and trust built in the community. (Giant)

If communities are consulted near the end of a process to decide on remediation options, there is the risk that members will feel that the consultations at this point are merely “window dressing” for a decision that has already been made. (Giant)

### **Factors affecting the success of community involvement processes**

Governmental agencies’ accountability to and support for a process are essential. (U.S.)

High rates of participant turnover can lead to frustration, and decrease the credibility of the process. (U.S.)

These actions can include a solid process for dealing with conflict, information packages and a clear outline of goals and objectives. Financial support for expenses, babysitting and independent reviews can help alleviate volunteer stress.

Openness and transparency can lead to a better process. (U.S.)

A lack of structure for providing resolutions from the Public Liaison Committee to the Technical Committees gives the appearance that the process is not transparent, and the decision-makers are not accountable to the PLC in their determination of remedial options. This limits trust in the process, and community members are less likely to have confidence in reports and decisions. (Deloro)

Efforts must be made to ensure that processes are conducted in a fair and equitable manner. (U.S.)

Conflict resolution mechanisms and quality facilitation is extremely important to ensure that conflicts do not seriously hamper the process. (U.S.)

Professional facilitators used at meetings allows everyone a chance to speak and that all interests to be represented. This is especially important when there is a wide range of interests represented at the table and the issues are complex. (Mount Washington)

Paid staff people are crucial to keeping the administrative tasks done (setting up meetings, communicating with members, distributing minutes, and communicating with wider community). It takes the burden off of the members and lessens the problem of “volunteer burn-out.” (Mount Washington)

The development of committee structures, terms of reference, rules of order, etc can be difficult and time-consuming. The use of existing models (if they exist) may facilitate this process.

Communities want to be consulted on issues that affect them, and in being consulted, members will be more vested in the decisions made. (Giant)

## **6.0 RECOMMENDATIONS**

Recommendations are provided to suggest analysis that would further the capacity of NOAMI to foster community involvement in decision-making about remediation of abandoned mine sites. The recommendations are derived from gaps identified through the case study analysis. The areas that require further research, but are integral to the success of community involvement programs, include:

1. Community capacity building processes that address the broader health and social concerns;
2. Re-training initiatives to address labour concerns in communities where there is economic difficulty after the mine closes. These training programs could focus on remediation and monitoring techniques;
3. Programs for initiating alternative and sustainable economies;
4. Experiences of direct community involvement in remediation projects; and
5. Investigation of community involvement in the remediation of small mine sites.

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- Note: While not all Superfund sites are mine sites, the examples used reflect many of the same problems faced by mine site remediation, i.e., sites are technically complex, have various forms of contamination, present potential health concerns, involve a diversity of stakeholders, numerous government agencies are involved, and there may be no party willing or able to take financial responsibility for cleaning up the site.
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- <sup>53</sup> *Public Participation in Contaminated Communities*. p. IV-13.
- <sup>54</sup> *Stakeholder Involvement & Public Participation at the U.S. EPA*. p. 4.
- <sup>55</sup> *Lessons Learned About Superfund Community Involvement*, "EPA dunking helps wash out community resistance."
- <sup>56</sup> *Public Participation in Contaminated Communities*. p.IV-17.
- <sup>57</sup> *Stakeholder Involvement & Public Participation at the U.S.*
- <sup>58</sup> *Lessons Learned About Superfund Community Involvement*, "Successful partnering with a community leader in Michigan City, Indiana."
- <sup>59</sup> *Public Participation in Contaminated Communities*. p.IV-34.
- <sup>60</sup> *Evaluation Report on the Pine Street Barge Canal Coordinating Council*. p. 2.

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- <sup>61</sup> *Lessons Learned About Superfund Community Involvement*, “Building ties to the community finally pays off in Los Angeles.”
- <sup>62</sup> E.g., the Design Review Committee in Albuquerque. *Public Participation in Contaminated Communities*. p. VI-24
- <sup>63</sup> *The Constructive Engagement Resource Guide: Practical Advice for Dialogue Among Facilities, Workers, Communities and Regulators*. “New Bedford Harbor Superfund Community Forum: Progress without complete consensus.” U.S. Environmental Protection Agency. Appendix 1 – Case Studies. (<http://www.epa.gov/publicinvolvement/pdf/appd1.pdf>)
- <sup>64</sup> *Stakeholder Involvement & Public Participation at the U.S.* p.10.
- <sup>65</sup> *Public Participation in Contaminated Communities*, p. I-2.
- <sup>66</sup> *Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure*. M.R. Edelstein (Boulder, CO: Westview Press). 1988. (Cited in *Public Participation in Contaminated Communities*)
- <sup>67</sup> *Public Participation in Contaminated Communities*, p. III-2.
- <sup>68</sup> *Understanding Risk: Informing Decision in a Democratic Society*. National Research Council, Committee on Risk Characterization. Washington, D.C. National Academy Press. 1996. (Cited in *Public Participation in Contaminated Communities*)
- <sup>69</sup> S. Eden. “Public participation in environmental policy: considering scientific, counter-scientific and non-scientific contributions,” *Public Understand Sci.* 1996. 5:193-204; Fiorino, D.J. “Environmental risk and democratic process: a critical review,” *Columbia Journal of Environmental Law*. 1989. 14:501-547. 1988; N. Ashford, “Science and values in the regulatory process.” *Statistical Science*. 3:377-383. (Cited in *Public Participation in Contaminated Communities*)
- <sup>70</sup> *Stakeholder Involvement & Public Participation at the U.S. EPA*. p. 5.
- <sup>71</sup> *Stakeholder Involvement & Public Participation at the U.S. EPA*. p. 5.
- <sup>72</sup> For communities living near contaminated sites that are not part of the Superfund program, U.S. communities can access similar grants through EPA’s Technical Outreach Services for Communities program. Information on both of these programs is available on EPA’s web site (<http://www.epa.gov/superfund/programs/recycle/help.htm>)
- <sup>73</sup> *Stakeholder Involvement & Public Participation at the U.S. EPA*. p. 5.
- <sup>74</sup> *Evaluation Report on the Pine Street Barge Canal Coordinating Council*. p. 4.
- <sup>75</sup> W. Mellot. “Formation of the Summitville Mine TAG: The TAG administrator’s perspective.” Nov., 1998. U.S. Environmental Protection Agency web site (<http://www.epa.gov/superfund/tools/tag/testr8.htm>).
- <sup>76</sup> *Stakeholder Involvement & Public Participation at the U.S. EPA*. p. 8.
- <sup>77</sup> *Public Participation in Contaminated Communities*. pp. IV-37, 38,42
- <sup>78</sup> *Public Participation in Contaminated Communities*. p. VI-2.
- <sup>79</sup> *Public Participation in Contaminated Communities*. p. VI-3.
- <sup>80</sup> *Public Participation in Contaminated Communities*. p. VI-5.
- <sup>81</sup> *Stakeholder Involvement & Public Participation at the U.S. EPA*. p. 8.
- <sup>82</sup> *Public Participation in Contaminated Communities*. p. III-10.
- <sup>83</sup> *Public Participation in Contaminated Communities*. p. IV-30.
- <sup>84</sup> *Public Participation in Contaminated Communities*. p. VI-3.
- <sup>85</sup> *Stakeholder Involvement: Open Processes for Reaching Decisions About the Future Uses of Contaminated Sites*. M.G. English, D.L. Feldman, and B.E. Tonn. Univ. of Tennessee, Waste Management Research and Education Institute, Knoxville, TN. December, 1993. (Cited in *Public Participation in Contaminated Communities*)
- <sup>86</sup> *Public Participation in Contaminated Communities*. p. I-3.
- <sup>87</sup> *Public Participation in Contaminated Communities*. p. IV-2.
- <sup>88</sup> *Lessons Learned About Superfund Community Involvement*, “Early involvement makes a real difference at the Li Tungsten Site.”
- <sup>89</sup> *Understanding Risk: Informing Decision in a Democratic Society*. National Research Council, Committee on Risk Characterization. Washington, D.C. National Academy Press. 1996. Framework for Environmental Risk Management. Final Report, Vol.2. Washington, D.C. 1997. (Cited in *Public Participation in Contaminated Communities*)
- <sup>90</sup> *Public Participation in Contaminated Communities*. p. IV-22.
- <sup>91</sup> *Public Participation in Contaminated Communities*. p. III-11.
- <sup>92</sup> *Evaluation Report on the Pine Street Barge Canal Coordinating Council*. pp. 5, 6.

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- <sup>93</sup> *Public Participation in Contaminated Communities*. pp. IV-37, 38,42.
- <sup>94</sup> *Stakeholder Involvement & Public Participation at the U.S. EPA*. p. 8.
- <sup>95</sup> This occurred in Chatanooga Case Study. *Public Participation in Contaminated Communities*. p. III-11.
- <sup>96</sup> *Evaluation Report on the Pine Street Barge Canal Coordinating Council*. p. 5.
- <sup>97</sup> *Lessons Learned About Superfund Community Involvement*, “Building ties to the community finally pays off in Los Angeles.”
- <sup>98</sup> *Participation in Contaminated Communities*. p. IV-55. This example deals with the contamination at an historic uranium processing site.
- <sup>99</sup> *Lessons Learned About Superfund Community Involvement*, “Fear mongering gives way to fact finding in Palmerton, Pennsylvania.”
- <sup>100</sup> *Public Participation in Contaminated Communities*, p. IV-54.
- <sup>101</sup> *Public Participation in Contaminated Communities*, p. IV-29.
- <sup>102</sup> *Evaluation Report on the Pine Street Barge Canal Coordinating Council*. p. 4, 5.
- <sup>103</sup> *Public Participation in Contaminated Communities*, p. V-16.
- <sup>104</sup> *Public Participation in Contaminated Communities*, p. IV-36.
- <sup>105</sup> *Public Participation in Contaminated Communities*, p. IV-44.
- <sup>106</sup> *Evaluation Report on the Pine Street Barge Canal Coordinating Council*. p. 7.
- <sup>107</sup> *Analysis and Evaluation of the EPA Common Sense Initiative*. Kerr, Grenier, Andersen and April, Inc. Prepared for the U.S. Environmental Protection Agency. Washington, DC. July, 1999. p. 42

## **APPENDIX A - SURVEY QUESTIONS**

### **LONG INTERVIEW AND SHORT SURVEY VERSIONS**

## COMMUNITY INVOLVEMENT IN REMEDIATION OF ABANDONED MINES

Date:

Interviewee (name, role):

Mine:

Site Background		
Ownership/operation history	When did the mine become "abandoned" In the past, what company(s) owned the mine	
Management practices	During operation, were there any problems (env'l, health and safety, labour disputes)	
Contamination	How widespread is the contamination What are the key concerns (specific pollutants, specific env'l or health issues) Have there been recent accidents	
Health effects and concerns	Are there proven or suspected health effects	
Economic impacts and benefits (after closure/aban)	Has mine closure/abandonment had any positive/negative impacts on the economy	
Estimated cost to address the issues	What is the estimated cost to fully reclaim the site and/or address health impacts	
Liability	Are there past/present owners who may have financial responsibility/liability for the site	
Jurisdiction	Which government agencies have regulatory responsibilities? <sup>108</sup> What are the relevant laws, policies that they administer? What are the roles of federal, provincial, municipal and First Nations governments in the remediation? Is there harmonized decision-making between the different levels of government and/or dep'ts within a level of government? If not, has it had an effect on remediation? How are disagreements resolved?	

Community Involvement Process		
General	Has there been a formal public process to make decisions regarding site remediation? Describe. If so, were community concerns addressed as a result	
Independent efforts to address	Have there been independent efforts to address the	

some of the issues	problems (e.g., remediation work, studies)	
By government	Describe the efforts What prompted the action What were the challenges/successes Was the community involved? How was involvement supported? If no involvement, why not?	
By private sector companies and their Associations (e.g., Mining Association of Canada or Chambers of Mines)	Describe the efforts What prompted the action What were the challenges/successes Was the community involved? How was involvement supported? If no involvement, why not?	
By members of the community	Describe the efforts What prompted the action What were the challenges/successes Was the broader community/gov't/industry involved? How was involvement supported? If no involvement, why not?	
Collaborative efforts (e.g., committees, taskforces)	How and why was the committee set up? Does the committee have a mandate? What is it? Has it met its mandate? What are the goals/objectives	
Membership	Who is on the committee? Is the committee representative of the broader community? How were potential committee member groups or individuals identified How are representatives chosen by the groups they represent (e.g., appointed, elected) Are there any groups/stakeholders excluded? Why? Is there a way to include new stakeholders/interested parties What are the main issues of concern for the individual committee members Was there resistance to community involvement? How could community involvement be improved Is there much turnover in participation in the process? Why?	
Committee structure, funding and protocols	What is the structure of the committee? What are the costs associated with the committee (e.g.,	



	<p>for meetings, studies, remediation work)</p> <p>How is the committee and its work funded</p> <p>How are (public) funds for the committee and the resultant work administered</p> <p>How are decisions made (consensus, majority votes, etc.)</p> <p>Is there a protocol in place to resolve conflicts?</p> <p>When are meetings held (daytime, evening)</p> <p>What is the time commitment for committee members</p> <p>Are childcare and/or meeting expenses covered for participants (especially those who are not doing this as part of their job, e.g., community representatives)</p> <p>How are the committee members assisted in understanding and working with legal and technical issues that may be outside of their expertise?</p> <p>To whom is the committee-as-a-whole accountable? To whom are the individual committee members accountable?</p> <p>Have there been concerns raised about accountability?</p> <p>Are meetings open to the general public? If not, why not?</p> <p>Are there mechanisms in place to ensure transparency (e.g., dissemination of meeting minutes, studies, etc., to the broader community)</p> <p>Is technical information conveyed to the public in an understandable format</p> <p>Is there a feedback mechanism to allow for public input into the committee's decision-making process</p>	
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Community Involvement in Site Remediation and Related Work		
General	Have there been any conflicts related to remediation? How were the conflicts resolved?	
	Is there general support for active community involvement in the remediation (i.e., not just representation on the committee)	
	What were your hopes and expectations of the committee? Have these been met? If not, what have been the barriers?	
	Has the general public been supportive/resistant to	

	the remediation efforts (e.g., don't want remediation, don't trust the remediation methods or decision-making processes)	
Remediation efforts	<p>What remediation work has been carried out? By whom? Was there community involvement Were resources made available for community involvement (e.g., training, investment in local remediation-related businesses) How was the work funded What were the problems/successes of the remediation efforts Is there more to be done? Is there a financial commitment to carry out more work?</p>	
Technical studies	<p>What studies have been carried out? By whom? Was there community involvement in the studies (design, implementation) Were resources made available for community involvement Were the studies made available for public review How were the studies funded What were the problems/successes Are there more to be done? Is there a financial commitment to carry out more studies</p>	
Environmental monitoring	<p>What monitoring was/is in place at the site? Was/is there community involvement in the monitoring? (design, implementation) Were resources made available for community involvement (e.g., training) Are the monitoring results available for public review How is the monitoring program funded Is there a financial commitment to maintain or expand the monitoring program What are the problems/successes with the existing program</p>	
Health and safety issues	What is being done to deal with long-term health effects and concerns (e.g., are health studies being	

	<p>conducted)?</p> <p>Are community health programs/education resources available related to the contamination</p> <p>Are there safety issues related to the mine site?</p>	
Economic benefits	<p>Have there been discussions about community economic development opportunities from the remediation? By whom?</p> <p>Have any opportunities been created? If not, why not?</p> <p>Was the question of potential implications for long-term liabilities for the site discussed</p>	

Long-term Outlook		
	<p>What is the prognosis for future remediation efforts?</p> <p>What barriers exist? What commitments have been made?</p> <p>Will the committee process be sustained/funded?</p> <p>Will the present level of community involvement in the remediation and decision-making processes help or hinder full remediation? Why?</p>	

**CONTAMINATED SITE SURVEY**

Site: \_\_\_\_\_

**Confidential:**

Name \_\_\_\_\_

Age: \_\_\_\_\_

M / F (please circle)

Occupation or Community Role \_\_\_\_\_

# Years Resident \_\_\_\_\_

Contact Information (if you want information on the finished report)

\_\_\_\_\_

## Questions

1. Please rank the level of risk you feel the contamination on site is:

to your health (or someone you know) no risk 1 2 3 4 5 high risk

to the environment no risk 1 2 3 4 5 high risk

2. What are your main concerns? (e.g., drinking water from creek, cancer rates)

3. Have there been recent accidents or spills? (details)

4. a) What has been the level of clean-up at the site?

no clean-up 1 2 3 4 5 fully cleaned up \_\_\_\_ don't know

b) What started the clean-up work?

c) At what rate has the clean-up work been accomplished?

slow 1 2 3 4 5 fast \_\_\_\_ don't know

d) What is the level of commitment of the government to clean up the site?

no commitment 1 2 3 4 5 high commitment \_\_\_\_ don't know

e) How effectively is the site being monitored?

not effective 1 2 3 4 5 highly effective \_\_\_\_ don't know

f) What is the level of community member involvement in monitoring?

no involvement 1 2 3 4 5 high involvement \_\_\_\_ don't know

g) How effective is the site maintenance?

not effective 1 2 3 4 5 highly effective \_\_\_\_ don't know

h) How involved are community members in maintenance?

not involved 1 2 3 4 5 highly involved \_\_\_\_ don't know

5. a) What is the level of community involvement in decisions made about the site clean-up?  
no involvement      1      2      3      4      5      highly involved      \_\_\_\_don't know

b) What is the level of community involvement in decisions made about the health studies?  
no involvement      1      2      3      4      5      highly involved      \_\_\_\_don't know

c) To what degree do the decisions of the project committee address your priority concerns?  
not at all      1      2      3      4      5      completely      \_\_\_\_don't know

d) Could community members be more involved in the decisions?      Yes / No      (please circle)  
If yes, how?

6.a) How available is the information about the contamination and clean-up project?  
not available      1      2      3      4      5      highly available      \_\_\_\_don't know

b) How understandable is the information?  
not understandable      1      2      3      4      5      very understandable      \_\_\_\_don't know

c) How credible or believable is the information?  
not credible      1      2      3      4      5      highly credible      \_\_\_\_don't know

d) How consistent is the information from different studies/sources?  
not consistent      1      2      3      4      5      highly consistent      \_\_\_\_don't know

e) Could communication be improved?      Yes / No      (please circle)  
If yes, how?

7. a) How much has the clean-up project increased availability of jobs to locals?  
not at all      1      2      3      4      5      very much      \_\_\_\_don't know

b) What is the level of opportunity for local training for the clean up work?  
no opportunity      1      2      3      4      5      high opportunity      \_\_\_\_don't know

c) How useful has the training been?  
not useful      1      2      3      4      5      very useful      \_\_\_\_don't know

8. What kind of clean-up should happen at this site?

9. Comments

## **APPENDIX B - CORPORATE HISTORY SUMMARIES FOR:**

1. DELORO, ONTARIO
2. GIANT MINE, YELLOWKNIFE, NORTHWEST TERRITORIES
3. MOUNT WASHINGTON, BRITISH COLUMBIA

## 1. Deloro History

### ***Chronology of Production Years***

YEAR	OWNERSHIP / ACTIVITIES	Ref
1886-99	Gold Mining and Smelting - arsenic removal from gold ore	1,4,5
1873	Gatling/Gold and Silver Mining Company	
1880	Canada Consolidated Gold Mining Company	
1892	Hastings Mining and Reduction Company	
1896	Canadian Goldfields Ltd. -white arsenic developed using cyanide	
1899	Atlas Arsenic	
1903-09	Silver and Cobalt Smelting	3,4,5
1906	M.J. O'Brian	
1907	M.J. O'Brian starts Deloro Reduction and Mining Company	
1912-17	Stellite Production- new alloy of cobalt, chromium and tungsten	3,4
1916	Company renamed Deloro Smelting and Refining Company Limited	
1918-20	Insecticide Production- arsenic insecticides for US cotton	1,4,5
1920	Deloro Chemical Company Limited	
1925-51	Stellite Research and Production	1,4,5
1928-52	12 deaths from lung cancer- 29% of workforce deaths from cancer, 11% cancer deaths in surrounding areas.	
1932	Eldorado Nuclear of Port Hope begins supplying cobalt rich wastes to be refined in Deloro, source of radioactive waste at Deloro	
1934	Photo showing no trees around Deloro	
1937	Arsenic poisoning, 7.6 ppm in well dug in Madoc	
1950	\$2 million expansion with federal financing, Korean war started	
1955-61	Deloro Mining and Smelting moves to Belleville	6
1953-7	High incidence of respiratory cancer (3 dead)	
1958	Ontario Water Resources Commission test 3ppm arsenic in Moira River	
1960s	Dead fish removed from Moira Lake shores daily Cow deaths from drinking Moira River water. Young's Creek valley was red and the Creek ran red.	7
1970	British Oxygen buys Deloro site and transfers to Erickson Construction subsidiary of M.J. O'Brian Ltd.	1,4,5
1974	Hastings county deaths from cancer and lung disease 119% greater than province average.	8
1975	Ted Galloway moved from house next to Deloro site because of high radon levels and died of lung cancer in 1975 with coroner report linking the radon to cancer. Mrs. Galloway, his wife, paid compensation by Ontario government and Erickson Construction.	7
1977	Elmer Buchanan raised profile of site asking for clean-up. Analysis showed 2km radius of contaminated plants.	7
1978	Ontario MOEE- issues clean-up order to Erickson Construction to control arsenic, with no compliance from the company	3, 5
1979	Red tailings flooded down to Aikerman Mine site south of Hwy 7.	7
	MOEE issues a second clean-up order requiring Erickson Construction and the company abandons the site. MOEE invokes Section 99 of the Environmental Protection Act and becomes manager of the site.	3, 5

### **References**

1. Bowles, Roy T. 1980. *Deloro and the World: The Local Manifestations of the Ontario Mineral Industry*. Canadian Historical Association.
2. Bowles, Roy T. June 14, 1951. *Deloro's Great Expansion*. The Marmora Herald.

3. Ontario Ministry of Energy and Environment. July 1999. *In Brief, Cleaning Up The Deloro Mine Site*.
4. Turner, Larry. January 1988. *An Historical Analysis of the Deloro Site*. Ottawa: Commonwealth Historic Resource Management Ltd.
5. Ontario Ministry of Environment and Energy, Web site [www/ene.gov.on.ca/envision/deloro.htm](http://www/ene.gov.on.ca/envision/deloro.htm)
6. Pers. Comm. Deloro Stellite Employee.
7. Pers. Comm. Community members and academics.
8. Morton Shulman, Ontario Coroner, 1974.



## 2. Giant Mine History

### *Chronology of Production Years*

YEAR	OWNERSHIP / ACTIVITIES	Ref
1935	Baker and Muir stake the 21 original "Giant" claims Burwash Yellowknife Mines Limited.	1
1937	Giant Yellowknife Gold Mines Ltd incorporates and acquires claims. Work is done throughout 30s and into 40s	1
1943	Frobisher Exploration Company acquires operating control of Giant Yellowknife Gold Mines and the Giant property	1
1948-1951	Gold production begins at the Giant mine in 1948 From 1948 to 1951, gold roasting production with no pollution control/no capture of arsenic-rich gases.	1, 2
1951	An electrostatic precipitator is installed to reduce emissions.	2
1958	A baghouse dust collector installed that reduced emissions a few hundred kg/day. From 1958-1999, mining and gold roasting operation continue; arsenic trioxide dust captured and stored in underground stopes and chambers (237,000 tonnes stored)	3
1986	Pamour Inc. acquires Falconbridge Ltd.'s interests in Giant Yellowknife Mines Ltd. and in Akaitcho Yellowknife Gold Mines Ltd.	1
1990	Royal Oak Resources Ltd. assumes control of Giant Yellowknife Mines Ltd. by purchasing the interests of Giant Resources Ltd. and Pamour Inc. The following year, Royal Oak Mines Inc. formed by the amalgamation of Royal Oak Resources Ltd. with companies in Pamour and Giant Yellowknife groups.	1
1990-1999	Royal Oak operated mine from 1990 until the company went bankrupt in April 1999	3
Dec. 1999	Receiver Price Waterhouse turned it over to DIAND in December 1999. DIAND sold it to Miramar in December 1999. DIAND retained responsibility for pre-existing environmental liabilities, including the underground trioxide dust.	2,3
1999-present	Miramar operating at a ¼ to 1/3 of Royal Oak's level; no longer roasting gold. Hauling ore to other mine (Con Mine) where the arsenic is pressure oxidize. DIAND continues to work on a plan to deal with underground arsenic	2,3

#### **References:**

1. From Natural Resources Canada web site: [http://www.nrcan.gc.ca/gsc/mrd/extech3/giant\\_e.html](http://www.nrcan.gc.ca/gsc/mrd/extech3/giant_e.html)  
Exploration and Development of the Giant Mine
2. Emery Paquin. Government of NWT. Resources, Wildlife and Economic Development. Personal communication. July 2002
3. SRK Consulting. "Study of Management Alternatives For Giant Mine Arsenic Trioxide Dust." Prepared for Department of Indian Affairs and Northern Development. May 2001.

### 3. Mt. Washington History

#### ***Chronology of Production Years***

YEAR	OWNERSHIP / ACTIVITIES	Ref
1964	Joint venture between Mt. Washington Copper and Cumberland Mining Co. begins. Open pit copper mine on Mount Washington on Vancouver Island near Courtenay, BC. Company leases base metal rights from Esquimalt and Nanaimo (E&N) Railway and precious metal rights from province of BC.	1
1964-1966	Ore is mined until 1966. Mining stops in 1966.	1
1967	Ore still being hauled to mill site 4 km southeast and processed. Company goes into receivership. Mine abandoned	3
1979	In 1979 Esso Resources Ltd. tried to extract metals from the overburden; applied acid and iron-oxidizing bacteria; accelerated AMD formation.	1, 2
1983 - present	Better Resources acquires precious metal rights from Mt. Washington Copper. At this point, TimberWest has surface rights. CPR has subsurface rights.	2

#### **References:**

1. "State of the Tsolum River: A Comprehensive Report on Work completed by the Tsolum River Task Force, April 1997-March 1999. Kathy Campbell. Tsolum River Task Force. April 1999, p 5.
2. AGRA Earth and Environmental Limited, "Report on Opportunities Relating to the Remediation of Acid Mine Drainage at Mt. Washington and the Restoration of the Tsolum River Watershed," July 1996, p.2.
3. Cliff Rennie, Better Resources. Personal communication. July 2002.

**APPENDIX C - CONTACTS FOR INTERVIEWS  
ON COMMUNITY INVOLVEMENT IN CONTAMINATED SITE REMEDIATION FOR:**

1. DELORO, ONTARIO
2. GIANT MINE, YELLOWKNIFE, NORTHWEST TERRITORIES
3. MOUNT WASHINGTON, BRITISH COLUMBIA

## **1. Deloro Contacts**

Gerald Bellanger, Historian

Lionel Bennett, Reeve for Marmora, Public Liaison Committee Member

Peter Brant, Technical Services Officer, Tyendinaga Mowhawk First Nation

Brenda Brett, Deloro Resident

Bob Brown, Assistant Manager, Deloro Water Treatment Facility, Technical Liaison Committee Member

Joanne Campbell, Technician, Deloro Water Treatment Facility

Bonnie Danes, Quinte Watershed Cleanup, Public Liaison Committee Member

Tom Deline, Reeve of Madoc, Public Liaison Committee Member

Bev Foley, Executive Assistant, Deloro Stellite, Belleville

Crichton Harrop, Councillor for Madoc, Public Liaison Committee Member

Heather Hawthorne, Communications Officer, Ontario Ministry of Environment and Energy

Tom Hutchinson, Trent University Professor

Bryon Keene, Quinte Conservation Authority, Belleville, Technical Liaison Committee Member

Susan Larsh, Ontario Healthy Communities

Louise Livingston, Journalist, Public Liaison Committee Member

Doug Lynch, Deloro Resident, Public Liaison Committee Member

Tom Northardt, Ontario First Nation Technical Services Corp, Past Public Liaison Committee Member for Tyendinaga Mowhawk First Nation

Andre Philpot, Lawyer for Municipality

Victor Reid, Deloro Water Treatment Facility Operator

Jim Ritter, Project Manager for Deloro Clean-up, Ontario Ministry of Environment and Energy

Dave Schulz, Councillor of Centre Hastings, Public Liaison Committee Member

Tom Wells, Downstream Resident, Banker

## **2. Giant Mine Contacts**

Kevin O'Reilly, City Councillor, City of Yellowknife  
Director of Research, Canadian Arctic Resources Committee

Emery Paquin, Director, Environmental Protection Service, Resources, Wildlife and Economic  
Development, GNWT

Jodi Woollam, Communications Officer, NWT Region, DIAND  
Giant Mine Project Team

Dave Nutter, Giant Mine Project Team

Malcolm Robb, Giant Mine Project Team

Carole Mills, DIAND, Manager, Contaminants Division

Lisa Dyer, DIAND, Contaminants Division

Octavio Melo, DIAND, Contaminants Division

Fred Sangris, Yellowknives Dene

Greg Yeoman, Conservation Director, CPAWS

Bob Bromley, Ecology North

Greg Cameron, Yellowknife resident

### **3. Mt. Washington Contacts**

Father Charles Brandt, Tsolum River Restoration Society, Tsolum River Task Force

Kathy Campbell, Tsolum River Task Force Coordinator

Jack Minard, Tsolum River Restoration Society

Jackie Sandiford, Tsolum River Restoration Society/Tsolum River Task Force Administrator

Dave Ferguson, Tsolum River Restoration Society, Tsolum River Task Force

Chris Hilliar, Habitat Partnership Coordinator, Habitat Conservation and Stewardship Program,  
Department of Fisheries and Oceans, DFO Comox

Lloyd Erickson, Head, Environmental Quality, Ministry of Water, Land and Air Protection (BC),  
MWLAP Nanaimo

Cliff Rennie, Better Resources, Miner/owner of precious rights, Tsolum River Task Force

**APPENDIX D - INTERVIEW SUMMARIES ON COMMUNITY INVOLVEMENT IN  
CONTAMINATED SITE REMEDIATION FOR:**

1. DELORO, ONTARIO
2. GIANT MINE, YELLOWKNIFE, NORTHWEST TERRITORIES
3. MOUNT WASHINGTON, BRITISH COLUMBIA

## 1. Deloro, Ontario

Site Background	
Ownership/operation history	<p>1886-1899-Gold Mining and Smelting with arsenic removal, 5 successive mining companies (Gatling/Gold and Silver Mining Company, Canada Consolidated Gold Mining Company, Hastings Mining and Reduction Company, Canadian Goldfields Ltd., Atlas Arsenic)</p> <p>1903-1909- Silver and Cobalt Smelting- M.J. O'Brian starts Deloro Reduction and Mining Company</p> <p>1912-1961- Stellite Research and Production- M.J. O'Brian, renamed Deloro Smelting and Refining Company, radioactive waste from Eldorado Nuclear in Port Hope processed for cobalt</p> <p>1918-1920- Arsenic pesticide production- Deloro Chemical Co. Ltd</p> <p>1961- Moves Deloro Stellite to Belleville</p> <p>British Oxygen, followed by Erickson Construction take over site</p> <p>1979-site abandoned by Erickson Construction and MOEE becomes responsible for the site</p>
Management practices	<p>Health and safety for workers- compromised health due to high metals levels (particularly lead and arsenic) and radioactive materials, cancer</p> <p>Environment- problems with dam stability and overflow of tailings (especially with spring freshette), air deposition of arsenic dust, couldn't hang laundry out during smelter operation years due to deposition of stack soot high in metals</p> <p>Moe Water Resources Commission 1960's, samples high in arsenic</p>
Contamination	<p>Arsenic, lead and metals contamination in soil around Deloro from air deposition, water and sediment of the Moira River, Young's Creek and wetlands</p> <p>Radiation</p> <p>Toxic compounds from chemical plant, pcbs, bulk fuel, herbicides</p>
Health effects and concerns	Cancer (particularly lung), arsenic burns, arsenic poisoning in wells
Economic impacts and benefits (after closure/abandonment)	<p>Closed over 30 years ago, some jobs in water treatment and remediation such as heavy equipment operation, some regional consulting work</p> <p>Adversely affected property values, town services closed (library, community center, town office etc)</p> <p>Tourism impact at moira lake</p>
Estimated cost to address the issues	<p>\$25 million for on-site hazardous waste disposal, upgrade arsenic treatment plant, cap shafts, demolish smelting and refining infrastructure, \$17 million of this is already spent</p> <p>1979- government recorded expenditures on land title for \$2.5 million in hopes of pursuing Writs of Execution to recover costs, shareholder would have to settle debt</p>
Liability	Deloro Stellite, Campden Eldor Inc, BOC Canada, Atomic Energy Control Board, M.J. O'Brian (CP Rail)
Jurisdiction	<p>Ontario Ministry of Environment and Energy, MNDM, Federal, Atomic Energy Board, Health</p> <p>MNDM is usually responsible for mining related sites, but MOE took over in 1979 and has continued to take the lead</p> <p>National Contaminated Site Remediation Program contributed \$1million</p> <p>Radioactive material is regulated under federal legislation, now will require a federal environmental assessment (EA), province was previously exempted from conducting an EA, this new EA requirement could cause a 5 year delay and cost \$500,000 to satisfy the process</p>



<b>Community Involvement Process</b>	
General	<ul style="list-style-type: none"> <li>• 2002 Federal Environmental Assessment required to licence low level radioactive waste, previously the federal government has not been very involved</li> <li>• 1998 MOEE is exempted from Environmental Assessment using the Security Account Project Exemption. Also not required to have a public hearing to expedite clean-up process in exchange for having public liaison committee.</li> <li>• 1992 consultation was intergovernmental with NMDM</li> </ul>
Independent efforts to address some of the issues	
By government	<ul style="list-style-type: none"> <li>• See sections below</li> </ul>
By private sector companies and their Associations (e.g., Mining Association of Canada or Chambers of Mines)	<ul style="list-style-type: none"> <li>• None</li> </ul>
By members of the community	<ul style="list-style-type: none"> <li>• A meeting was convened at Trent University to discuss contamination and effects with academics, researchers, community members and MOE staff (funded by academic sources)</li> <li>• 1998 Class action suit initiated for \$15 million damages against MOE, MNMD, Ministry of Health, Attorney General of Canada, Campden Eldor Inc., Atomic Energy Control Board, BOC Canada Ltd., volunteer commitment has been extensive 40hours per week for 3 years, has had a lot of help</li> <li>• 1997 Environmental Bureau of Investigations charge Ontario government for allowing damage to fish habitat, based on sample analysis conducted by an independent community group, Attorney General takes over prosecution of court case in 1999. 2001 EBI court case ends, MOEE found to have demonstrated due diligence in time frame of charges.</li> <li>• Trent study group, variety of studies and monitoring over time</li> <li>• Study investigating diverting the Moira River around the Deloro site estimates feasible at \$50 million</li> </ul>
Collaborative efforts (e.g., committees, taskforces)	<ul style="list-style-type: none"> <li>• Three project liaison committees, Technical Liaison Committee and MOE Technical Committees are only government composition, the Public Liaison Committee has community representation, these committees operate independently</li> <li>• 1997 started with consultant- no aims and objectives, ongoing dialogue and information sharing, provide a sounding board and process for feed-back</li> <li>• Some view the primary objective of PLC is to allay public fear, a publicity gesture aimed to decrease the explosive situation</li> <li>• Some community members reluctant to be involved due to conflict or inaction</li> </ul>
Membership	<ul style="list-style-type: none"> <li>• Initiation of Public Liaison Committee- reeves of watershed asked to attend and to provide suggestions for members, many of the participants are senior members of the community (not a broad cross section representative of the community diversity), anyone can attend but MOE selected initial members, some felt they were encouraged and felt no resistance, others with dissenting views were not told when the meetings were to be held, media was not allowed to come to initial meetings</li> <li>• Technical Liaison Committee is made up of government representatives for regulatory agencies, any department that is</li> </ul>

	<p>involved in permitting aspects of the project (DFO, MNR, MOE, Quinte Conservation Authority, AEC)</p> <ul style="list-style-type: none"> <li>• Consultant is always at the meeting, many don't challenge</li> <li>• Functioning reasonably, no resistance</li> <li>• Some turn over of membership, it can be difficult to get up to speed on the issues</li> <li>• Recent meetings seem less well attended</li> </ul>
Committee structure, funding and protocols	<ul style="list-style-type: none"> <li>• The technical and Public Liaison Committees operate separately, minutes of the meetings can be obtained if requested and recommendations from the PLC are passed on to the Technical Committee through the MOE staff and consultant, consultant builds a decision matrix based on all three committees</li> <li>• PLC is set up for information distribution, presentations and taking comments, not for listening and responding to public concerns early on, some say the PLC is "an absolute waste of time," announcements with a "do nothing attitude," government representatives say there is community input at every stage in an open process</li> <li>• Some community members have "blinders on," don't want to admit that they brought up their children in contamination that could harm them</li> <li>• Not much has happened over the last two years, only minimal containment and treatment</li> <li>• 1998 PLC asks for joint meeting with Technical Committee, has not happened to date</li> <li>• PLC has not been given a site tour</li> <li>• PLC is chaired by MOE staff, not viewed as neutral or unbiased, controls the process, many suggested that an independent chair would be more appropriate and greatly improve the credibility of the process</li> <li>• Conflicts arose with outspoken environmentalists, media and a range of community members came to the meeting, the court case has been effective at opening up the process somewhat and increasing transparency, some of the structural problems with the PLC are getting better but people still lack trust, some viewed the environmentalists as outsiders meddling and this brought negative feelings and no trust</li> <li>• It has been decided that future conflicts will be resolved by an appointed chair at the meeting and the targeted MOE staff will not have to chair a conflict that he is implicated in</li> <li>• Iterative process is time-consuming but necessary to build trust, otherwise the public remains skeptical and data doesn't change minds</li> <li>• Decisions are made by consensus not formal votes, however there does not seem to be a formal structure for PLC to make resolutions, some no decisions are actually made by the PLC members, uncertainty around the accountability of the consultant and MOE staff to ensuring that community priorities and outcomes are addressed, some indicate that the technical decisions are twisted to seem like they reflect community priorities but were already decided in advance, some say not enough time is given to reflect on study results and prepare responses (e.g. The health study was released with only 1 day advance notice of the public meeting), some say there is no significant feed back mechanism for making decisions, there are never finalized plans so there is no decision to be made by PLC</li> <li>• Active stance to get the Moira River and Lake cleaned up has not been successful</li> <li>• Meetings are held quarterly, technical meeting during the day and PLC in the evening</li> <li>• PLC meetings are open to the public but not advertised</li> <li>• Time commitment for volunteers is to review materials and attend the meetings (average 5 hours per month), bigger commitment when reports are being prepared and reviewed, Technical Committee members contribute ~4 days per year</li> <li>• Volunteer expenses are not paid, some of the reeves and councillors attend as part of their job</li> <li>• Communication-web site, fact sheets, update bulletin prepared by MOE communications staff, some of these have been delivered door-to-door, ongoing process to explain technical information in plain language, studies are available in the</li> </ul>

	<p>libraries, some say the glossy technical reports are easy to understand but not very credible, others say people don't want to be embarrassed asking questions about things they don't understand,</p> <ul style="list-style-type: none"> <li>• Technical reports on the health study were presented in charts and graphs which were hard to understand, the conclusions didn't seem to correspond with the sample analysis, data wasn't explained, the consultant didn't answer when asked if he would bring up his children in Deloro, community members advised not asked</li> <li>• \$10,000 per meeting for consultant (includes technical meeting and PLC)</li> </ul>
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<b>Community Involvement in Site Remediation and Related Work</b>	
General	<ul style="list-style-type: none"> <li>• Current law suit against government for property values</li> <li>• Sldf law suit about government carrying out remediation, government found to have been following due diligence for the period under scrutiny in the case</li> <li>• Suggestions that MOE was covering up information</li> </ul>
	<ul style="list-style-type: none"> <li>• General support for active community involvement, some say the studies aren't well integrated and the process doesn't provide adequate means for community involvement</li> <li>• Funding should be made available to have independent verification and analysis of study results, and to choose studies reflecting community priorities, need experts that have been mutually agreed upon who are independent, as it is they have to trust results presented because they can't afford to get their own analysis (but don't actually trust results and interpretations)</li> </ul>
	<ul style="list-style-type: none"> <li>• Some problems of PLC accountability and getting the message out to the broader community</li> <li>• Building trust will pay off, now it is hard to trust</li> <li>• There are more and more reports, meanwhile they have lived with this for so long</li> <li>• Need broader support, discussions still based too much on conflict instead of collaboration</li> </ul>
	<ul style="list-style-type: none"> <li>• MOE is diligently following the process, needed more data before acting, but now need to commit to remediation plan,</li> <li>• Keep being delayed by process and studies, then court case, and now federal EA</li> <li>• "it is time to get the job done and get out of here"</li> <li>• A survey was sent out by a municipal council to their constituency to determine main concerns and what action the community members wanted, very well responded to, not acted on by the council</li> </ul>
Remediation efforts	<ul style="list-style-type: none"> <li>• Government tender process with open bidding, locals given consideration in bid scoring process</li> <li>• Specialized work to remove sludge, has been taken to secure landfills</li> <li>• Some feel the focus should be on containing the site</li> <li>• Locals have applied for heavy equipment operation</li> <li>• \$3/4 million spent on fence</li> <li>• Repaired bridge on highway for trucks, put in a monitoring station</li> <li>• Some say the provincial government has done a reasonable job limiting arsenic exposure but the radioactive materials have not been addressed</li> <li>• 1997 MOEE initiates engineering work for clean-up, no off-site work included in investigation</li> <li>• Mine shafts sealed in 1992-95</li> <li>• 1992 rehabilitation strategy, federal government fund \$1 million to cap shafts and survey site, red mud tailings covered with limestone, waste dumped down mine shafts</li> <li>• 1980's water treatment facility has reduced arsenic by 80%</li> </ul>

	<ul style="list-style-type: none"> <li>• 1983 MOE installs ground water treatment , shafts capped, some hazardous waste removed</li> <li>• 1978 or 79 community reports red tailings flood down to Aikerman mine site south of hwy 7. MOEE issues a second clean-up order on Erickson construction and the company abandons the site. MOEE invokes section 99 of the environmental protection act and becomes manager of the site. The site is 650 acres, and divided into 4 areas for clean-up and closure- 1. Industrial area (smelter, refinery, research and chemical laboratories), 2. Red mud tailings, 3. Young's creek, 4. Former mining areas.</li> <li>• Concerns that arsenic still leaks in significant quantities from the site</li> </ul>
Technical studies	<ul style="list-style-type: none"> <li>• 36 different feasibility studies</li> <li>• No funding for independent monitoring and verification</li> </ul>
Environmental monitoring	<ul style="list-style-type: none"> <li>• 2001 Moira River Study analysis for sediments and water quality initiated</li> <li>• 1998 Moira River study-invitations and draft report, 600 people in the study area, presented in an open house with a presentation and comments received, community members reviewed results, public consultation 2000 and released in 2001, determined no adverse affect on aquatic life or residents' health, some questioned the interpretation of the results that claimed there was no adverse effect when fish health and reproduction had been determined to have decreased and there were high metal concentrations in the sediments-not very credible interpretation, there was a public advisory committee for this project but it didn't meet very often and didn't meet before the results were announced publicly</li> <li>• Water treatment facility staff (Ontario Clean Water Agency) conduct water sampling of effluent and Moira River, Young's Creek and ground water, sampling equipment was recently upgraded as it was a 20 year old system, OCWA is a crown corporation under contract with MOE</li> <li>• There is radiation found for miles in circumference around Deloro, but current monitoring results are not publicly available. Deformed frogs and genetically altered plants have been found in the area. Lower plant species diversity (3-5 types instead of 70) thought to be a result of contamination</li> <li>• No deer in the area, few fish</li> <li>• 1997 Scimus Inc Report shows larger area of radioactive tailings in Young's Creek sediment</li> <li>• 1997 field investigation by MOE hired engineering consultant, no off-site work included in investigation</li> <li>• 1997 soil analysis found high arsenic, cobalt, nickel, silver around site from airborne deposition during the production years</li> <li>• 1986 MOE survey shows average 723ppm arsenic in Deloro soils, extent of radioactivity determined. Technical report prepared for monitoring and abatement of arsenic in Moira River. Some say the results of this study were clearly conclusive of the levels of contamination but the study was buried</li> <li>• 1980 Analysis shows high radiation in slag and waste piles, 700ppm arsenic in Moira Lake Sediment</li> <li>• 1977 study shows 2 km radius around Deloro with contaminated plants</li> <li>• 1960's dead fish removed from Moira Lake shores daily, cows died from drinking the water of Moira River</li> <li>• 1934 photo shows no trees surrounding Deloro</li> </ul>
Health and safety	<ul style="list-style-type: none"> <li>• Workers came to fix the gas line and wore hazard suites to do the excavation work, when ground is dug up in Deloro it is disposed on site as a hazardous waste (but only once it is disturbed), kids used to play on arsenic piles</li> <li>• 1999 Ministry of Health and County Health Unit conducted a health study and found no significant health risk for total exposure, peer reviewed although some of the reviewers couldn't get the review done in time since the deadline was rushed, Deloro Health Risk Study released in July, 1 day notice to those most affected, summary indicates village is contaminated but safe. A warning is issued to not drink the water near the mine site. High levels of arsenic found in gardens of Deloro. Urine was sampled for arsenic- this gives a very short-term view of contamination, hair samples give a longer term view of exposure to arsenic but were not taken as part of the study, some say they were taken at the wrong</li> </ul>

	<p>time of year to show greatest exposure. Similarly, dust samples were collected from high up in houses in December which does not show highest exposure of dusty time of year, a follow-up study using vacuum collection in the summer showed much higher arsenic and other metal levels. Some felt that the health study was intended to put a rosy picture out before the court case, so the study may have been rushed to get the results out in time. Many were dubious of the results, skeptical of the MOE and process. 30 properties were heavily contaminated. Some told to wear gloves and a mask while gardening. Health study focuses on a moment in time and ignores past contamination from living near or working on the site (no family history discussed), and it ignores future exposure that could happen as a result of drinking water, dust, or food contamination. No past residents were surveyed, or death records out of the area.</p> <ul style="list-style-type: none"> <li>• Arsenic levels in Moira River and Lake exceed Ontario drinking water guidelines</li> <li>• &gt; average of abnormal pregnancies compared to province</li> <li>• 1998 MOEE initiates Deloro Health Risk Study. Public Liaison Committee (PLC) asks for off-site contamination to be investigated. Health Study Committee struck- subcommittee of PLC was struck and additional participants chosen to cover a more specific mandate, met 5 times, 90% participation in community. Most said the study did not involve the community members very well in devising questions, approach and priorities for the study and the resultant methodology was unclear. Some wanted plant uptake to be analysed since people grow gardens</li> <li>• Some people moved there without knowing about the contamination</li> <li>• Tailings have been used as fill, e.g. The old folks home is built on high arsenic concentration tailings</li> <li>• Sampling of toenails showed high arsenic in toenails in Madoc compared to Belleville</li> <li>• Action plan to deal with critical results of the health study, communication plan</li> <li>• Atomic Energy reports are not accessible</li> <li>• Gamma radiation survey, radon gas surveyed above recommended clean-up # but not evaluated as a health risk, community members told results on individual basis not as a group</li> <li>• Children played hockey on the ponds high in arsenic, arsenic burns in summer when playing on tailings and waste piles</li> <li>• Ted Galloway, a worker who drove radioactive material from Port Hope died of lung cancer, his wife was given compensation</li> <li>• Community says there should be compensation for the lost health of the workers as well as Deloro community members</li> <li>• 1974 Hastings county deaths from cancer and lung disease 119% greater than province average</li> <li>• During operation there were immigrant workers who had the worst jobs</li> <li>• 1953-7 high incidence of respiratory cancer, 3 dead</li> <li>• 1937 arsenic poisoning from well</li> <li>• 1928-52 lung cancer deaths (12)- 29% of workforce deaths from cancer, 11% in surrounding area</li> </ul>
Economic benefits	<ul style="list-style-type: none"> <li>• Small amount of local work</li> <li>• Decreased property values (at 25% of value)</li> <li>• Tourism impacts</li> <li>• Emotional stress, unknown health effects</li> </ul>

Long-term Outlook	
	<ul style="list-style-type: none"> <li>• Close to estimating cost of clean-up</li> <li>• Federal ea ongoing, need to remediate radioactive material</li> <li>• One area of Moira River found to be more contaminated with radioactive material, increase prospective work</li> <li>• No funding guarantee though budgets are planned on 3-5 year timeline, many community members have low level of confidence that there will be enough funds committed and available</li> <li>• PLC will be scaled back when remediation is started</li> <li>• Concerns that the site might become zoned as a hazardous waste site and bring in other types of contaminants from other places</li> <li>• In the end will still have a problem, do some things to help the problem not save all</li> <li>• MOE is committed by "default," with little resources committed by industry or federal funds</li> </ul>

## 2. Giant Mine, Northwest Territories

### Abbreviations:

DIAND: Department of Indian Affairs and Northern Development

GNWT: Government of the Northwest Territories

MVLWB: Mackenzie Valley Land and Water Board

YASRC: Yellowknife Arsenic Soils Remediation Committee

EC: Environment Canada

DFO: Department of Fisheries and Oceans

CEPA: Canadian Environmental Protection Agency

Site Background	
Ownership/operation history	<p>July 1935 – Baker and Muir stake the 21 original "Giant" claims Burwash Yellowknife Mines Limited.</p> <p>1937 – Giant Yellowknife Gold Mines Ltd incorporates and acquires claims. Work is done throughout 30s and into 40s</p> <p>June 1943 – Frobisher Exploration Company acquires operating control of Giant Yellowknife Gold Mines and the Giant property</p> <p>June 1948 – Gold production begins at the Giant mine</p> <p>Giant Mine is located within the municipal boundaries of the City of Yellowknife</p> <p>Began producing gold in 1948</p> <p>From 1948 to 1951, gold roasting production with no pollution control/no capture of arsenic-rich gases.</p> <p>In 1951 an electrostatic precipitator was installed to reduce emissions, and in 1959, a baghouse dust collector installed that reduced emissions a few hundred kg/day.</p> <p>From 1959-1999, still a gold roasting operation, but the arsenic trioxide was captured, and the dust stored in underground stopes and chambers.</p> <p>1986 – Pamour Inc. acquires Falconbridge Ltd.'s interests in Giant Yellowknife Mines Ltd. and in Akaitcho Yellowknife Gold Mines Ltd.</p> <p>1990 – Royal Oak Resources Ltd. assumes control of Giant Yellowknife Mines Ltd. by purchasing the interests of Giant Resources Ltd. and Pamour Inc.</p> <p>The following year, Royal Oak Mines Inc. formed by the amalgamation of Royal Oak Resources Ltd. with companies in Pamour and Giant Yellowknife groups.</p> <p>Royal Oak operated mine from 1990-1999 when the company went bankrupt (April 1999?); receivership - Price Waterhouse until December when they turned it over to DIAND (mineral rights and land under federal control)</p> <p>DIAND took responsibility; sold it to Miramar in December 1999. DIAND retained responsibility for pre-existing environmental liabilities on the property, including the underground arsenic trioxide dust</p> <p>Miramar operating at a ¼ to 1/3 of Royal Oak's level; no longer roasting gold. Hauling ore to other mine (Con Mine) where the arsenic is stabilized and put in tailings pond.</p>
Management practices	<p>1992 – miners at Giant mine go on strike May 23. The mine continued to operate with staff, replacement workers and hourly union members who crossed the picket line. In September 1992, a deliberately-set explosion underground killed nine miners. Striking miners don't return to work until December 1993.</p>
Contamination	<p>237,000 tonnes of arsenic trioxide dust are stored in 14 underground stopes and chambers; a pump and treat</p>

	<p>system is in place to pump mine water and water around these to the surface, where it is treated and released, but it is not considered a long-term solution</p> <p>Surface arsenic levels are high in soil around the area, but it is not entirely determined what natural levels are. YASRC (Yellowknife Arsenic Soils Remediation Committee) soon to release report on soils contamination</p> <p>Air pollution from the stack at Giant mine was a concern (both arsenic and sulphur dioxide) and contributed to high levels of arsenic in soils, but since 1999, stack not being used.</p> <p>Tailings ponds on site cause concern as they are accessible to wildlife and when wind is high, dust blows tailings</p>
Health effects and concerns	<p>3 or 4 studies done on Yellowknife Bay (?) – air and water quality</p> <p>The Yellowknives Dene have been concerned for years about the effects of arsenic; have requested records from hospital of all deaths to try to determine cancer rates, etc. Studies have been done on berries (Denise Maxwell's study) and other flora; earlier studies in late 60s by PhD student from Iowa</p> <p>Dene report cancer rates in their communities are high.</p> <p>The Yellowknives say that 10-15 years after the start up of the mine, they began noticing changes in the land around them, and in the plants and animals; they stopped picking berries close to the mine. Etc</p> <p>Some children died from arsenic laced snow melt; cows died; dog team died. (50s or 60s?)</p> <p>Late 60s, an elder died – arsenic was 10x higher than normal.</p> <p>1990s – Dene started to pound on doors, to find some answers. Felt that everyone was trying to pass the buck; no one taking responsibility.</p> <p>Now have to travel 15 miles from Giant. Used to use the land and water right around Giant</p> <p>Sled dogs walking through creek would lose all the fur on their paws</p> <p>Scared about effects on moose, fish and rabbits.</p> <p>Canadian Public Health Association set up taskforce/study in mid 70s.</p> <p>City of Yellowknife water intake/source changed at time to lower arsenic levels</p> <p>Concern about underground arsenic leaching into Great Slave lake</p> <p>Levels of arsenic in sediment of Baker Creek and Back Bay already high.</p> <p>Constituents of MLA Bill Braden (Great Slave MLA) have expressed concerns: (from Hansard, Feb. 16, 2001)</p> <p>"soil remediation solutions around private dwellings in the area; cancer rates in Yellowknife; integrated land-use planning and land-use administration; concern for the public health; standards for clean-up and standards for soil remediation; and to what extent will the public be consulted in the future."</p>
Economic impacts and benefits (after closure/aban)	<p>Closure of mine; loss of jobs in the community; some got hired back when Miramar took over, but only 1/3 of workforce</p> <p>Dene would like remediation work if there is to be any. Feel they'd do a better job than contractors because they have vested interest.</p>
Estimated cost to address the issues	<p>\$16-20 million (surface)</p> <p>\$52-400 million for underground arsenic reclamation/remediation</p> <p>GNWT – preliminary estimates for surface clean-up is \$8-17 million (not including ongoing monitoring)</p>
Liability	<ul style="list-style-type: none"> <li>At time of last water license, \$400,000 set aside. This was just paid out by insurance company in last few months.</li> </ul> <p>Also condition of water license that company must put up \$1.5 million/year security up to \$7 million</p> <ul style="list-style-type: none"> <li>DIAND has taken it on. Possibility of previous owners (falconbridge mentioned) but not being pursued at this time</li> </ul>



Jurisdiction	<ul style="list-style-type: none"> <li>• Referred to by interviewee: from Hansard June 8, 2001; issues of jurisdiction – Joe Handley (GNWT minister of finance) states that the responsibility for arsenic at Giant Mine rests with DIAND as a condition of the sale of the mine to Miramar. States that GNWT “participates primarily because as a government for this Territory, we have great concerns about what the department may or may not be doing, what their plans are, what they may be in the future and so on. We do not have an official role or responsibility.”</li> <li>• GNWT’s responsibilities lie with lands not covered by the water license. Still some debate b/w DIAND and GNWT on that line.</li> <li>• Are presently considering negotiations</li> <li>• 1970 – administration of surface of land transferred to GNWT -land lease issued by Territorial government</li> <li>• Water license – federal gov’t</li> <li>• Under terms of sale to Miramar, Miramar has indemnification for all past liability at site</li> </ul> <p>Some say there were huge holes in deal with Miramar</p> <ul style="list-style-type: none"> <li>• DIAND have all liabilities underground and water related liabilities</li> <li>• The responsibility for non-water related surface needs to be negotiated</li> <li>• Have agreed to cost-share work that is clearly land related</li> <li>• Fuel oils, reagent chemicals, contaminated soils on site, buildings (though nothing can be done with most structures as mine is still operating)</li> <li>• Negotiations have apparently been initiated by GNWT to sort it out.</li> <li>• DIAND have to have a plan submitted to the MVLWB – Abandonment and Restoration Plan by Oct. 1/2002 (got extension from last year)</li> <li>• DIAND enforces water license for MVLWB</li> </ul> <p>Both boards exist under federal legislation</p> <ul style="list-style-type: none"> <li>• DIAND, although possibly some GNWT. GNWT has put some money into surface clean-up</li> </ul> <p>Kevin – surface lease became jurisdiction of GNWT in 1970 (administration of)</p> <ul style="list-style-type: none"> <li>• Environment Canada? When arsenic was still going up stack (until '99). Arsenic a dangerous substance under CEPA; EC at that time required to come up with a management plan. Many studies</li> <li>• EC/DIAND – air emissions?</li> <li>• DIAND – underground arsenic</li> <li>• DIAND have mandate for economic development; and also responsibility for aboriginal people;</li> <li>• Mackenzie Valley Land and Water Board</li> </ul>
	<p>Miramar has to give federal government 1 month's notice of shut down</p> <p>Miramar then responsible for assuring compliance of property for additional 6 months; then complete liability falls back to government; this is where GNWT has initiated negotiations with DIAND as to jurisdiction; whether GNWT has any responsibility; only had one meeting so far in Oct/01. short meeting; negotiations have not progressed</p>

Community Involvement Process	
General	<p>Public information, but as of yet, no community involvement beyond that</p> <p>Used to be the Royal Oak Project team, but were taken off Colmac mine (given to Contaminants division) –</p>

	<p>weren't happy with job they were doing.</p> <p>Colmac process is entirely different. Different philosophy/approach. In partnership agreement with Dogrib.</p> <p>Involved every step of way, from identifying priorities right through to decisions.</p>
Independent efforts to address some of the issues	<p>Some studies of arsenic contamination. Bob bromley worked as research assistant for phd student from iowa in late 60s, studying arsenic levels in area around yellowknife</p>
By government	<p>Canadian Public Health Association did health study (arsenic) in 1975-77: Task Force on Arsenic; noted levels in public; stated water supply was safe; and that arsenic was best in the underground chambers</p> <p>Could have gone Britannia route? Say some. But didn't. Joint several and retroactive liability</p> <p>Has been some surface clean-up, paid for by DIAND and GNWT. Removal of metal debris, barrels, batteries, waste oil, etc</p> <p>Report by SRK (to look alternatives for underground arsenic – SRK came up with 4 types of options: a) to leave it in the ground (and do nothing; freeze it; pump and treat; grout around it; etc) b) mine arsenic and sell it c) excavate arsenic and chemically stabilize it d) excavate arsenic and physically stabilize it</p> <p>GNWT led clean-up so far of surface (though both DIAND and GNWT contribute monies)</p> <p>In March 2002, Geonorth report (for DIAND) reported need for a Community Liaison Committee as identified by the City of Yellowknife, participants at a Management Alternatives Workshops (held July 11-12/01), and members of other ngos.</p> <p>DIAND have to present a management plan for arsenic to MVLWB by Oct. ½ (already got extension of year)</p> <p>SRK have been hired; major contract for scientific and technical study;</p> <p>2 public workshops (check, the technical ones) by invitation – multi-stakeholder – to present SRK's report to date 3 years ago (meetings) and last year (check dates)</p> <p>Within last 6 months, 6 public information sessions (2 yk, 2 Ndilo, 2 Dettah)</p> <p>Updates on SRK – fairly well-attended</p> <p>Public registry – giant project team has tried to communicate information</p> <p>LUTRA report – looking at public awareness of arsenic situation – found that the public and the media were skeptical of DIAND – think they have already chosen option and are now trying to get public to agree</p> <p>DIAND denies that they have chosen plan</p> <p>Has been discussion of Community Liaison Committee – GNWT have heard of this; Dene and Ecology North have heard nothing formally</p> <p>DIAND also has begun to set up technical peer review committee to review SRK information</p> <p>Invited other four (GNWT, Ecology North, Dene, and North Slave Metis) to name technical expert to sit on technical review committee</p> <p>DIAND would fund this</p> <p>The Community Liaison Committee would be broad; multistakeholder, advisory capacity</p> <p>It would take materials reviewed by technical peer review committee and provide advice to DIAND and GNWT</p> <p>GNWT would like to see this committee established</p> <p>Is concern over effectiveness and independence of committee</p>
By private sector companies and their Associations	<ul style="list-style-type: none"> <li>•</li> </ul>

(e.g., Mining Association of Canada or Chambers of Mines)	
By members of the community	•
Collaborative efforts (e.g., committees, taskforces)	<p>Have been some public information meetings (2 in Yellowknife, 2 in Ndilo, 2 in Dettah – dates??)</p> <ul style="list-style-type: none"> <li>Yellowknife Arsenic Soil Remediation Committee – joint venture between federal gov't, GNWT and group of community stakeholders.</li> </ul> <p>Giant Mine Project team have produced some communications; done some interviews; set up a public registry</p> <p>Have held some technical workshops</p> <p>YASRC – trying to determine what health risk in soils would be – what baseline would be; report soon to come out. Deals with soils contamination on site and off-site</p>
Membership	
Committee structure, funding and protocols	<p>Giant Mine Project Team just now talking of setting up Community Liaison Committee to look at remediation options for the underground arsenic</p> <p>Also setting up a Technical Peer Review Committee</p>

<b>Community Involvement in Site Remediation and Related Work</b>	
General	<p>Has not been any aside from bit from GNWT and DIAND on surface. Miramar has contracted these workers/??</p> <p>Yellowknives Dene have expressed desire to do the work, as they feel they'd do a better job as they have a vested interest in the land, but this has not been discussed in any real detail with DIAND (not at that stage yet)</p>
Remediation efforts	
Technical studies	None involving community; several reports commissioned by DIAND; SRK; Geonorth; etc
Environmental monitoring	<p>Since first water license was issued, DIAND has been monitoring water</p> <p>Environment Canada doing monitoring of Baker Creek ??</p>
Health and safety issues	Concerns about arsenic if it is brought to surface; particularly if mined (though that seems like a slim possibility now since market for arsenic has shrunk since concern about treated wood has skyrocketed in the US.
Economic benefits	New jobs (remediation or otherwise) were to go to former workers of mine; were supposed to have first right of recall for 2 years from the date of closure of the mine (of Royal Oak's insolvency) but that date has now passed.

<b>Long-term Outlook</b>	
	Giant Mine Project Team wants to involve community now to get their input in to what remediation plan to use.

	<p>Plan to set up Community Liaison committee; have begun to set up Technical Peer review committee.</p> <p>Need to decide on what option to use for underground arsenic</p> <p>Barriers: no one taking action; community suspicious of DIAND; lack of communication from Giant mine project team; according to some community members, don't seem to have an action plan; Lack of trust – feel that if DIAND gets a report in that they don't agree with, they don't release it to the public; some members of public want independent studies as they don't trust DIAND to tell them the truth.</p> <p>Dene are in middle of land claims. Need to decide if they want the land the Giant is on, or possibly compensation. Some people want a comprehensive study of “how we got here”; study of how mines were allowed to create and leave such a liability to be paid for with tax dollars; wonder why mines can make such a mess and just walk away; set higher bonds.</p> <p>A plan is to be completed by October 1, 2002 but committee not yet set up (beginning stages, though no one on committee had heard at time of interviews for this report)</p> <p>Community still mistrustful and wondering how effective community involvement can be if plan is due by October 1, 2002 (already July 2002 and no Community Liaison Committee yet); independence and effectiveness questioned;</p> <p>GNWT has said they won't be on the committee (nor will DIAND) though they will help determine terms of reference</p> <p>DIAND and GNWT need to negotiate liability – when Miramar finishes operations</p>
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### 3. Mount Washington Interview Summaries

#### Abbreviations:

TRTF – Tsolum River Task Force

TRRS – Tsolum River Restoration Society

MEMPR – Ministry of Energy, Mines and Petroleum Resource

MELP – Ministry of Environment, Lands and Parks

MWLAP – Ministry of Water, Land and Air Protection

AMD – Acid Mine Drainage

Site Background	
Ownership/operation history	<p>1964 – mining began; open pit copper mine on Mount Washington on Vancouver Island near Courtenay, BC. On an E&amp;N Railway Land Grant; province held precious metal rights; railway co. had base metal rights. Both leased to Mt. Washington Copper and Cumberland Mining Co.</p> <p>Operations from 1964-1967; stopped mining in fall of 1966 (company went into receivership), ore hauled and milled to 1967; mine site then abandoned. No mining activity since.</p> <p>In 1979 Esso Resources Ltd. tried to extract metals from the overburden; applied acid and iron-oxidizing; accelerated AMD generation.</p> <p>TimberWest now has surface rights; CPR has subsurface; Better Resources owns precious metal rights.</p>
Management practices	Operated for short time in 60s. No known labour or other problems during operation.
Contamination	<p>Copper from AMD; elevated levels in the Tsolum River. Runs of pink were up this last year (2002), but the numbers have decreased since 1970s. In 1980s, DFO stocks 2.5 million pink fry. None return. Subsequent water testing indicates elevated copper levels.</p> <p>In the 1950s, runs of 100,000 pink salmon and 15,000 coho were counted each year, as well as cutthroat trout, chum and steelhead salmon. Started to see declines in these numbers in 1950s, presumably from effects on river system from development and logging practices</p> <p>The environmental damage caused by toxic levels of copper released from the mine was not apparent until identified by MELP staff in 1985. Community was aware salmon levels had decreased, but there had been a series of changes in the river (logging, development, gravel taken from river) that also contributed.</p> <p>From mine site, AMD into Pyrrhotite Creek which empties into the Tsolum River</p> <p>The Ministry of Environment, Lands and Parks estimated that for the Tsolum River to meet the water quality objectives (stated above) during spring freshet, the reclamation should reduce copper loading from the mine site by 95%</p> <p>In 1979, Esso Resources Ltd tried to extract copper from the remaining ore at the site by adding sulphuric acid and iron-oxidizing bacteria to the ore. This process sped up the release of copper from the mine site.</p> <p>Some remediation efforts were made from 1988-92, including a till cap over some of the waste rock; at first weren't sure how successful, but in 1998, sampling showed copper levels reduced by 50%. Still some debate about what led to the reduction in copper levels. Still too high at certain times of the year for salmon to return. Pinks got in between high spikes in the last year.</p>
Health effects and concerns	No human health concerns; concerns about health of river and effects on aquatic life, particularly salmon; loss of recreational river

Economic impacts and benefits (after closure/aban)	Mine operated for short time; no discussion of loss of jobs when mine closed. Economic value lost with loss of fishery and recreational use of river estimated at \$2 million/year (since late 60s)
Estimated cost to address the issues	Estimates range from \$4-12 million; (\$5-7 million)
Liability	
Jurisdiction	<ul style="list-style-type: none"> <li>• Environment Canada/DFO/MWLAP (was MELP)/ Sustainable Resource Management?</li> <li>• Federal gov't (Env't Canada) have initiated legal action using fisheries regulations</li> </ul>

<b>Community Involvement Process</b>	
General	<p>One interviewee claimed that in a report by Agra consultants (for the prov'l gov't) it was stated that if anything was to be done to restore the Tsolum, it would have to be community driven (unconfirmed in draft report)</p> <p>One gov't official said that remediation should be taken on by government or business, not community – not against involvement of the community, but felt that gov't and business weren't living up to their responsibilities</p> <p>Concern about river since 70s-80s. Steelhead Society listed it as a major area of concern in 1985.</p> <p>Team Tsolum group formed out of the Comox Valley Watershed Assembly to look at Tsolum River issues</p>
Independent efforts to address some of the issues	
By government	<p>Tsolum River had long been a concern of DFO</p> <p>After identifying problem in of AMD in 1985, federal and provincial agencies set up a technical committee in 1987 to look at solutions; met 3 or 4 times a year? MEMPR took lead role</p> <p>Consultants were hired to advise, and BC government put up \$1.5 million dollars for remedial work and monitoring.</p> <p>In 1988-92 – various actions taken at site, including till cover, diversion of ground and surface waters, covering some spots with asphalt and concrete-impregnated textiles, and in situ neutralization. Ministry of Mines (Energy, Mines and Petroleum Resources at the time) attempted some reclamation;</p> <p>Initially, no reduction in copper ( in monitoring from 1993-95)</p> <p>In 1998, sampling showed copper levels reduced by 50% but is not certain if this is the direct result of cap or other factors.</p> <p>1997 – Meeting held (organized by community “Team Tsolum”) but got MLA Evelyn Gillespie to host (see below) meeting that started the Tsolum River Task Force (See below) DFO funded the Tsolum River Task Force but no money specifically for mine site remediation</p> <p>According to some community members, MEMPR became somewhat less involved after 88-92 remediation efforts. MELP became more involved</p> <p>Number of reports commissioned. 1998, MEM and MELP commissioned Levelton Engineering to examine reclamation options for Mt. Washington.</p> <p>Environment Canada on the Task Force; McCandless hired SRK to do report</p> <p>March 2000 – meeting to discuss SRK report; also talk of legal action at that time. Committee already out of funding. Governments seem quieter once the talk of legal action began.</p>

By private sector companies and their Associations (e.g., Mining Association of Canada or Chambers of Mines)	TimberWest, who own surface rights are looking into using wetlands to treat (Golder report) TRRS met with TimberWest. Plan to dam Pyrrhotite Lake, raise waters 6 metres and collect contaminated water TimberWest obligated to do something (as are CPR)
By members of the community	For many years, active citizenship concerned about watershed issues in Comox Valley Steelhead Society Comox Valley Environmental Council Comox Valley Watershed Assembly – at a meeting in 1995, the Tsolum Team was formed. They held a “Healing the Tsolum” workshop in 1997, which was attended by over 200 local residents. The next day, the Tsolum River Task Force was formed with the goal of restoring the Tsolum River to historic levels of health and productivity. 1996 there was a Citizens’ Delegation which went to Victoria
Collaborative efforts (e.g., committees, taskforces)	Taskforce Tsolum was set up In April, 1997, a meeting was held in Comox to discuss the state of the Tsolum River. Shortly after, DFO funded a multi-stakeholder taskforce, the Tsolum River Task Force (Tsolum River Restoration Project) – salmon focus; habitat restoration; monitoring Had to focus on fish habitat, etc, b/c of DFO mandate, not on mine site/AMD. But did have an AMD working group Funding for the Task Force ended on March 31, 1999, and final report of the group “State of the Tsolum River” was issued.
Membership	Multi-stakeholder. Industry (TimberWest, Better Resources, DFO, EC, MELP, environmental NGOs, farmers, First Nations) Was an advisory group Had 2 staff (1 ½ jobs); Kathy Campbell and Jackie Sandiford No groups excluded. Had First Nations involvement for awhile, but ultimately they left (not because of conflict) When DFO funding ended, Task Force ended, but Tsolum River Restoration Society (TRRS) set up as a society so they could get funds. Now operating with funding from aquaculture industry. Jack Minard is only paid staff member; have public AGM every year, but society not set up like the Task Force (not a multi-stakeholder type of meeting structure) – ngo, board of directors, etc.
Committee structure, funding and protocols	Looked at the Comox Valley Watershed Assembly for how to set up group, etc. Decided who was a stakeholder One meeting/ month, generally Had workgroups <ul style="list-style-type: none"> <li>– ARD/ mine reclamation group</li> <li>–Salmon stock group</li> <li>–flows and storage</li> <li>–habitat restoration</li> <li>–water monitoring</li> <li>–media and communications</li> </ul>

	<p>Rep from each group would go to Task Force meeting once a month</p> <p>Usually had facilitator/mediator</p> <p>Access to experts and legal counsel</p> <p>Had structure to deal with conflict; gave ability to focus on issue</p> <p>Task Force set up to represent all sort of views</p> <p>Best community action group they had</p> <p>Was “doable in board room as well as in the field”</p> <p>Time was donated; travel expenses barely covered, but the paid staff person made the meetings possible, did all set up, arranged meetings; printed up and distributed minutes, etc.</p> <p>Members felt that they learned together, that it was multi-disciplinary; bringing together all issues in this “watershed problem”</p> <p>Open to general public in that people could ask to be involved, and people from the general public were asked to participate; having the workgroups really helped with this (easier to get people involved in workgroups</p> <p>Minutes were available on web site; media were given releases as well</p> <p>Workgroup would define a project and take it to the advisory group (for approval?)</p> <p>Decisions made by consensus (although were some times cases where they would “agree to disagree” and no consensus was reached – one holdout)</p> <p>Professional facilitators used; all members found this extremely effective and helpful</p> <p>Taskforce was multi-stakeholder and visible in community; having paid coordinator and staff person meant someone was paid to get information out to entire group, and community</p> <p>Weren’t open to press – government were sensitive to that.</p> <p>Some conflict with Cliff Rennie. His idea of using lime at site was not seen as viable by any other members. Caused some conflict, but with mediator, he was always given the chance to speak.</p> <p>One member feels adding lime to site would neutralize the site for very low cost; also feels that “total democracy” doesn’t work; that they need leadership; too much talking and not enough action; feels too many people want to be involved, but not everyone has mandate or the power to do anything</p> <p>Some conflict b/w MELP and Env’t Canada about how they should proceed</p>
	<p>Most hoped the ARD issue would have been dealt with; that the gov’t would have taken action; lack of money/gov’t will</p> <p>Killed the mechanism for community decision-making; nowhere to go with it. Ground to a halt; no funding plus no action</p> <p>Some felt that the provincial government were sometimes quite inflexible</p> <p>But process overall was good until it hit the wall of inaction</p> <p>Community got involved because government weren’t handling it.</p> <p>Now that population is jaded</p> <p>Seen as a breach of public trust in that they had expectations and put in all this work, but in the end, nothing was done. Had momentum but it was lost. Big sense of disappointment and frustration in the community</p> <p>Some claimed the provincial government failed by not coming up with the money to do something</p> <p>Some felt it lacked leadership in the end. Especially when it came time to do something about the site</p> <p>Perhaps some misunderstanding about government’s role at the table. MELP said they were there in advisory capacity only, but not clear whether this was clear to community members (who may have not realized the extent to which they should have been taking other action (i.e., contacting ministers, etc)</p> <p>They had really thought they had something going when the Task Force was operating, and there had been</p>



	<p>some optimism about a solution being found/action being taken</p> <p>Many community members frustrated as Task Force ended up “spinning its wheels”</p> <p>Members of community said barrier was that the provincial government wouldn’t put up any money</p> <p>The community at large was generally supportive of Task Force. When it was operating, members said they couldn’t go anywhere in the valley and not be asked about it.</p> <p>Funding dried up; set up the Tsolum River Restoration Society; project-to-project funding; much more reliance on volunteer work; slower process; less getting done; w/out paid coordinator</p> <p>Barriers: complex question; no vision of what solution would entail</p> <p>mine remediation needs to be done, but who will do it? Government or industry?</p> <p>Fatal flaw in the Task Force was that it was funded by DFO and therefore the mandate was limited (and technically did not involve the mine site or its remediation); tightly targeted resources</p> <p>Was useful to get multi-stakeholder group together</p> <p>Problem with raising expectations. MELP there in advisory capacity (but were community members aware that this was role?)</p> <p>Hard to come to consensus</p> <p>Still need to pressure higher ups in government (did community stop doing this b/c they felt that government agencies at the table implied political will to do something?)</p> <p>Problem of jurisdiction? Who is ultimately responsible?</p> <p>Need appropriate legislation</p> <p>Community needs to keep it in the public eye to continue the pressure on the government; letters to editor, etc.</p> <p>MAC has direct pipeline to government – BC Mining Association person is now the executive assistant to Mining Minister in province – continue to pressure government for leeway. Community needs to keep pressure up</p> <p>MAC/BCMA not at table/on Task Force</p>
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<b>Community Involvement in Site Remediation and Related Work</b>	
General	<p>Has been no substantial remediation work since 1989 (-92)</p> <p>Community involved in monitoring (through TRRS), streamkeeping, habitat restoration</p> <p>On hold; waiting to see what happens with litigation</p>
Remediation efforts	<p>MEMPR did do some work from 1988-92 (before Taskforce established, though there had been community concern expressed through other organizations); \$1.5 million spent on till cap</p> <p>Streamkeepers, habitat restoration, going on in watershed, but not on mine site.</p> <p>TimberWest have been looking into wetlands, but not sure what’s happening now that Env’t Canada is looking at legal action</p>
Technical studies	<p>Most in the community said “no more studies” but some government folk feel more studies, or a more comprehensive study is needed.</p> <p>Some Task Force members said these were made available to Task Force, but maybe not the public at large (no public registry?)</p> <p>TRRS says no more studies, just money to find an on-site solution (TRRS would like to see engineered cap go ahead)</p>
Environmental	<p>TRRS paid ½ last year, provincial and Env’t Canada paid other ½. (\$8,800 total/year)</p>

monitoring	Monitoring of water at different points in watershed. Steelhead society had done monitoring through mid-80s to 90s. Water sampling
Health and safety issues	
Economic benefits	Economic benefit to making stream healthy, both commercial fishery and recreation/tourism Not much discussion on economic development though. Local economic development people haven't paid much attention to it; nor has there been much talk about jobs through remediation work. Much of the stream keeping and habitat restoration work has been on a volunteer basis.

Long-term Outlook	
	<p>Process ground to halt/on hold. People are waiting to see what happens with Env't Canada.</p> <p>Community "disheartened, frustrated, disappointed, disgruntled"</p> <p>Something is in the works with Environment Canada, using fisheries regulations, to get work done.</p> <p>Some feel the Task Force could resume at any time, but without funding, not likely</p> <p>The TRRS is still operating on limited funding. Involved in habitat restoration and share monitoring with gov't.</p> <p>Much work is done on a volunteer basis</p> <p>Comox Valley Watershed Assembly still meeting; open, once-a-month meeting where anyone can come in a bring up concern with watershed. Action oriented group (Tsolum Team came out of this process)</p>