



WORKSHOP PROCEEDINGS

ASSESSING LIABILITIES AND FUNDING OPTIONS

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**NATIONAL ORPHANED/ABANDONED MINES INITIATIVE (NOAMI)
ADVISORY COMMITTEE**

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ASSESSING LIABILITIES AND FUNDING OPTIONS
WORKSHOP REPORT

Prepared for:

The National Orphaned/Abandoned Mines Initiative Advisory Committee

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ABSTRACT/RÉSUMÉ

This report captures the proceedings of the National Orphaned/Abandoned Mines Initiative (NOAMI) Workshop on Assessing Liabilities and Funding Options, held on November 2 and 3, 2005 in Ottawa, Ontario. The workshop was attended by over 70 participants from mining industry, Aboriginal Canadians, non-governmental organizations from both Canada and the US, and federal and provincial governments.

The objectives of the workshop were:

- To present and discuss approaches for assessing liability and funding options at orphaned/abandoned mines, and share relevant experiences and examples;
- To develop a better understanding of the issues;
- To explore different approaches to dealing with the issues; and
- Identify areas for further work by NOAMI.

Key themes of technical site assessments, accounting for and reporting on liabilities, assessing community and health impacts, and funding options were examined through Canadian and international case studies and panel presentations, which were discussed in plenary. A rollup discussion summarized the highlights of the discussions on each of the key themes, and identified gaps and future priorities for NOAMI. These recommendations will help to develop terms of reference for the assessment, reporting and funding of liabilities associated with orphaned/abandoned mines.

Ce rapport contient les délibérations de l'Atelier sur l'évaluation des responsabilités financières et des options de financement de l'Initiative nationale pour les mines orphelines/abandonnées (INMOA), tenu les 2 et 3 novembre 2005, à Ottawa, en Ontario. L'atelier a réuni plus de 70 participants provenant de l'industrie minière, de groupes d'Autochtones du Canada, d'organismes non gouvernementaux du Canada et des États-Unis, et des gouvernements fédéral et provinciaux.

Les objectifs de l'atelier étaient les suivants :

- présenter et examiner des méthodes afin d'évaluer les responsabilités financières et les options de financement pour les mines orphelines/abandonnées, et partager des expériences et des exemples pertinents;
- mieux comprendre les enjeux reliés à ce problème;
- examiner diverses façons de traiter ces enjeux; et
- identifier les domaines dans lesquels l'INMOA devrait faire des travaux.

Les thèmes fondamentaux que sont l'évaluation technique des sites, l'imputabilité des responsabilités et la reddition des comptes sur ces responsabilités, l'évaluation des impacts sur les collectivités et la santé, et les options de financement ont été discutés au moyen de cas typiques canadiens et internationaux et de présentations par des panels d'experts, qui ont été examinés en séance plénière. Une séance finale a permis de résumer les points saillants de discussion pour chacun des thèmes fondamentaux et d'identifier les lacunes ainsi que les priorités futures pour l'INMOA. Ces recommandations aideront à élaborer les principes de base pour évaluer, rendre compte et supporter financièrement les responsabilités liées aux mines orphelines/abandonnées.

Introduction

Welcoming Remarks

Christine Kaszycki, NOAMI Chair (Ontario Ministry of Northern Development and Mines), welcomed participants to the workshop and discussed the establishment of the National Orphaned/Abandoned Mines Initiative (NOAMI). Created in 2001 based on recommendations put forth at a multi-stakeholder workshop on abandoned mines, NOAMI is administered by an Advisory Committee that takes direction from Mines Ministers and reports back to them via the Intergovernmental Working Group on the Mineral Industry (IGWG). The NOAMI Advisory Committee's role is to assess key issues regarding orphaned and abandoned mines in Canada and put forward recommendations to Mines Ministers. NOAMI is guided by a work-plan that was endorsed by Mines Ministers in 2003, and outcomes of this workshop will assist NOAMI in identifying areas for future work and future recommendations to Mines Ministers.

Objectives

Michael van Aanhout, Workshop Facilitator (Stratos), reviewed the workshop agenda and the following objectives:

- To present and discuss approaches for assessing liability and funding options at orphaned/abandoned mines, and share relevant experiences and examples;
- To develop a better understanding of the issues;
- To explore different approaches to dealing with the issues; and
- Identify areas for further work by NOAMI.

Case Study Presentations & Plenary Discussion

Giant Mine

Bill Mitchell, Giant Mine Project Manager, discussed the challenges and best practices related to assessing liabilities and funding options in the Giant Mine Remediation Project. Located in Yellowknife, NWT, approximately 237,000 tonnes of highly toxic arsenic trioxide dust is stored underground in sealed rock chambers at the Giant Mine. The site also has surface arsenic contamination as well as other surface liabilities.

In 1999, the owner of Giant Mine, Royal Oak Mines, went into receivership. The courts transferred Giant Mine to INAC, and INAC sold the mine's assets to Miramar Giant Mine Ltd. An agreement between INAC and Miramar allowed Miramar to operate the mine on a reduced scale, and Miramar was indemnified for the existing condition of the mine. This agreement allowed INAC to contract a group of Technical Advisors to provide broad-based, neutral, technical advice on identification of preferred, long-term arsenic trioxide management plan; identify and recommend preferred management option(s) to INAC; and assist INAC in liability and risk assessment as well as workshops and public consultations. An Independent Peer Review Panel (IPRP) was also created to provide INAC with expert, independent peer review of the management alternatives for the arsenic trioxide stored underground, and the role of the IPRP subsequently expanded to include review of the integrated underground and surface Giant Mine Remediation Plan.

A number of challenges were faced in terms of funding options for the remediation plan. There was no possibility of the previous owners cleaning up the site, and since different jurisdictions have authority at

the site (the surface is administered by the Commissioner and the subsurface by the federal government), it is difficult to apportion responsibilities and liabilities. Nevertheless, there is an expectation to proceed with remediation, and the need for an integrated remediation plan addressing surface and underground issues. A cooperation agreement was signed on May 15, 2005 between INAC and the GNWT to create a mechanism for coordination and cooperation regarding remediation and care and maintenance activities at Giant Mine. The agreement acknowledges different legislative and administrative responsibilities for the Giant Mine site, but does not include a transfer of responsibility. INAC and GNWT have agreed to be co-proponents of the remediation plan and have also agreed to a cost sharing arrangement. The currently estimated cost of remediation is \$280M – \$330M (1/3 surface and 2/3 underground). GNWT will contribute \$23M over 10 years towards care and maintenance and remediation of the surface only, up to \$250,000 annually towards the cost of the interim office, and other in-kind services.

The Parties have agreed to finalize an integrated remediation plan for submission to regulatory agencies, which proposes in situ freezing of arsenic trioxide dust as the preferred option for addressing the underground arsenic trioxide. The Parties agreed to cooperate in all aspects of regulatory filings and environmental assessment, and to remediate the surface of the site to GNWT Industrial Standards. These options were arrived at through a great deal of technical research as well as public consultation. Next steps include finalizing the remediation plan and IPRP review report, as well as the regulatory board review, which may lead to additional public input and a possibly a full environmental assessment.

Britannia Mine

Barry Azevedo, of the Britannia Mine Remediation Project (BC Ministry of Agriculture and Lands), discussed the Britannia Mine Remediation Project. Following an overview of the Britannia Mine, including location, history, and post-mining conditions, Mr. Azevedo discussed the early project management structure, and pointed out the wide range of stakeholders involved in the technical advisory committee, which ensured strong buy-in for the remediation plan. The 2001 remediation plan included a water treatment plant (WTP), fan remediation and marine remediation, for a 20-year nominal total cost of \$99.3M (20-year NPV total cost of \$75.9M).

The funding approaches for the project were also discussed. Under the BC *Environmental Protection Act* (formerly *Waste Management Act*) and the *Contaminated Sites Regulation* (1997), current and previous owners/operators are responsible for remediation of a contaminated site, and a responsible person is absolutely, retroactively, and joint and severally liable. A 1998 assessment of corporate history identified several existing companies that were successors to the historical mine owners and operators. In 2001, the relevant parties contributed \$30M to the project in exchange for environmental indemnification. In 2003, an agreement was struck with the property developer for access to the land (estimated value of \$5M). Mr. Azevedo provided a brief update of the remedial activities with the highlight being the construction and operation of the WTP under a performance-based, public-private partnership agreement between the provincial government and the design, build, operations contractor, EPCOR Water Service Inc. Mr. Azevedo compared the conceptual 2001 budget to the current 2005 budget, and discussed unconsidered costs (e.g. project management) and dismissed costs (e.g. marine remediation) as well as outstanding liabilities.

In summary, Mr. Azevedo indicated that indemnification to historical mine operators has resulted in provincial taxpayer covering remediation costs of \$64.3M (nominal). The project is on budget as set in 2001 (\$99.3M, nominal) due to some early conservative assumptions and cost effective WTP procurement. The WTP is ahead of schedule, with no over-budget risk on contract items, but there are substantial outstanding liabilities that may impact budget.

Kam Kotia

Chris Hamblin, Abandoned Mines Rehabilitation Fund (Ontario Ministry of Northern Development and Mines), discussed the Kam Kotia Rehabilitation Project. Mr. Hamblin provided a brief description of Kam Kotia, including the site's history and hydrology, and described the five-phase, \$41M rehabilitation plan that was developed in 2000-2001, including cost estimates for each phase.

Mr. Hamblin discussed each phase of the project, including key challenges and cost implications, including the unforeseen effect of two years of anomalously high precipitation on the new North Unimpounded Tailings (NUT) Impoundment Area, which filled with 500,000 – 700,000 m³ of contaminated water. Work is currently underway on a \$9M contract to treat and discharge the contaminated NUT water and to place the stacked NUT tailings into their proper location.

The final cost of the Kam Kotia Rehabilitation Project is expected to be \$55M. Based on the experience at Kam Kotia, Mr. Hamblin provided a number of recommendations:

1. Try to diversify your funding sources by involving other governments, agencies or partnerships.
 - MNDM was unsuccessful when it approached the Federal government for assistance. The OMA partnered with MNDM on the revegetation of the NUT impoundment dams.
2. Build a "contingency" allowance into your bids so that you can deal with the unforeseen.
3. Once you start a rehabilitation project, be prepared to stay the course.
 - The five-phased approach at Kam Kotia was supposed to have allowed MNDM to end or pause the project after any phase, with no loss of the benefits already achieved. In reality, discontinuing rehabilitation on an environmental project like Kam Kotia will probably draw the negative attention of the environmental regulators, environmental NGOs, and/or the public.
4. Be prepared to "think outside of the box".
5. Expect the unexpected.
6. Weather will probably have a negative impact on your project at some point.
7. Have fun – remember that you are making things better.

Plenary Discussion

A participant asked Mr. Mitchell to explain the process for freezing arsenic in situ at Giant Mine, and questioned the impact of climate change. Mr. Mitchell indicated that the chambers will be frozen by inserting freeze pipes connected to a surface freeze plant underneath and around the chambers. Brine circulated in these pipes will be maintained at -28°C, and current projections indicate that all areas will be fully frozen within 10-15 years (DID I GET THIS RIGHT?). Modelling conducted by the technical advisory group indicates that, once frozen, the ground stays frozen in very robust form for a long time, including taking into account the various estimates on global warming. Even if the whole system breaks down and no maintenance is provided, the chambers will stay frozen for many decades. Once the active freezing is complete, the system will switch to a passive method of freezing using thermosyphons.

Mr. Mitchell was asked to elaborate on the specific triggers that would require an environmental assessment (EA), and whether any participant funding would be provided in the event of an EA. Mr. Mitchell was unable to comment, as the Mackenzie Valley Environmental Impact Review Board decides whether an EA is required and whether participant funding will be provided.

The case study presenters were asked to comment on how their respective projects impact on and communicate with local communities. Mr. Azevedo indicated that the Britannia Beach community is represented on the technical advisory committee, and that there are ongoing public meetings and a website where feedback can be provided. Mr. Azevedo noted that the communities' concerns are more to

do with traffic issues and interruptions to their livelihood (e.g. digging up roads for remediation and development). With regard to Giant Mine, Mr. Mitchell discussed the ongoing public consultation process as well as the use of information sessions, open houses, workshops, and scoping and information sessions to communicate with communities. He indicated that many misperceptions have been allayed to some extent as the result of an open and proactive communication approach. The Giant Mine Community Alliance's role is to assist the public by sharing information about the project and relaying public concerns and issues to the remediation team. Mr. Hamblin noted that while Kam Kotia is far enough away from Timmins that there are no effects on that community, there is a small community at Kamiskotia Lake and a semi-organized community group with which MNM is in contact. MNM has met with community residents to describe the project and has also provided site tours. Northwatch was involved in the conceptual planning process.

The federal government's move to accrual-based accounting created the conditions for the Federal Contaminated Sites Accelerated Action Plan, and Mr. Azevedo and Mr. Hamblin were asked whether any similar actions have been taken at the provincial level. Mr. Azevedo and Mr. Hamblin responded that no such actions have been taken at the provincial level.

A participant noted that, in the early 1970's, a decision was made to move the water intake pipe from Yellowknife Bay, and at that time the Aboriginal population was not connected to the new water intake. This participant asked whether this situation has improved, and whether there are any plans to remediate the sediment in Yellowknife Bay. Mr. Mitchell responded that most Aboriginal communities are either on the city water supply or have water delivered to their communities. Mr. Mitchell noted that water quality in Yellowknife Bay has greatly improved, and moving the sediment, which appears to be quite stable, may do more harm than good.

A participant questioned whether current remediation activities will meet future legislative requirements, and also indicated that access to clean and safe natural resources is an Aboriginal right. Compromising Aboriginal communities' use of natural resources is unacceptable, and all natural resources must be left in good condition when mining companies leave so as not to compromise the Aboriginal communities' use of the resources.

Panel Discussions

Technical Site Assessment

The panel on technical site assessment consisted of the following individuals:

- Daryl Hockley, SRK Consulting
- John Brodie, Brodie Consulting Ltd.
- Ann Maest, Buka Environmental
- Jim Kuipers, Kuipers and Associates

Panel members were given 10 minutes each to provide their presentations, followed by a plenary discussion addressing all panelists.

1.1.1 Panel Presentations

Daryl Hockley, SRK Consulting

Daryl Hockley discussed a method called the "top down process" to direct mine closure planning projects, which was developed by SRK and some of their clients. SRK recognized the need for an over-arching

framework for mine closure planning, acknowledging that while methods of contaminated sites assessment, risk assessment, and conventional engineering design are tools that can be applied in mine closure planning, they should not be the framework.

Mr. Hockley described the top down process as a method to direct mine closure investigation and planning so that they are as efficient, defensible, and as transparent as possible by recognizing that closure planning is not just about science and engineering, but is in fact principally about making decisions. The top down process puts the entire process of closure planning, including all of the technical investigations and assessments, into a framework of decision analysis.

Mr. Hockley outlined the application of the top down process to a mine closure project. The six steps in the process are summarized below:

- Step 1: Identify all closure and reclamation measures that could conceivably be needed and applied at the site;
- Step 2: Identify the factors to be used to evaluate the various closure options;
- Step 3: Gather readily available information, including experience at other sites (you don't have to "reinvent the wheel" on every new project);
- Step 4: Use this information in an initial evaluation (many methods can be quickly ruled out, and one method may even rise clearly to the top);
- Step 5: Initiate very well focused investigations directed at resolving only those uncertainties that are preventing the selection of the preferred closure method from among the remaining candidates (note the contrast here with the conventional approach, where mine-site characterization is a goal in and of itself); and
- Step 6: Re-evaluate the remaining candidate methods, with the benefit of the Step 5 investigation results. Once the technical uncertainties preventing decisions are resolved, the investigations can stop and the decisions can be made.

Refinements to the top down process include the use of workshops and public meetings at critical points in the process: technical workshops to identify closure alternatives, stakeholder meetings to determine evaluation factors, and joint workshops to go through the key decisions.

Mr. Hockley concluded that the top down process is more effective for managing mine closure projects than any of the alternatives. It applies a rigorous decision analysis framework to ensure that the selection of closure methods will be transparent and defensible, and it puts the technical investigations and assessments in their proper place, at the service of the decision-makers.

John Brodie, Brodie Consulting Ltd.

John Brodie discussed the significant engineering risk assessment process, or SEFR. SEFR focuses on critical components of abandoned mines for an interim period until closure work begins, and ranks critical site components to establish priorities for remediation, identify the need for monitoring and interim mitigative strategies, and identify key factors that site managers should be prepared to take action on if changes are observed.

The four step in the process include:

- Step 1: Identification of potential failures (dams; spillways and diversions; bulkheads; crown pillars; waste dump slopes; large volume hazardous materials)
 - Focus on major concerns and avoid developing closure solutions. Consider "what could happen until closure work starts"
- Step 2: Assessment of probability of failure

- Semi-quantitative assessment (data is often insufficient) that includes conservative opinions of qualified professionals with working knowledge of site(s)
- Major focus is dams and spillways
- Step 3: Estimation of consequences
 - Three areas of impact include fatality, environmental impact, and remediation cost. Other areas may include legal and First Nations land
- Step 4: Conversion of probability and consequences into numeric values to obtain risk rating - multiply Probability Rank (Step 2) x Consequence Rank (Step 3)

Ann Maest, Buka Environmental

Ann Maest discussed three issues: uncertainties associated with predictions and site characterizations at abandoned mine sites; assessing maximum impacts from abandoned mine sites; and remediation vs. restoration at abandoned mine sites.

Uncertainties associated with predictions and site characterizations at abandoned mine sites: In the context of abandoned mines, predictions are needed to quantify improvements from remediation of abandoned mine sites, especially in the context of a "trade" or Good Samaritan Legislation under the Clean Water Act (in the US). Predictions also relate to prioritizing sites for cleanup. Most uncertainties are associated with inputs to predictions (models), and inputs derive from site characterizations. In order to know how much a site will clean up from remedial efforts, how close you can get to "pre-mining" conditions, or how much a given site(s) will affect water quality, you need to construct a conceptual model of the site that includes: baseline conditions; sources; pathways from sources to receptors; processes that affect releases from sources and transport to receptors; receptors; and remedial measures and how they affect water quality and releases from sources. Additional site sampling may lead to redefining the conceptual model.

Assessing Maximum Impacts from Abandoned Mine Sites: High stream concentrations of contaminants, especially metals, limit restoration of aquatic biota because of acute exposures. However, the maximum ambient concentrations in a stream affected by mine drainage often are not known, and the highest concentrations in streams are not necessarily timed with highest loadings. While many think that the worst water quality is during the summer because flows are low and evaporation is high, at many sites with snow or with distinct rainy and dry seasons the worst stream water occurs when the snows first melt or rains first occur after the dry season. Poor water quality is also associated with storm events, especially summer thunderstorms. However, sampling during early snowmelt, thunderstorms or first rain events is difficult to time correctly and unpleasant and inconvenient, and it is difficult to mobilize samplers to work in these conditions. A solution may be to have local citizens, who know the area best, inform agencies of the timing of these hydrologic conditions, or better yet, to do the sampling themselves, in cooperation with agencies. Conducting loadings studies during times of highest concentrations will help prioritize sites for cleanup.

Remediation vs. Restoration at Abandoned Mine Sites: To "remediate" means to meet standards, while to "restore" means to return site conditions to the way they used to be. The Abandoned Mines Technical Advisory Committee's Report on Abandoned Mines (to the CA State Water Resources Control Board) identified the water quality goal for clean up of abandoned mines as follows: "Ideally, the ultimate goal of remediating contaminated water, regardless of contaminant type, is restoration of natural pre-mining conditions of surface water and groundwater quality and beneficial uses." If the goal is restoration, baseline studies of water quality and ecology are required in order to determine their original state. Restoration often involves source removals, which have been effective at improving water quality at some of the worst mine sites. Removals may temporarily increase releases, but are longer lasting than other

alternatives. There is a paucity of studies on what kind of remedial measures are effective at mine sites, and more studies are needed to select the best choices for abandoned mines.

Jim Kuipers, Kuipers and Associates

Three predominate approaches to characterization and remedy selection for abandoned mine cleanup in the U.S. have been used over the past 20 years. Two are done under CERCLA (Comprehensive Environmental Recovery and Cleanup Liability Act) or Superfund guidance – RI/FS (Remedial Investigation/Feasibility Study) Process, typical to mine cleanups directed by the U.S. EPA; and EE/CA (Engineering Evaluation/Cost Analysis) Process, typical to mine cleanups directed by the U.S. Forest Service and Bureau of Land Management. The third is a common approach taken by state agencies and is best described as a Prescriptive remedy approach.

RI/FS: The Remedial Investigation part of the RI/FS study process involves characterization consisting primarily of field sampling and laboratory analyses, but may also include modeling. A significant amount of sampling is typically conducted early in the process to determine to what extent existing conditions exceed applicable or relevant and appropriate requirements. Depending on human health issues, the Agency for Toxic Substances and Disease Registry (ATSDR) may be asked to participate. The information is also used in baseline human health and ecological risk assessments to determine relative hazards. The process then analyzes a range of alternative approaches in the feasibility study step, and a proposed plan is determined based on nine criteria. While this process has been highly effective at dealing with some of the biggest and most complex abandoned mine sites in the U.S., it is characterized by a slow and methodical approach encumbered by bureaucracy and legal issues as well as high cost implications.

EE/CA: The Engineering Evaluation/Cost Analysis process is directed towards non-time critical actions where it is agreed that action needs to be taken but a planning period of at least six months is available before on-site activities must begin. Non-time-critical removal actions are intended to address priority risks, and they provide an important method of moving sites more quickly through the Superfund process. The intent is to identify and perform substantial, prioritized risk reduction in shorter time frames and to communicate program accomplishments to the public more effectively. The EE/CA process requires site characterization including source identification and contaminant extent and relies on analytical data (modeling or other more complex tools for site assessment are rarely performed). The site characterization summarizes available data on the physical, demographic, and other characteristics of the site and surrounding areas as needed to provide background engineering information for analyzing removal alternatives. A streamlined risk evaluation is performed, alternatives are compared and analyzed for their effectiveness, implementability and cost based on cleanup objectives, and a decision is made based on those criteria. The EE/CA process offers a more simplified approach while still fulfilling the requirements of the U.S. National Environmental Policy Act. The results have been mixed, with questions concerning the tendency for incomplete site characterization to be used in decision-making and difficulty in allowing for public involvement due to limited opportunities and the quick pace of evaluations. The approach can more easily address limits on funding but has led many to feel that it is largely a deferral of, rather than a plan for, action.

Prescriptive Remedy: The Prescriptive Remedy approach is typical to abandoned mine cleanup efforts being conducted by state agencies with limited budgets, and is most commonly applied to mine sites not on federal lands (e.g. state or private lands). It is not intended to be used on sites that have risks qualifying them for Superfund status – although it can be argued that some of these sites may someday become Superfund sites if not for the current cleanup efforts. However, water quality issues are usually not significant at sites where this approach is used. The Prescriptive Remedy approach uses a set of standards, such as:

- Regrade all slopes to 2.5:1
- Cover all slopes with at least 20 centimeters topsoil or suitable growth medium
- All materials with ARD potential (based on paste pH) shall be amended with lime to a depth of 2' or covered with 2' of non-acid generating material prior to covering with topsoil.
- All waste material within active (100-year) floodplain to be removed

This approach is simple and relies upon little more than examination of existing data and a site visit with limited sampling for site characterization. The available funding is spent almost entirely on cleanup activities. The downside with this one-size-fits-all approach is that often times critical site features are overlooked, only partial cleanup may take place, and remedies fail to meet objectives or have unintended results.

1.1.2 Plenary Discussion

Given the difference in their views on site characterization, the facilitator asked Mr. Hockley and Ms. Maest to further discuss this issue. Mr. Hockley clarified that he did not indicate that there should be no site characterization, but that it should be at the service of decisions. Ms. Maest indicated that her concern was with Step 1 of the top down process, during which all closure and reclamation measures that could conceivably be needed and applied at the site are identified. She remarked that it is inherent that you know something about what is going on at the site in order to achieve this step, and therefore some amount of site characterization should be the first step.

A participant brought up the issue of risk, and indicated that legislation and monitoring in the future may show that decisions made today were not the right ones. This participant also voiced the concern that all risk ratings (e.g. those in the SEFR process) are assigned a dollar value and do not take into account cultural and social factors. Mr. Hockley noted that the specific SEFR example illustrated in Mr. Brodie's presentation was part of a broader risk assessment that also considered impacts on local communities.

A participant noted that initial site characterization often does not go far enough to quantify the true costs of remediation (e.g. a management decision is reached to clean up arsenic-contaminated soil to "X" PPM, but further characterization is not conducted to determine how much soil that involves). Mr. Hockley commented that the mistake in such cases is in not adjusting the cost estimate or the associated contingencies to reflect the uncertainty inherent in the current level of site characterization.

There was some discussion of Ms. Maest's point on role of local communities in monitoring, as a participant indicated that his experience is that citizen characterization is the driving force in mine site cleanup, and the responsible party is made more responsible if citizens are keeping an eye on things. Ms. Maest also pointed out that local citizens often have a lot of scientific knowledge that can be of great benefit.

There was also some discussion on restoration as an appropriate objective. Mr. Hockley cautioned that restoration is an appropriate objective only if it is what all stakeholders want, and that there should not be a uniform criterion that everything must be restored to original conditions. Mr. Hockley noted a specific example where local people requested that a site be covered with waste rock, not restored, in order to prevent people and animals from using what they felt was a contaminated site.

Accounting & Reporting on Liabilities

The panel on accounting and reporting on liabilities consisted of the following individuals:

- David Gladwin, David Gladwin and Associates
- Alan Willis, Alan Willis and Associates

Panel members were given 10 minutes each to provide their presentations, followed by a plenary discussion addressing all panelists.

1.1.3 Panel Presentations

David Gladwin, David Gladwin and Associates

David Gladwin discussed risk-based accounting for cleanup liabilities. He stressed the importance of thinking long-term. Some mines were closed and decommissioned to the standards of the day, but standards change. Some mines have environmental liabilities, such as acid mine drainage, that may stretch out many centuries. The long-term impacts of climate change may also force the rethinking of some currently accepted approaches to mine closure and cleanup.

Mr. Gladwin indicated that cleanup/resolution of issues at orphaned and abandoned mines often requires significant capital investment, continuing actions over time, and investment in a holding pattern until the long term is clarified. The issue at hand is how to appropriately cost and report liabilities for environmental activities that are not "normal" activities and that may be well off into the future, possibly involving changes in standards or regulation.

This uncertainty can be dealt with through "risk-based costing", stating liabilities in risk-based terms based on current and anticipated standards and community expectations. Change can be managed by describing the required works in risk-based terms, recognizing that the eventually required works may not proceed as planned or as scheduled, and the mine operation may close unexpectedly, requiring prolonged site maintenance while the dust settles, with the risk of depleting eventual cleanup funds. Mr. Gladwin described risk-based costing, in which costs are developed on a risk basis to fully address and resolve the liability for cleanup to specified, performance-based standards, allowing for reasonable variation related to site remoteness/accessibility conditions; availability of operators and equipment; and changes over time. Cost forecasts should provide specified certainty or confidence of being achieved, probably in the order of 80% calculated certainty that eventual costs will be equal to or less than forecast.

Mr. Gladwin concluded that the best approach is to "Act Now, Think Long Term" – costs of capital works tend to escalate faster than the rate of inflation, and will do so in the next 10 years as Canada enters a period of unprecedented capital expansion. Resources for cleanup should be secured to be directly and easily accessible for the designated purpose, protected from access for undesigned purposes, and managed for the future.

Alan Willis, Alan Willis and Associates

Alan Willis provided an overview of Canadian accounting and disclosure rules as they apply to mine cleanup obligations. He encouraged participants to think of disclosure as a public policy instrument to help prevent rather than cure things, and discussed the core elements of corporate financial reporting; accounting standards and disclosure requirements; Board oversight, officer certification, and civil liability; the roles of securities regulators and investors; and government accounting standards and disclosures to taxpayers.

Companies are required by law to submit financial statements (F/S), a management's discussion and analysis (MD&A), and an annual information form (AIF). Mr. Willis discussed Canadian accounting standards, which apply to companies that are "a going concern" (not bankrupt or closing down). Under these standards, whether an exposure is recognized as a liability depends on whether criteria are met for

recognizing a liability, including the timing of the related activity or event as giving rise to an obligation, and whether it can be reasonably estimated. Notes to the F/S are used for disclosures about material items such as litigation whose outcome is uncertain or estimation not possible. When a specific item does not appear on the face of the F/S, it does not mean it has not been accounted for, but may simply be “lumped” in with other items.

Mr. Willis reviewed disclosure requirements of the MD&A and AIF. The MD&A requires companies to discuss material information that may not be fully reflected in the F/S, such as contingent liabilities or other contractual obligations, to disclose and discuss known trends, demands, commitments, events or uncertainties that are reasonably likely to have an effect on a company’s business, and to discuss commitments, events, risks or uncertainties that the company reasonably believes will materially affect future performance. The AIF requires disclosure on social or environmental policies; financial and operational effects of environmental protection requirements on the capital expenditures, earnings, and competitive position of the company in the current and future years; and risk factors relating to the company and its business. Companies with mineral projects must disclose all environmental liabilities to which the project is subject.

Audit committee review and board approval of the F/S and MD&A is now required. The company’s CEO and CFO must each certify that the annual filings of F/S, MD&A and AIF together present fairly the company’s financial condition, results of operations and cash flows, and contain no material omissions or misstatements. Directors and officers are to be liable in secondary markets for misrepresentations in filings or failure to disclose material changes.

Mr. Willis outlined the roles of securities regulators and investors, and briefly mentioned government accounting standards and disclosures to taxpayers et al by federal, provincial and territorial governments (in audited Public Accounts). Governments must include numbers on their financial statements on cleanup costs and liabilities, and the Public Sector Accounting Standards (CICA) include rules regarding liabilities, contractual obligations, and contingent liabilities.

1.1.4 Plenary Discussion

A participant noted an issue regarding public vs. private accounting, whereby the private sector does not agree with the public sector on the liability cost estimate. This participant questioned the implications if the value reported by the public sector does not correspond with the value reported by the private sector. Mr. Willis noted that the standards are open to technical interpretation, and the reported value is always “management’s best estimate”. Mr. Gladwin noted that it is not uncommon to have different estimates. Indicating that the estimate is your own management’s best estimate and including a description of what the estimate covers is key and should explain any differences. Another participant remarked that there may be administrative resolution of the number – given a dispute between a company and a regulator regarding financial assurance requirements pursuant to a licence, the regulator can issue an order pursuant to *CEPA*, and if the company disputes the order, the issue can be brought to the tribunal. Another participant noted that it may be reasonable for companies to have different estimates than what a regulatory agency might expect, because the company will be planning on doing the work with its own people and equipment, will incorporate the salvage value of equipment, etc. The estimate will be very different if the site is abandoned and remediated by someone else.

A participant remarked at the low level of disclosure in companies’ filings, and also asked the panel to comment on the lack of accrual-based accounting in the provinces. While the panel was not able to comment on the latter question, Mr. Willis responded to the concerns regarding disclosure, noting that in the last year, CSA has increased continuous disclosure reviews and is trying to ramp up efforts to review F/S, MD&As and AIFs so there is a better chance of catching deficiencies/negligence and giving

companies a chance to refile. Mr. Willis also noted that institutional investor activism is a positive advancement that will look at risk and return aspects of social and environmental issues of companies that are invested in.

A participant noted that the federal government's new accrual-based accounting system might not only reduce debt but also add to it. Even though the government has adopted a more risk-based approach to accounting for these liabilities, estimates can still be off by a significant amount. This participant questioned what happens if management's best estimate is off. Mr. Willis noted that part of the issue is materiality – what is a drop in the bucket for the federal accounts may be more material for the provincial government. Mr. Gladwin noted that there is benefit in using risk-based costing. For projects where risk-based costing is not used, obtaining the extra funding may be difficult. However, if risk-based costing is used and Treasury Board is presented with an estimate that is in the order of 80% calculated certainty, they may initially only provide 55-60% but going back for the rest will likely be easy.

Assessing Community & Health Impacts

The panel on assessing community and health impacts consisted of the following individuals:

- Ken Reimer, RMC (Moderator)
- Christopher Ollson, Jacques Whitford
- Tom Hutchinson, Environmental and Resource Studies Program, Trent University
- Jim McGeer, Metals and the Environment, Natural Resources Canada
- Mark Richardson, Environmental Health Assessment Services, Health Canada
- Eric Gillespie, Lawyer for Port Colborne Citizens
- Chris Wren, C. Wren and Associates Inc.

Panel members were given 10 minutes each to provide their presentations, followed by a plenary discussion addressing all panelists.

Ken Reimer opened the panel discussion, and introduced panel members prior to their presentations.

1.1.5 Panel Presentations

Christopher Ollson, Jacques Whitford

Christopher Ollson provided a practitioners perspective on effective community dialogue. He noted that there is inherent public distrust, and effective communication is crucial in order to avoid negative confrontation and protest. Mr. Ollson stressed the importance of communicating with all stakeholders early, often, and consistently, and also stressed the importance of listening and seeking real input, not just paying lip service. Potential methods of communication include small group sessions, websites, newsletters, "1-800" number, open houses, and ensuring effective media relations.

Mr. Ollson presented an integrated risk management framework in which stakeholder risk communication is conducted throughout the entire process. He also discussed the potential need for formal stakeholder committees, and raised questions such as whether these committees need to retain their own experts and the frequency of meetings.

Crucial steps that need to occur throughout the consultation process include:

- Early engagement
- Ensure proper understanding of exposure and potential health impacts
- Be respectful of concerns of stakeholders
- Communicate openly the intent of risk or health assessments

- Communicate openly the uncertainties
- Keep coming back with the findings

With regard to media relations, Mr. Ollson reminded participants that most press do not have technical backgrounds. He stressed the importance of consistent messaging and patience when dealing with the media.

Tom Hutchinson, Trent University

Tom Hutchinson expressed serious doubts about the present general governmental acceptance of the use of human health risk assessments in various heavily polluted communities in Canada over the past few years. His concern is that in virtually every case that a human health risk has been done, the result is a finding that there is no risk to human health, despite that in many of the communities there is a long standing reporting of various illnesses, elevated levels of cancer, and chronic diseases. He noted the disconnect between the human health risk assessments and the documented ill health of workers and residents in many such communities. These selected health risk sites include some of the worst polluted locations in Canada, caused by long-term industrial pollution, and named were Sydney Tar Sands, Port Colbourne, Deloro and Wawa.

Mr. Hutchinson noted that the problem lies in the fact that the risk assessments do not actually assess the health of the people, but use a model developed by the Harvard School of Public Health in the 1980's which asks the question "If people of various ages were to set up residence in the community NOW, does their environment present a risk to their health?" Mr. Hutchinson felt that the question entirely ignores the fact that most of the residents have been living in the communities through their lives, and have long-term exposures to a mixture of chemicals and elements, may have worked in the plant or factory, and have experienced substantial ill health in the past. He noted that the question looks at one element or chemical at a time, ignoring synergistics and past exposures, and appears designed to let government and industry "off the hook" of responsibility and liability. Mr. Hutchinson indicated that only in the unlikely event that this risk assessment comes up with a human health risk would human health considerations of the community be considered. He felt that deficiencies in the risk assessments are masked by expensive and unnecessary analysis. Mr. Hutchinson noted that a more realistic way to assess the health risks would be to examine hospital records, cancer clusters, visits to the local Medical Officer of Health, to local doctors, to community health centers, and to hold public meetings aimed at unearthing the actual health status of the people, including their history.

Jim McGeer, Natural Resources Canada

Jim McGeer highlighted two initiatives that are working to integrate new information that can be used by risk assessment practitioners. In the U.S. EPA Risk Assessment Forum, experts were brought together to discuss the state of the science in environmental chemistry; bioavailability and bioaccumulation of metals; metal exposure assessment; human health effects; and ecological effects. They discussed recommendations for future research and integration of science into a policy context. Five white papers were produced, which were then incorporated into a risk assessment guidance manual, *Framework for Inorganic Metals Risk Assessment*.

The EU Metals Environmental Risk Assessment Guidance project (MERAG) provides guidance in the context of the European metals risk assessment process. A need to integrate existing science was recognized, and guidance documents were prepared in nine areas: environmental classification; effects assessment; risk characterization; bioavailability in water and sediments; uncertainty analysis; bioavailability in terrestrial systems; exposure assessment; bioconcentration, bioaccumulation and biomagnification of metals (secondary poisoning); and marine assessment. During a workshop held in

the summer (2005), these guidance documents were peer reviewed and recommendations were made regarding next steps.

Mark Richardson, Health Canada

Mark Richardson discussed variability in risk assessment as a hindrance to consistency, defensibility and equitability. He noted that while risk assessment is important in identifying liabilities and is becoming the cornerstone of government operations in science-based programs, it is important to recognize the potential for huge variability in risk assessments. Mr. Richardson demonstrated inter-contractor variability in risk estimates with an example from a Canada Mortgage and Housing Corporation (CMHC) study whereby consultants investigated the cancer risk associated with vinyl chloride exposure in a particular building – the lowest estimate of cancer risk was near 1 in 10 billion, and the highest was near 1 in 100. He noted that while all of the assumptions made in these different assessments were individually defensible on the basis of science, they might not have been acceptable on the basis of policy.

In relation to inter-contractor variability, Mr. Richardson discussed inter-provincial differences in how risk assessment should be done that can range from simple nuances to significant divergence. Differences may include:

- Amount of guidance provided (more or less prescriptive)
- Required assumptions to be used
- Modelling methodology
- Levels of essentially negligible risk

Mr. Richardson provided a comparison of provincial risk assessment methods and noted key differences among provincial methodologies. As a result of these demonstrated differences, Health Canada decided to write prescriptive guidance for risk assessments for federal contaminated sites. The main purpose of the guidance is to rank sites from “worst” to “least worst”, and the consistent application of this method for all contaminated sites will allow risks to be effectively ranked and compared.

Eric Gillespie, Lawyer for Port Colborne Citizens

Eric Gillespie subtitled his discussion “conference rooms or court rooms”, describing two key methods of resolving stakeholder issues, the former being a preferred approach but the latter being all too common. He discussed four points related to ensuring that the “court room” approach will be avoided:

1. Many community groups are educated, sophisticated, and capable of technical analysis.
2. As a result of these capabilities, community groups are able to conduct their own background research and analysis. Background information and studies must be made available for these people to use in these efforts, or else they will distrust the process.
3. Information must be made available in a timely way. The most common complaint from community groups is that their input was sought through a “decide and defend” process – there was no chance to have an impact because a decision was already made.
4. There is a critical need for independent expertise – inherent distrust of projects means that communities are looking for a second opinion. An independent expert should not be chosen by the project proponent, and must have credibility within the community. In some cases, independent experts may be chosen by the community and funded by the company. Mr. Gillespie strongly encouraged those involved in OAM projects to engage some form of independent review as a crucial factor in avoiding the “court room”.

Chris Wren, C. Wren and Associates Inc.

Chris Wren discussed a case study on assessing community arsenic exposure in the town of Falconbridge, Ontario. In the early 2000's, soil risk assessments were conducted in the Sudbury area (the "Sudbury soils study"). Part of the study recognized that metal levels were elevated around Falconbridge Ltd.'s smelters. In Spring 2003, the Sudbury District Health Unit released a public advisory based on arsenic levels in Falconbridge residential soil. The announcement resulted in widespread public concern, media attention on the community, and public outrage. The company (Falconbridge Ltd.) said it would do what was needed to address the concern. The main areas of concern for Falconbridge residents, in order of highest to lowest, were property values; health; other people's perceptions of Falconbridge; and frustration and worry over not having clear answers.

A number of surveys and discussions were conducted with local residents to determine how they wanted the issue to be addressed. After considerable consultation it was determined that residents wanted to measure the actual level of exposure, and a study was designed to measure arsenic levels in urine in order to answer two fundamental questions:

1. Do Falconbridge residents have higher urinary arsenic levels than residents living in a comparison area with lower levels of arsenic in their soil? (E.g. higher exposure).
2. What health risks relative to other communities are associated with the urinary arsenic levels of Falconbridge residents?

A "control" community was chosen, and the urinary arsenic study was completed in Fall 2004 (it was felt that the best time to conduct the study was after the residents had a whole summer to be exposed). Residents of both communities were engaged throughout the whole process, and participation in the study was very high and included a good cross-section of ages.

The results of the study indicated that the average arsenic levels of Falconbridge residents were very similar to those of the control community both overall, and for various age groups. It was therefore determined that Falconbridge residents were within the typical daily intake of arsenic by Canadians, and therefore not at any increased risk from arsenic exposure as compared to other Canadians in general. Mr. Wren noted that the data from this study can be fed back into the risk assessment for the greater Sudbury area, and noted that it is important not to underestimate the effects of considerable community anxiety.

1.1.6 Plenary Discussion

The moderator noted the following key themes in the panelists' presentations, and asked each panelist to provide opening comments to start the plenary discussion:

- Communication
- "Is it safe?" as a challenging question scientifically and personally
- Whether the process of risk assessment is being addressed properly

Mr. Ollson noted that it comes down to openly communicating intent of the process. He disagreed that assessments do not reveal risks, and felt that the real question is what type of assessment do you need given the circumstances – it all comes down to what you are trying to achieve, making sure communities are on board, and not ruling out any types of assessments. Mr. Gillespie recognized that it can be difficult to predict risks despite having good data and science, and encouraged the thinking that no matter what the risk, it is a long-term risk and must be dealt with as such. Mr. Hutchinson noted his concerns with the lack of consideration of synergies in existing risk assessment science, as well as concern with site-specific variations in allowable pollutant limits (e.g. higher allowable limits of nickel in Port Colbourne) that may permit acceptance of higher levels of risk. Mr. Hutchinson noted that the MOE

guidelines for maximum acceptable levels of nickel in soils for the province has been 200ppm for the past 15-20 years but what Mr. Hutchinson felt to be a new dangerous concept of site-specific has been introduced for Port Colbourne, which moved this 200ppm level to 8500ppm. Mr. Wren responded that the site-specific nickel limits for Port Colbourne were raised through a transparent and open approach and were based on site-specific conditions. Mr. Richardson raised the issue of critical data and information pertaining to risk identification and assessment sitting on a shelf because there is no program in place to go to the next step of due diligence. He stressed the importance of timely disclosure – if information was brought forth early and openly, we might not have these problems with risk assessment. Mr. McGeer reminded participants that all risk assessment models are wrong to some degree, and 100% certainty can never be achieved. As such, he encouraged people to understand the limitations of their models, and to build conservatism into their risk estimates.

A participant expressed frustration with risk assessment and the lack of community health assessment, citing examples where NGOs or communities themselves have taken to leading their own health assessment. Where community health assessments are conducted, this participant commented on the need for “smarter” sampling that catches the pollutants while they are still detectable in the body, as well as the need for quick and honest communication of risk results and the inevitable erosion of trust where communication lacks. Lastly, this participant remarked on the nature of risk assessment as an inconsistent tool whose outcome can easily be manipulated, and further stressed the need for real community health assessment.

Another participant requested more accurate use and thorough definition of commonly used terms and phrases such as “communications”, “Aboriginal community”, and “consultation”. This participant noted that during community engagement it is important to realize who you are talking to, why you are talking to them, and whether you are actually engaging the proper leadership, recognizing that each community will have different needs and expectations. The concern was also raised regarding the lack of Aboriginal representation on this panel.

There was considerable concern with the use of the term “consultation” in the Aboriginal context. “Consultation” is defined very specifically under Section 35 of the *Constitution Act, 1982*, which recognizes and affirms Aboriginal rights, including aboriginal title. There is the concern that processes that do not meet this definition and related requirements will be deemed sufficient consultation and Aboriginal rights may be compromised or lost. A NOAMI representative clarified that NOAMI is a forum for discussion and has no decision-making authority, and was not intended to constitute “consultation”.

With regard to independent review, the workshop facilitator asked panelists whether they knew of any transparent mechanisms to identify experts to conduct this function on behalf of the community, while avoiding the circumstance whereby a company that lost the contract ends up working as the independent reviewer, which may create unnecessary tension. Mr. Wren noted that, in the Sudbury example, letters of interest were solicited from across North America, and the decision was made to go with a US company that brokers peer reviews. Mr. Gillespie noted that this does not constitute independent review, since it was conducted at the request of the people running the process, and paid for and directed by those same people. He clarified that independent review means that people in the community select the consultants, define the scope of the review, etc. A further suggestion was made to “bridge the gap” between the assessment and the independent review – both the industry/company and the community each retain an expert, who then sit down together, work things out, and progress on the same page.

In response to Mr. Hutchinson’s earlier comment on the lack of consideration of synergies in existing risk assessment science, a participant also noted the lack of consideration of sub-lethal and cumulative effects. This participant proposed that assessment should have a “frontal” approach - starting with the

community itself and talking with residents, teachers, doctors, nurses etc. about health concerns and patterns in the community, and questioned what the next steps could be, other than risk assessment or a large scale epidemiological study, if serious concerns were brought to light through this frontal process. Mr. Hutchinson responded that a possible approach would be to have health assessed by an outside body such as Health Canada or a provincial health ministry. He warned against the use of a risk assessment process, since risks to health would already have been identified.

Concern was raised with risk assessment being based on averages, and a participant questioned how serious "outliers" are handled. Mr. Richardson noted that the use of average vs. other statistics tends to be more of a policy issue than anything else. Health Canada recommends using the maximum in order to present a conservative estimation of risk. However, if samples are representative of an area as a whole, an average is probably reasonable except for areas that attract a disproportionate level of activity (e.g. playgrounds). With regard to the issue of outliers, Chris Wren noted that high outliers were found in both communities in the Falconbridge arsenic study, and follow-up was conducted with these individuals.

One participant suggested that the Port Radium site in the Northwest Territories is a good example of community involvement in risk assessment. Over the past six years, a process has been in place for the community to hire consultants and to have independent peer review done on results.

Funding Options

The funding options portion of the workshop included a keynote presentation from Joseph Castrilli, as well as a panel discussion.

1.1.7 Keynote Presentation

Joseph Castrilli presented the results of the report *Potential Funding Approaches for Orphaned/Abandoned Mines in Canada* that was commissioned by the NOAMI Funding Models Task Group to identify approaches for jurisdictions to consider to fund the cleanup of OAM sites; identify advantages/disadvantages of approaches; and discuss preferred funding options. The scope of Mr. Castrilli's presentation, which reflected the key sections of the report, included:

- Background to the OAM problem
- Principles/criteria for evaluating funding approaches
- Funding Approaches: Economic/financial policy theories
- Funding Approaches: Practice
- Administration/management of OAM funding
- Role of legislation in process
- Findings and conclusions
- Recommendations

Background to the Orphaned/Abandoned Mines Problem – Mr. Castrilli provided a brief background to the OAM problem, including a definition of orphaned/abandoned mines; environmental, social, and economic impacts and international and domestic examples of such sites; and discussion of the need for both financial and legal solutions to the problem.

Principles and Criteria for Evaluating Funding Approaches for Cleanup of Orphaned/Abandoned Mines – A number of principles and criteria for evaluating funding approaches for cleanup of orphaned/abandoned mines were considered and evaluated in the report, including:

- Polluter/beneficiary pays
- Fairness
- Openness, accessibility, participation
- Sustainable development
- Revenue-generating capacity
- Administrative ease
- Economic impacts
- Ability to address existing and future orphaned sites
- Ability to discourage future site contamination
- Public perception
- Emergency response

Mr. Castrilli noted that the study concluded that all of the principles, with some modification to take into account the unique circumstances surrounding OAMs, are appropriate for evaluating potential funding approaches. These criteria, as well as feedback from a stakeholder survey, were used to evaluate the funding approaches.

Funding Approaches: Economic and Financial Policy Theories – Mr. Castrilli discussed economic and financial policy theories that should inform the adoption of a funding approach for OAM cleanup. While the funding approaches are comparatively simple to state, they are more difficult and controversial to apply in practice:

- Governments (federal, provincial, or federal-provincial) could pay for the rehabilitation of these sites out of general revenue.
- The present mining industry could contribute to a fund that can pay for rehabilitation of orphaned/abandoned mines.
- Governments could provide incentives (e.g. tax deductions, liability exemptions, etc.) for existing mining companies to rehabilitate orphaned/abandoned mines in a generic or site-specific partnership.
- Governments could, without imposing new taxes or fees on the mining industry, re-direct a portion of existing mining tax revenue, and reduce existing subsidies or incentives to the industry and apply both streams to orphaned/abandoned mine rehabilitation.
- Governments could use a combination of the above or related funding approaches.

Funding Approaches: The Practice – A Summary Review of Selected Existing and Proposed Legislative and Non-Legislative Programs in Canada, the United States, and the UK – The report assessed 17 programs organized under five different categories of funding approaches:

- Government funded programs from general revenues coming from a single level of government;
- Federal-provincial government funded cost sharing arrangements from general revenues;
- Levies on industrial production;
- Government- industry partnerships; and
- Non-profit organization trust funds.

Mr Castrilli noted that while there are advantages and disadvantages with each funding approach examined, no single approach appears likely to constitute a complete solution to the cleanup of OAMs in Canada.

Administration and Management of Orphaned/Abandoned Mine Funding – Mr. Castrilli examined administrative and management issues surrounding OAM funding. Potential administration models include:

- One government level
- Joint – two government levels
- Special government agency
- Government-mining industry
- Government-industry in general
- Mining industry
- Industry in general

While survey respondents were divided on which entities could/should administer funding, there was some consensus that whatever entity is chosen it will have to bring to the task the expertise that resides within mines and environment departments as well as industry because of the safety, environmental, and human health problems posed by OAMs. The decision-making processes employed by the entity should include public input, oversight, accountability, and freedom from conflict of interest. There was opposition from survey respondents to relying on annual government line-item appropriations from general government revenues and support for a dedicated OAM fund.

The Role of Legislation in the Process – Mr. Castrilli discussed the role of legislation, if any, in the process of funding approaches for OAM cleanup. Continuation of a program of discretionary government funding from general revenues, earmarking a percentage of an existing revenue stream, or reducing existing mining industry subsidies or incentives to pay for cleanups may not require any, or only minimal, legislative change. However, imposition of a levy on industrial production and establishment of a dedicated OAM fund would require somewhat more legislative and regulatory reform.

Recommendations – Based on the review the authors recommended a number of measures for the consideration of the Task Group. A summary of the recommendations includes:

1. Governments amend existing or enact new legislation adopting and implementing a funding regime for cleanup of OAMs in their respective jurisdictions.
2. The funding regime should be designed to substantially eliminate the backlog of OAMs in the jurisdiction in which the legislation is enacted within a reasonable timeframe.
3. Such legislative regimes should be based on a mix of all of the following funding approaches:
 - a. Government funding from general revenues coming from a single level of government;
 - b. Federal-provincial (or federal-territorial) government funded cost sharing arrangements from general revenues, where appropriate;
 - c. Levies on mining industry production;
 - d. Government- industry partnerships;
 - e. Government re-direction of a portion of existing mining tax revenue, and reduction of existing incentives to the mining industry and application of both streams to orphaned/abandoned mine cleanup; and
 - f. Fund interest, fines and administrative penalties imposed on the mining industry, donations by individuals or others, etc.
4. The legislative regime adopted in each jurisdiction should also include establishment of an OAM Cleanup Fund into which general government revenue, industry levies, and other monies also are deposited on an annual basis.
5. The legislation should specify the minimum annual financial appropriation to be made by the government and the period over which that level of appropriation is to continue.
6. The legislation also should specify the annual levy or levy range to be imposed on each mining company, mining industry sector, or classes within a sector as a cost attributable to its activities in the jurisdiction and the period over which that level of contribution is to continue.
7. The legislation should set out the basis for government-industry partnerships and what effect, if any, they will have on the annual levy noted in recommendation 6 and tax and incentive measures noted in recommendation 8.
8. The legislation should amend federal and provincial tax laws to specifically identify the annual amount of mining tax revenue being re-directed to the Fund, and the annual reduction of existing incentives to the mining industry being re-directed to the Fund.
9. The legislation should set out the specific purposes of the funding regime.
10. The legislation should specify the lands and water eligible for cleanup.
11. The legislation should specify the OAM cleanup priorities under which the funding regime will operate.

12. The legislation should identify the administering entity for the funding regime. The authors recommend that this entity be either a department of government or special government agency created by the legislation establishing the funding regime.
13. The legislation should authorize promulgation of rules and regulations addressing matters pertaining to administration of the funding regime.
14. In conjunction with establishment of a funding regime, the process of cleanup of orphaned/abandoned mines should be facilitated through measures designed to eliminate barriers and facilitate community involvement identified by previous studies commissioned by NOAMI.

Plenary Discussion

A participant asked whether the authors of the report considered a sliding scale approach to funding that could promote good mining practices by “punishing” poor performers with a higher levy and “rewarding” good performers with a lower levy. This participant also asked whether it would be possible to make any funding legislation “retroactive” instead of applicable only after the date of proclamation, based on the concern that companies may prepare shutdown faster because they don’t want to pay the levy. Mr. Castrilli indicated that if a company has entered into a site-specific partnership or has made a contribution to the regime, it could have the effect of reducing the levy for that company for that year. If the company made no contributions whatsoever, they would pay the full amount of the levy set out in the statute or the regulations. This provides an incentive for companies to make voluntary contributions (which can come with a tax break). The participant clarified that he would rather see companies rewarded for more substantive environmental progress rather than “buying” a levy reduction. A participant raised the concern that “punishing” poor performers will result in high bureaucratic costs of implementation and ill will between companies.

With regard to the recommendation that the legislative regime adopted in each jurisdiction should include establishment of an OAM Cleanup Fund into which general government revenue, industry levies, and other monies also are deposited, a participant indicated that it will be important to contextualize the situation with respect to the size and scope of mining activities in the past vs. current activities. If some sort of levy structure is being considered, the entire burden of past activities may have to be dealt with by very few companies in jurisdictions where only a few mining companies are currently operating. Mr. Castrilli acknowledged that each jurisdiction might not have a robust mining industry, in which case there may not be enough companies to contribute significantly to a levy and greater public contribution may be required. Funding approaches will vary by jurisdiction, and a levy approach, or levy level, might not be applied uniformly across the country.

A participant asked for clarification of the recommendation that the annual reduction of existing incentives to the mining industry are re-directed to the fund, and whether this includes only subsidies in the form of tax breaks, or redirecting other subsidies as well. Mr. Castrilli suggested that this participant refer to the report for more detail on various types of incentives, and also indicated that the intention in the report was not to be too prescriptive but to leave it to jurisdictions to decide which incentives to make available.

A participant asked whether levies would be applied to the exploration sector as well as the production sector, noting that many classified OAMs are actually abandoned exploration sites and have the fewest requirements for closure and remediation. Mr. Castrilli responded that the examples looked at in the report were mostly driven by production, and no information was found dealing with exploration stage levies. Mr. Castrilli noted that there are other ways to deal with exploration, including more robust financial assurance obligations.

A participant noted that Saskatchewan's funding approach includes an oil and gas environmental fund as well as the federal government on board cleaning up northern uranium mines. This participant encouraged people to look at all funding options, as well different options for past and future sites.

In terms of raising general revenues from provincial and federal partnerships, a participant questioned whether provincial contributions would be directed in their own jurisdictions. Mr. Castrilli noted that money raised in the provinces would be spent in the provinces.

A participant asked whether the research looked at international trade rules, noting that the current softwood lumber dilemma is caused by externalities in the market place, and it seems that OAMs are also an externality that are not factored into market place costs for mining companies. This participant proposed the implementation of a "land reclamation credit" program, similar to the existing pollution credits program, whereby the marketplace deals with the issue, and companies that make smart decisions survive and those that don't fail for good reasons. Mr. Castrilli noted that the research did not explicitly look at international trade rules, but did account for the fact that the mining industry is buffeted by international pressures related to cost of production and the value of metals mined.

Under the model of federal-provincial contributions, it was asked whether a federal contribution would entitle the federal government to impose standards, and whether a particular ratio of federal to provincial contribution would be required for this to be allowed. Mr. Castrilli indicated that in the cases summarized in the report, which are not related to mining, the federal contribution is not greater than 50%. It was also pointed out that, with regard to Giant Mine, the federal government agreed to the GNWT's surface standards. This participant also asked whether there have been any recent advancement in the Good Samaritan legislation in the US, particularly at the state level. Mr. Castrilli noted that there is another federal bill in the US House of Representatives that is explicitly about facilitating "Good Samaritan" cleanups. While there is still interest in removing barriers at the national level in the United States, he was not sure about more recent initiatives at the state level apart from the Commonwealth of Pennsylvania.

1.1.8 Panel Presentations

The panel on funding options consisted of the following individuals:

- Christine Kaszycki, Ontario Ministry of Northern Development and Mines
- Justin Duncan, Sierra Legal Defence Fund
- Paul Fitzgerald, RM Solutions
- Joseph Castrilli, Barrister and Solicitor

Panel members were given 10 minutes each to provide their presentations, followed by a plenary discussion addressing all panelists.

Christine Kaszycki, Ontario Ministry of Northern Development and Mines

Christine Kaszycki provided a government perspective on funding models, including experiences with specific models and a recommendation for a toolkit approach. She discussed a number of general observations based on the information shared at the workshop thus far, noting that:

- The case studies highlighted the unique circumstances or pre-conditions that led to specific funding approaches;
- Liability issues are a key determinant in funding arrangements;
- Administrative process can be burdensome and reduce program effectiveness;
- Predicting or estimating remediation costs is a risky business and inaccuracy often negatively impacts program delivery and credibility; and

- Accrual based accounting can provide funding opportunities in support of a debt reduction mandate, but the inability to adequately assess or account for inherent risk may actually serve to increase debt.

Ms. Kaszycki provided an analysis of four funding models (direct government funding by appropriation; partnerships; production levy; and dedicated revenue stream) and discussed the application, potential instruments, administration, legislative requirements, challenges and opportunities or special considerations associated with each one. Ms. Kaszycki concluded that there are currently a variety of funding approaches being used by governments to address remediation or that could be adapted to address remediation, and raised the question of whether a toolkit should be developed for governments to assist policy makers in determining the best approaches for their specific needs and the unique circumstances of individual mine sites.

Justin Duncan, Sierra Legal Defence Fund

Justin Duncan discussed the polluter pays (P2) principle, specifically the incorporation of the P2 principle in Canadian law and how courts have treated government decisions utilizing it; how broad governments can be in seeking damages for harm to public resources; and whether a legal duty is evolving that requires the Crown to seek damages for or otherwise address pollution issues.

Mr. Duncan noted that, generally, Courts have made it very clear that environmental legislation is to be interpreted in a flexible manner and that governments have broad discretions under environmental legislation to manage public resources and to address pollution, the reason for this being that it is impossible to enumerate all the circumstances in which an environmental regulatory regime may be applicable. He provided examples of actual cases where the P2 principle was successfully applied, and concluded the following"

1. The Courts will provide broad interpretation of legislative regimes aimed at addressing pollution if they are challenged.
2. Decisions to remedy contamination will likely be upheld if the decision maker meets procedural requirements at common law and those set out specifically under the legislation.
3. The Crown is not limited to claim damages to a public resource as an owner would be, and can also claim damages for loss of public benefits residing in the natural resource damaged.
4. The notion that the Crown is trustee of the environment for the public and that failure to act in any given situation is legally challengeable will likely develop further in Canadian law – i.e. governments must turn their attention to how environmentally degrading activities will be addressed.

Paul Fitzgerald, RM Solutions

Paul Fitzgerald discussed risk financing for mine closure liabilities. He presented an environmental risk financing case study of the Iron Mountain Mine, which was declared a Superfund Site in 1984 and was considered the largest source of toxic metals in the US. The responsible party structured an "environmental risk financing" funding approach, the funding source for which was obtained from historical insurance policies of successor companies.

Details of the risk financing program were as follows. A \$144 million, one-time insurance premium was paid at inception. This purchased certain types of insurance including a cost cap insurance policy and commutation fund for future sites costs. An independent contractor agreed to operate the water treatment plant, and use the cost cap insurance to guarantee that their commitment to operate the plant would not have cost overruns.

Key issues in successfully implementing this approach include agreement on a mine closure plan; hiring a qualified remediation contractor and putting in place profit-sharing and performance incentives; highly-rated financial counterparties; a transparent cost structure; and ensuring broad stakeholder support. This approach ensures that remediation costs are capped and that funds are guaranteed, thereby providing enhanced financial assurances and ensuring the risks are managed. In terms of applicability to OAMs, the approach transfers the site and liabilities to a responsible, qualified third party (e.g. remediation contractor, Special Purpose Entity, operator with a business plan (salvage, re-start).

Mr. Fitzgerald noted that historical liability policies do not contain absolute pollution exclusions, and "occurrence" policies in effect during the period of "damage" will respond. In terms of historical liability cover, covered "damages" include remediation and other response costs, and the "owned property" exclusion does not apply to costs incurred to prevent off-site damages. The "occurrence" trigger is continuous, and a pollution exclusion, except for "sudden and accidental" does not bar losses "neither expected nor intended". Much stronger pollution exclusions are put into insurance policies today, and insurance assets are eroding due to insurer and re-insurer insolvency and diminishing policy evidence and proof of damages.

Joseph Castrilli, Barrister and Solicitor

Joseph Castrilli discussed the role of laws requiring financial assurance/security, as well as the role of historical and other insurance policies as possible funding options for OAMs. Sound laws on financial security imposed on existing mining operators may prevent some/all current mining operations from becoming OAMs in the future, but may have some/little/no effect on sites that are already orphaned or abandoned.

In terms of historical insurance policies, insurance coverage at mine sites may or may not be provided by a Comprehensive General Liability Insurance Policy (CGLI) containing a pollution exclusion clause. Where this clause does not exist the insurer may be liable up to the limits of the coverage, but where such a clause does exist it is likely a bar to recovery against the insurer. Modern insurance coverage (environmental liability insurance (ELI)) explicitly covers, not excludes, environmental liability, but usually comes with a high deductible, a high premium, and narrowly focused coverage (which can be broadened at the expense of the insured). From the insurer's perspective, the more pollution coverage in ELI expands, the greater the potential payout and the greater the insurer's potential liability expands.

Mr. Castrilli concluded that while CGLI may or may not be an avenue for recovery against some insurers of sites that became OAMs and ELI may address problems (up to the limits of coverage) in preventing future OAMs, a separate and comprehensive legal/financial regime is still necessary for existing OAMs.

1.1.9 Plenary Discussion

A participant asked Mr. Duncan whether lawyers in court would take a wide or narrow definition of "pollution inclusion", or whether it is limited to chemicals. Mr. Duncan responded that while a broader approach would likely be taken, it would depend to some extent on the case.

A participant voiced concern regarding the lack of punishment for corporate persons who inflict environmental damage and "walk away" from the problem without any repercussions. Mr. Castrilli noted that in the circumstances where a responsible person can be identified that person should be held accountable. However, such a person most likely would not have the financial viability to contribute to remediation in a meaningful way since the sums necessary for clean-up at certain sites are so large. Another participant raised a similar concern, one where a company responsible for one of these sites goes bankrupt, and the company *or* the corporate persons "reinvent" themselves and start business all over

again. Recognizing that corporate law protects the individuals from legal action, and that people make decisions in their work lives that they would never make in their personal lives, this participant questioned the use of criminal negligence provisions to make these people responsible for their actions. Mr. Castrilli noted that there are provisions in certain provincial laws that deal with the issue of past performance of an applicant as a factor in whether a new licence should be allowed, though this is currently limited to past performance in an adjacent area and targets the corporation.

A NOAMI representative noted that in NOAMI's original Terms of Reference, there was a recognition that NOAMI needed to consider a variety of things that were not just related to OAMs but were broad enough in scope to prevent new abandonment. NOAMI has focused its discussion on OAMs because it is a large issue in itself, and a broader scope would make it more difficult to provide recommendations. While other groups are looking at some of these broader issues, the discussion of permit blocking is not outside the scope of NOAMI's mandate.

A comment was made about the cyclical nature of the mining industry, and the fact that a number of OAM properties are being explored because commodity prices are up. This can be seen as creating both complications and opportunities – in terms of a funding options toolkit, participants were asked whether this situation provides opportunities for funding partnerships that could be explored in some jurisdictions. A few participants noted both negative and positive experiences of mining companies redeveloping OAM sites, and it was noted that there is a great deal of opportunity to learn from these experiences and build on new ideas.

Summary Discussion: Assessing Liabilities & Funding Options

The facilitator summarized the key themes that arose during each panel discussion, and opened the floor to general comment and discussion on each. These discussions are summarized below. Note that full consensus was not the objective of these discussions.

Site assessment and characterization

- There is benefit in a structured, disciplined approach to site characterization. Do not “reinvent the wheel” – tried and true often works best. Focus site characterization efforts where decisions need to be made, and let the decision-makers guide the process.
- Community involvement in site assessment and characterization is critical. Communities can be actively involved in site monitoring, and should be provided with training and support to ensure monitoring is done properly (e.g. sampling to fulfil regulatory requirements has to be auditable and defensible). However, the need for community involvement goes beyond community monitoring to also evaluating results and knowing what to do with them. There is a high level of frustration in communities because they cannot evaluate results themselves and do not necessarily trust the retained experts. People at the community level need to be equipped to evaluate results as well as translate that knowledge into next steps. There is power in people having a better understanding of the situation, but more power if they can contribute to improving it as well. Communities should also be involved in the front-end design stage of studies to ensure buy-in and trust.
- NOAMI recognized community involvement in monitoring as a new topic for consideration. It was noted that NOAMI's Community Involvement Task Group commissioned a report on case studies of mines that had successful community involvement. These case studies illustrate why communities felt involved, what worked, and lessons learned. The results are available on a report on NOAMI's website (www.abandoned-mines.org/ci_e.htm).

- While there is consensus on risk assessment as an imprecise tool, this downplays the degree to which it is an inaccurate tool. It is important to look at broader models of assessing health and broader health implications that incorporate cultural, social and spiritual aspects.

Accounting for costs and liabilities

- Yesterday's panel discussion included recommendations on risk-based accounting, recommendations to those jurisdictions that have not moved to accrual accounting and do not have accurate liability estimates with abandoned mines, and discussion around the role of new disclosure rules in preventing future OAMs.
- A good provincial/territorial OAM inventory should be publicly available and searchable via a GIS database. A NOAMI representative indicated that the Information Gathering Task Group has been working on integrating existing databases across the country via a "portal" that also includes a GIS (mapping) component. However, not everyone has access to the Internet or is comfortable with online information, and it is therefore important for information dissemination to be culturally sensitive and specific. NOAMI acknowledged that it should consider appropriate information outreach and equitable access.

Assessing community and health impacts

- There is a need to look at models other than risk assessment that incorporate social and cultural factors. Issues such as consultation and communication should also be dealt with in a broader scope.
- Communicating early and often not only applies to community outreach but also to communicating with regulators. Regulators can provide guidance as well as information on future legislative requirements.

Funding options

- A "toolkit approach" is a good method for ensuring that the most appropriate funding option(s) are thoroughly explored and applied.
- One of the implications of federal funding is it may give the federal government certain rights to establish standards, and may also result in a CEAA trigger. These issues should be factored in when funding requires federal input of dollars.

Broader comments

- Given the range of issues with regard to OAMs, a participant suggested that NOAMI go beyond engaging Mines Ministers to also engaging Ministers of Health and the Environment in various jurisdictions, and a First Ministers conference dealing with OAMs, or where OAMs are on the agenda, might be a good place to start a debate on national OAM standards. A NOAMI representative indicated that while NOAMI has had discussions on remediation standards and can bring the notion forward, it is not in a position to impose national standards and must respect the autonomy of jurisdictions. Another participant noted that national standards for reclamation (as opposed to remediation) would not be appropriate.
- There is a lot of work happening at operating mines on community involvement and vitality, health impacts, etc., and a lot of opportunity for NOAMI to be involved in disseminating information on best practices. The ambitious notion of a best practices report on OAMs was raised. Saskatchewan currently publishes annual reports on best practices in Aboriginal participation in the mining sector, which are publicly available. A NOAMI representative indicated that a best practices workshop is planned for 2006.
- Future panel discussions should include Aboriginal representation.

Other issues for NOAMI's consideration

Participants were asked to comment on the prevention of future OAMs and the implications of "remining", as well as suggest other issues for NOAMI's consideration. Much of the discussion revolved around restricting "bad actors" from getting back into business, improved closure planning and specifically ramping up public involvement, and the role of improved financial assurance practices.

- A participant questioned whether any precedents or checks-and-balances have been set that would limit "bad actors" from obtaining new operating permits. A NOAMI representative indicated that some jurisdictions might begin sharing permitting information. Another participant referred to a number of mechanisms whereby accountability and transparency have been strengthened, such as MMSD and NI-43101, which governs how issuers disclose scientific and technical information about their mineral projects to the public.
- Another important factor in preventing future OAMs is ramping up public involvement in closure planning. While the opportunity exists in Ontario, it is not one that people are aware of or use. Increased public involvement in closure planning will require increased investments in community capacity as well as a restoration of Ministry staffing levels.
- A participant remarked that due to the need for adequate predicting of financial requirements for mine closure and the inherent difficulty therein, regulatory regimes should include a provision for periodic updating of security and closure planning. Participants from a number of jurisdictions including Alberta and Saskatchewan commented that these provisions are already in place. One participant noted that qualified professionals generate liability estimates based on the operator's closure plan. OAMs come about because some situation forces them into financial difficulty. Practices under those conditions create liabilities that are not in original security provisions. The question was posed - Do we want a reasonable security provision, or for all mines to post a security provision based on a worst case scenario? It was suggested that there would be benefit in educating bond companies on the mining sector.
- There was considerable discussion around the role of financial assurance in avoiding future OAMs. There was reference to a survey of financial security practices in Canada. The information obtained will be made available to Mines Ministers so they can see and appreciate what's going on in other jurisdictions and maybe attempt to have some uniformity across the country. Once the survey is complete, NOAMI may recommend to the Mines Ministers that the results be made publicly available.
- In addition, it was noted that NOAMI put together guidelines for legislative review for jurisdictions as they applied to issues with respect to OAMS as well as operating and closed mines. Part of that questioning was around financial assurance and mine closure. A draft report dealing with 9 provinces, 3 territories and the federal government is out for comment among various jurisdictions and will hopefully be finalized by end of this year. An objective of the review is to identify for jurisdictions gaps in their own regulatory framework that may be limiting their ability to dealing with issues around OAMs.
- One participant urged participants to take a broader perspective. The mining industry and government need to move into a more modern era. Some deposits have problems and should never be developed. These properties should not get to first base unless the full life cycle can be dealt with. Feasibility study should address "cradle to grave". Full financial assurance for eventual disclosure might be needed. Some operations will not be able to put up the money - maybe they should not be in the business. Assurance should be negotiated or set by impartial body out of the realm of political pressure.

During the discussion a number of resources were noted and it was proposed that these be posted on the NOAMI web site or that the links could be provided. These included:

- An ICMM study on financial assurance (international comparison);
- Examples of “Good Samaritan Legislation” in the US. Gilles Tremblay indicated that he had copies of the legislation introduced by Mark Udall - one on abandoned hard rock mines and one on facilitating good Samaritan cleanups, introduced for the first time in conjunction with the former in spring 2005; and
- UNEP study on mining for closure. It was suggested that perhaps NOAMI could do a similar thing in Canada.

Closing Remarks

The discussion was wrapped up with closing remarks by Christine Kaszycki, NOAMI Chair, who thanked all of the participants for their contributions to what she considered a very successful workshop. She indicated that the results of the workshop would help determine priorities for NOAMI going forward.

Appendix A: Agenda

NOAMI Workshop on Assessing Liabilities and Funding Options

November 2-3, 2005
Embassy West Hotel and Conference Centre
Ottawa, Ontario

OBJECTIVES:

- To present and discuss approaches for assessing liability and funding options at orphaned/abandoned mines, and share relevant experiences and examples;
- To develop a better understanding of the issues;
- To explore different approaches to dealing with the issues; and
- Identify areas for further work by NOAMI.

ANTICIPATED OUTPUT:

- Report of workshop proceedings capturing information presented, substantive discussion, comments and issues.

TARGET AUDIENCE:

Individuals dealing with issues of assessment, reporting and funding of liabilities including:

- Provincial, Territorial and Federal Government officials;
- Communities of interest;
- Aboriginal peoples;
- NGOs; and
- Private companies.

AGENDA:

November 2	DAY 1
07:30 – 08:30	Registration and Continental Breakfast
08:30 – 08:45	Welcoming Remarks – Christine Kaszycki, NOAMI Chair, Ontario Ministry of Northern Development and Mines Objectives and Approach of Workshop – Michael van Aanhout, Facilitator, Stratos Inc.
08:45 – 09:45	Case Studies <i>Three case studies from jurisdictions high- lighting challenges and best practices related to assessing liabilities and funding options</i>
8:45 – 9:05	▪ Giant Mine – Bill Mitchell, Project Manager
9:05 – 9:25	▪ Britannia Mine – Barry Azevedo, Senior Project Engineer
9:25 – 9:45	▪ Kam Kotia Mine – Chris Hamblin, Ontario Ministry of Northern Development and Mines
09:45 – 10:30	Plenary Discussion on Case Studies
10:30 – 10:45	Health and Coffee Break

November 2	DAY 1 (cont.)
10:45 – 11:30	<p>Panel on Technical Site Assessment</p> <ul style="list-style-type: none"> ▪ Daryl Hockley, SRK Consulting ▪ John Brodie, Brodie Consulting Ltd. ▪ Ann Maest, Buka Environmental ▪ Jim Kuipers, Kuipers and Associates <p><i>Each panel member will be given ten minutes to give a presentation on technical site assessment.</i></p>
11:30 – 12:15	Plenary Discussion on Technical Site Assessment
12:15 – 13:15	Lunch
13:15 – 13:35	<p>Panel on Accounting and Reporting on Liabilities</p> <ul style="list-style-type: none"> ▪ David Gladwin, David Gladwin and Associates ▪ Alan Willis, Alan Willis and Associates <p><i>Each panel member will be given ten minutes to give a presentation on accounting and reporting on liabilities.</i></p>
13:35 – 14:15	Plenary Discussion on Accounting and Reporting on Liabilities
14:15 – 14:30	Health and Coffee Break
14:30 – 15:40	<p>Perspectives on Assessing Community and Health Impacts</p> <ul style="list-style-type: none"> ▪ Ken Reimer, RMC (Introduction) ▪ Christopher Ollson, Jacques Whitford ▪ Tom Hutchinson, Environmental and Resource Studies Program, Trent University ▪ Jim McGeer, Metals and the Environment, Natural Resources Canada ▪ Mark Richardson, Environmental Health Assessment Services, Health Canada ▪ Eric Gillespie, Lawyer for Port Colborne Citizens ▪ Chris Wren, C. Wren and Associates Inc. <p><i>Each panel member will be given ten minutes to give a presentation on assessing community and health impacts.</i></p>
15:40 – 16:45	Plenary Discussion on Assessing Community and Health Impacts
16:45	Close of Day 1
17:00 – 18:30	Informal Reception
November 3	DAY 2
08:00 – 08:30	Continental Breakfast
08:30 – 10:30	Presentation and Discussion on Funding Options Paper – Joseph Castrilli, Barrister and Solicitor
10:30– 10:45	Health and Coffee Break

November 3	DAY 2 (cont.)
10:45 – 11:30	<p>Panel on Funding Options</p> <ul style="list-style-type: none"> ▪ Joseph Castrilli, Barrister and Solicitor ▪ Justin Duncan, Sierra Legal Defence Fund ▪ Paul Fitzgerald, RM Solutions ▪ Christine Kaszycki, Ontario Ministry of Northern Development and Mines <p><i>Each panel member will be given ten minutes to give a presentation on funding options.</i></p>
11:30 – 13:00	Plenary Discussion on Funding Options
13:00 – 14:00	Lunch
14:00 – 15:30	<p>Rollup Discussion on Assessing Liabilities and Funding Options</p> <p><i>Identify gaps, priorities for future work by NOAMI.</i></p>
15:30 – 16:00	Next Steps
16:00 – 16:15	Wrap up and Closing Remarks

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