

NORTHWATCH

September 4th, 2009

Sudbury Soils Study Technical Committee
c/o Dr. Christopher Wren
Sudbury Area Risk Assessment Group
512 Woolwich St. Suite 2
Guelph, ON N1H 3X7

Sent by email <questions@sudburysoilsstudy.com>

Dear Members of the Technical Committee:

**Re. Northwatch Comment on the Ecological Risk Assessment Report
Sudbury Area Risk Assessment, Sudbury Soils Study**

We are pleased to provide our comments on the Ecological Risk Assessment Report for the Sudbury Soils Study, released by the Technical Committee on March 31st, 2009.

Northwatch is a regional coalition of environmental and social organizations in northeastern Ontario. Founded in 1988 with a mandate to promote the protection of the environment and the incorporation of environmental concerns into economic and social decision-making Northwatch's interests in the Sudbury Soils Study processes and outcomes include the use of risk assessment as part of the decision-making process, the ability of the public to participate effectively in the various phases of the research and decision-making processes, the outcomes of the process relative to the protection of human health and the environment, and the options considered and selected for remediation. Northwatch has a similar interest in contaminated soils studies that have been conducted or are underway in Wawa, Cobalt and Virginiatown following Ministry of the Environment sampling programs in those communities several years ago.

Our participation in the Sudbury Soils Study to date has included attendance at information centres and Public Advisory Committee meetings, and review of reports and materials that have been produced as part of the study process, including the Independent Process Observer's quarterly reports, SARA Group newsletters, study results including Volumes 1 and II and related summaries, and meeting reports and other materials made available through the Sudbury Soils Study web site. On November 1st, 2008 we provided comments to the Technical Committee on the Human Health Risk Assessment Report.

Since the release of the Ecological Risk Assessment in March, we have reviewed the Public Advisory Committee report, Independent Process Observers final report, SARA responses to comments on the Human Health Risk Assessment (HHRA), all of the summary documents, and several sections of Volume III and its many appendices. Due to the volume of material and the limited resources available to us, we have not yet completed our review at the time of this September 4th deadline for public comments. We will continue our review, and may provide supplementary comments at a later date.

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Many of the concerns we expressed in our November 2008 submission on Volumes I and II of the Sudbury Soils study are outstanding, and also apply to Volume III, which reports on the ecological risk assessment. As noted above, we have carefully reviewed the response provided to our comments on the HHRA, but for the most part were unable to retire our key concerns.

Our concerns and comments can be grouped under five general categories:

- ? the findings and conclusions of the Sudbury Soils Study (Final Report, January 2008) raise questions about the basis for the subsequent Human Health Risk Assessment
- ? as with the Human Health Risk Assessment, we do not have confidence in the findings and conclusions of the Ecological Risk Assessment and hold the view that further work is required
- ? Volumes I, II and III are related, and there should be a final document prepared and presented that discusses the outcomes of the entire process, the relationships between the three main study areas, and presents the findings of the three study areas in relationship to each other and in relationship to “next steps” and the broader issues of public participation, decision-making, and the all-important questions of response and remediation
- ? the large volume of information to be reviewed and the highly technical nature of much of the material means that meaningful public involvement requires technical support
- ? the decision-making process that is to follow the Sudbury Soils Study process needs to be developed, with clear opportunities and supports for public involvement and clarity around decision-making roles

As noted in the Sudbury Soils Study report Volume I, “risk assessments performed for different assessment purposes will use different methods”¹. Further to our review of the Sudbury Soils Study Volume I we are left to question the purpose of this risk assessment process and the influence a given purpose will have on the selection of methods and approaches. In our view, the purpose of the Sudbury Soils Study should be to determine what action is required to protect human health and the environment in relation to soil contamination from mining and smelting in the Sudbury basin. The Ministry of the Environment has stated that the purpose is to “assess potential human health risks to residents related to exposure to arsenic and metals from soil, water, food, and air (and) potential risks to terrestrial and aquatic wildlife and ecosystem health of the Sudbury area from metals and arsenic in soils”². According to these purposes, the approaches and methods should be conservative and protective, which would not include eliminating the most contaminated sample results and would not include opting for less protective standards.

Ecological Risk Assessment (Volume III, Final Report, March 2009)

For the sake of brevity, our comments are provided section-by-section in point form, as follows:

General

- ? throughout the document, the SARA group (and/or various authors) has argued the limitations of the Sudbury Soils Study so vigorously as to have effectively convinced the reader that it is neither comprehensive nor reliable; this may well be the case, leaving the reader - and the residents of the Sudbury basin - eager for news of when the real studies are going to be undertaken

- ? in various references the distinctions - or commonalities - between regreening, reclaiming, restoration, remediation are blurred; further, none of these terms are included in the glossary
- ? Ministry of the Environment Tables A, B and F are not included in the glossary, despite being referred to without explanation in the text of the reports; understanding these tables is important to being able to understand some sections of the report and the omission from the glossary is problematic

Chapter 1, Introduction

- ? many of Northwatch's concerns noted in our comments of November 2008 with respect to Volumes I and II of the Sudbury Study are outstanding and could be restated in comment on this section, ie the shortlisting of the Chemicals of Concern,
- ? we are concerned that the approach of defining and then responding to four objectives has resulted in an assessment that is too modular and compartmentalized, rather than cohesive and holistic
- ? the definition of what is an "acceptable" risk is key; this definition is not addressed and the residents of the Sudbury basin do not appear to have yet been engaged in making such a determination
- ? the decision to separate out the effects of SO₂ emissions (ie exclude them from the evaluation of ecological risk) should not be listed as a "principal"(sic); while important to acknowledge this as the approach taken, it would be better described as a constraint or limit to the study, rather than as a principle of the study
- ? without the aquatic component, the ecological risk assessment is not, in fact, an ecological risk assessment; "ecological" studies can be generally defined as being studies of the interdependence of living organisms in an environment, and few environments - and certainly the environment of the Sudbury basin - can be described as being an environment without aquatic life systems; while we appreciate that the "problem formulation" of Chapter 5 "lays the foundation for future studies and monitoring", those studies and that monitoring are essential components of the ecological risk assessment that should have been done for this risk assessment

Chapter 2, Problem Formulation

- ? as with the HHRA, the description of the criteria used for selecting the Chemicals of Concern is confusing and contradictory, indicating in the first bullet quite categorically that the parameter must be above the levels in MOE Tables A or B, and then providing what we take to be a qualification in the following text, ie that Table F applies for soils with pH levels below 5.0
- ? as per our comments on the HHRA, we are not convinced that the the criteria applied to identify Contaminants of Concern is appropriate; in particular, we are concerned that application of the criteria that "the parameter must be present across the study area" means that some chemicals which are of concern in some but not all parts of the study area may have been excluded
- ? the selection of "presence" or "survival" as the endpoint for the Valued Ecosystem Components (VECs) is, in our view, overly blunt

Chapter 3 - Evaluating Objective # 1

- ? there is no executive summary for Chapter 3
- ? as per our comment under “General” about the lack of any definitions in the glossary ... the term “recovery” is also not defined; Section 3.1 is one of the sections that would benefit from a set of definition or a discussion of the terms recovery, re-greening, reclaiming, restoring, remediating, etc.
- ? the study identifies three variables / conditions that render the use of literature values as insufficient in addressing Objective # 1 of the Sudbury Soils Study (of evaluating the extent to which the chemicals of concern are preventing the recovery of regionally representative, self-sustaining terrestrial plant communities), yet the Ecological Risk Assessment largely relies on the literature for values, in the absence of sufficient local information
- ? 18 test sites seems like a low number of test sites, given the extent of the impacted area and the variety of site conditions throughout that impacted area; we found no explanation or rationale for selecting 22 sites (i.e. versus a much larger number); we also question the placement of the sites, and the absence of any test sites in what could generally be described as the “common” area between the three stacks, i.e. within the area that is ringed by test sites CC-03, CC-01, CC-02, FB-05, FB-01, CON-05, CON-03, CON-06, CON-07, CON-08
- ? of even greater concern is the extremely low number of reference sites, and their placement; to have only three reference sites is questionable, to have all three reference sites in close proximity to the stacks is even more questionable, and to have selected test sites that are variously described as being “background level”³ or “near or below MOE Table “F” background level criteria”⁴ or “below the MOE ‘Table F’ background criteria levels”⁵ creates uncertainty about the quality of these sites and their suitability as reference sites; in our view, there should have been a much larger number of reference sites, from a larger cross-section of the same ecological site district⁶
- ? it’s not clear whether the effort to find test sites with a pH between 4 and 5 means that all of the sites were between 4 and 5, or just some of them; if it is the former, then the suite of test sites could not be representative of the Sudbury environment unless all soils in the area were between 4 and 5, which they clearly are not; Tables 3.13 through 3.16⁷ appear to indicate that only 3 of the 22 sites actually had pH between 4 and 5, so perhaps this is a case of poor writing rather than poor judgement
- ? the ERA incorrectly classifies the study area as boreal forest⁸; the southern portions of the Sudbury Forest⁹, which includes the study area, are Great Lakes St. Lawrence Forest, with the northern portions being in the transitional zone between the Great Lakes St. Lawrence and boreal forest regions; the Great Lakes St. Lawrence Forest is ecologically quite different from the boreal forest, and is generally more biologically diverse
- ? we were surprised to learn that two of the test sites were not accessible to the SARA group for data collection because they were on Vale Inco or Xstrata Nickel property¹⁰; this seems to be a limitation that should have been made entirely avoidable with communication and cooperation
- ? by appearances, we note that of the test sites for which a one description and picture were provided¹¹, all but one were treed sites; the study area has a greater diversity of site conditions (including wetlands, fens, bogs, barrens, grasslands) and it is not clear why this diversity is not represented in the selection of test sites
- ? in our view, the conclusion that “the concentration of COC have in the paste impacted the plant communities, and are likely continuing to impede the recovery of a self-sustaining forest

ecosystem in the Sudbury region”¹² is an incredible understatement when contrasted to the actual findings¹³

Chapter 4 - Evaluating Objectives # 2 and #3

- ? a primary concern / question with respect to the exposure assessment is the degree to which estimates are based on real information about the study area versus extrapolations based on information from other sources or other locales and other conditions which may or may not be applicable or appropriate; while estimates for wildlife exposure are described as being based on actual measured values in the Sudbury area, several other estimates were “based on the literature because Sudbury-specific data were not available”;¹⁴
- ? similarly, the ERA report describes the effects assessment as being largely based on literature reviews and data previously collected for other purposes, rather than data collected for the purpose of conducting a effects assessment for the Sudbury Soils Study Ecological Risk Assessment¹⁵
- ? overall, while extremely complex to read, the report creates an impression that repeated efforts were made to simplify the study and to approximate instead of actually estimate, rendering the validity of the study as questionable
- ? we note with interest that the meadow vole is the VEC that appears to be the most severely impacted¹⁶, and it is also the VEC with the smallest range and therefore the greatest exposure
- ? while the report contents might not irrefutably establish that there is ongoing harm from the Chemicals of Concern and their historic and continued release into the environment, nor does the report establish that this is not the case; as the saying goes “Absence of evidence is not evidence of absence”

Chapter 5 - Aquatic Problem Formulation

- ? the notion that lakes or rivers would be eliminated from a future aquatic ecological risk assessment¹⁷ because it had been impacted by mine effluent in addition to smelter emissions should be rejected; while we would agree that some effort should be made to determine which impacts are particular to or increased by the receipt of mine effluent, we strongly disagree that the receipt of mine effluent - presumably from the same mining operations that feed the smelters - would eliminate a lake or river from a future aquatic assessment
- ? this chapter is a cause of frustration, namely because it identifies numerous and significant gaps in data or information, and then comes to conclusions regardless of those gaps
- ? the shortlist of lakes that “may be considered for inclusion in a future aquatic ERA includes only five of the 300 lakes with the City of Greater Sudbury, representing only two watersheds; the rationale for including such a list could only be that it assisted the authors in completing a check-list of required items

Chapter 6 - Conclusions and Recommendations

- ? the term “risk management” is not defined in the Volume III glossary; as per our earlier comments about several other definitions not being in the glossary, this handicaps the reader - particularly those who do not work in this field on a professional basis - from fully understanding the author’s meaning

- ? substituting the term “risk management” with a term such as remediation or restoration would provide a clearer and more positive understanding
- ? we appreciate the declaration in the second paragraph of this chapter that “this chapter is not intended to provide risk management strategies, or to definitively identify where risk management is required” but are of the view that the decision-making process and the decision-making body for these crucial next steps should be clearly identified, and they are not
- ? interestingly, the definition of what “recovery” does not mean is provided, but a definition of what recovery does mean is absent
- ? we agree with the summary that there are numerous sources of uncertainty in the risk models and information sets for both Objectives 2 and 3¹⁸
- ? we agree with the study conclusion that ecosystem function has been and continues to remain impaired at many sites throughout the study area¹⁹
- ? while we agree that the degree to which a healthy ecosystem can be considered impaired can be determined by comparing its key structural and functional components and its processes to those of a healthy system, we are very strongly of the view that the comparisons must be done with a larger number of reference sites, and that at least the majority of reference sites must be more definitively outside the range of the same detrimental influences that have impaired the negatively impacted sites; in other words, there need to be more reference sites, and they need to be more broadly dispersed, presumably throughout eco site district 5E3
- ? the Volume III report in general, and Section 6 in particular, suffer from a lack of references; for example, the statement that “a self-sustaining system tends to be composed of 50 plant species or more” is extremely simplistic and potentially erroneous, but without a reference to place it in context and better understand the spatial scale etc. it is difficult to evaluate
- ? similarly to the previous comment, Table 6.5 lacks a reference, a spatial scale and geographic context
- ? we agree with the SARA group recommendations that risk management objectives be developed, and that stakeholders be consulted during the risk management process; we would further recommend that the engagement process include opportunities for members of the public and community organizations and agencies to engage at varying levels of detail and complexity, through a process which is iterative and inclusive
- ? we agree with the SARA group recommendation that the 22 sites established during the Objective 1 studies be retained for long-term monitoring studies; as per our earlier comments, additional reference sites should be added, and there should be consideration of the need for additional study sites, particularly for the aquatic ecosystems
- ? we agree with the SARA group recommendation that any future risk management related activities - including additional monitoring - include wildlife habitat; in addition, future work should look not just at the continued presence of a wildlife population, but also its vitality
- ? we agree with the ERA conclusion that “although there are uncertainties and limitations inherent in the data used for this ERA, it can be concluded that ecological receptors, particularly the plant community, continue to be at risk in the study area...”

Public Involvement and Decision-Making

In our submission of November 2008 on the Human Health Risk Assessment we provided comments on the public role and involvement in the Sudbury Soils Study up to that point in time. Those comments

stand The following comments on what should follow the Sudbury Soils Study were first included in our November 2008 submission, and are being restated here, given their continued relevance and the lack of action in this sphere to date. .

In the first paragraph in the first volume of the first study we are told that the various studies “provide the basis for future decisions on the management of potential risks identified in the Sudbury study area”²⁰, but in the thousands of pages that follow we find no discussion of that decision-making process, the opportunity for the public to be involved in that decision-making process, or the role and responsibilities of the Ministry of the Environment as the obvious decision-maker, given their regulatory responsibilities.

While the following comments may not be deemed “relevant” to the review of the Ecological Risk Assessment by the Technical Committee, in our view there is a clear and pressing need for:

- ? *a clearly defined review exercise to follow the Sudbury Soils Study process*
- ? *clear opportunities and supports for public involvement*
- ? *clarity around decision-making roles with respect to requirements for future remediation and mitigation, and*
- ? *confirmation by the Ministry of the Environment that they recognize their role as the lead decision-maker given their statutory responsibilities with respect to environmental protection, with the Ministries of Health and Labour, as well as federal agencies, also having certain responsibilities*

The Ministry of the Environment should now develop a proposed approach that addresses the above noted points, consult with the public and other decision-makers on its appropriateness, and provide a clear outline of the decision-making process(es) that is to follow the conclusion of the Sudbury Soils Study, taking into account the findings of the three volumes of the Sudbury Soils Study, public and other comments received in review of these studies, and other matters of related concerns.

Our own recommendations for next steps are not inconsistent with the SARA group recommendations, which also identify a need for further work to develop risk management objectives and then strategies, and recommend stakeholder involvement. In addition, the next phase of investigation must involve more “real” data from the Sudbury area, and less extrapolations from the scientific literature and studies from other locations. Any exercise that relies on the use of models is by its nature going to be dealing with high levels of variables and uncertainties; using “real” data from relevant sources is essential if the results are to have any credibility or usefulness. In addition, the precautionary principle must be employed.

The precautionary principle²¹ directs that precautionary measures be taken, or an activity avoided, if the activity or a substance poses a threat to environmental or human health. The precautionary principle does not demand scientific certainty of the anticipated damage, but rather favours erring on the side of caution, and so on the side of health. In the case of the soils in the Sudbury basin that have been contaminated by a century of smelter emissions, this means not delaying any available action to reduce continued emissions and begin remediation of damages to date.

While we are disappointed that the public comment period for the ERA was wholly devoid of any presentations or workshops beyond the initial presentation on the release date, we are of the view that such activities would still be useful, and are essential in building a public understanding of the issues at hand and the decisions that are still to be made.

Conclusion

As indicated above, we agree with the Ecological Risk Assessment conclusion that “although there are uncertainties and limitations inherent in the data used for this ERA, it can be concluded that ecological receptors, particularly the plant community, continue to be at risk in the study area...” While we have many areas of disagreement with decisions taken or interpretations made throughout the study process, on this final and fundamental point we agree.

In closing, we remain committed to participating in future discussions with respect to the contamination of the Sudbury basin from mining operations, both ongoing and over the last century. . We look forward to receiving a response to these comments, and to future engagement with the Ministry of the Environment, as the responsible authority, with respect to next steps in reducing the release of contaminants from mining operations and remediating the harm from releases to date.

Sincerely,

A handwritten signature in black ink, appearing to read 'Brennain Lloyd', is enclosed in a thin black rectangular border.

Brennain Lloyd
Northwatch

ENDNOTES

- 1.Sudbury Areas Risk Assessment, Volume I, Chapter 8-1
- 2.<http://www.ene.gov.on.ca/envision/sudbury/soilsstudybg.htm>
- 3.ERA, Page 3-12
- 4.ERA, page 3-5
- 5.ERA, page 3-210
- 6.see map of site districts at <http://www.on.ec.gc.ca/wildlife/ecogifts/images/biog-fig8-lrg-e.gif>
- 7.ERA, page 3-37,3-38
- 8.ERA, page 3-85
- 9.www.sudburyforest.com
- 10.ERA, page 3-100
- 11.ERA pages 3-103 through 3-121
- 12.ERA, page
- 13.For example, results as depicted in Tables 3.27 or Table 3.30 or Table 3.32
- 14.ERA page 4-i
- 15.ERA, page 4-i
- 16.ERA, page 4-130
- 17.ERA, page 5-iii
- 18.ERA page 6-17
- 19.ERA page 6-23, section 6.4.1
20. Sudbury Areas Risk Assessment, Volume I, Executive Summary, January 2008, EC-i
21. "It's About Our Health! Towards Pollution Prevention - CEPA Revisited", Report of the House of Commons Standing Committee on Environment and Sustainable Development, June 1995