



Saskatchewan
Environmental
Society

Response to the CNSC staff submission “Regulatory Oversight Report for Uranium Mines, Mills, Historic and Decommissioned Sites in Canada: 2015” and Areva’s Cluff Lake 2015 Annual Report

This response is submitted to the Canadian Nuclear Safety Commission (CNSC) on behalf of the **Saskatchewan Environmental Society** (SES) and the **Athabasca Chipewyan First Nation** (ACFN).

14th November 2016

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Introduction

The Saskatchewan Environmental Society (SES) appreciates the opportunity to review and comment on the Regulatory Oversight Report and to collaborate with the Athabasca Chipewyan First Nation (ACFN) in responding to the Cluff Lake 2015 Annual Report.

The Oversight Report provides an interesting opportunity to consider a number of aspects of the CNSC's regulatory role and its relationships with its licensees and the public.

The mandate of the CNSC is to *regulate the use of nuclear energy and materials to protect health, safety, security and the environment; to implement Canada's international commitments on the peaceful use of nuclear energy; and to disseminate objective scientific, technical and regulatory information to the public*. The CNSC is not responsible for promoting or facilitating the development of the nuclear and uranium industries. Its clients are the Canadian public and Canada's land, air and water. It is important that these regulatory and promotional roles are always seen to be clearly separated, so in reviewing the Oversight Report, we look for that clarity. We take the opportunity to learn about the performance of licensees as perceived by CNSC staff, where possible we compare that perception with other sources of information including the reports from the licensees themselves, and we consider the ways in which the CNSC reacts to the information that comes to their attention.

Our review of the Report led us delve into other CNSC documents that show us that the Commission is going through some useful self-questioning about the ways in which it interprets its mandate.

The CNSC Discussion Paper DIS-16-03 on Radioactive Waste Management and Decommissioning (May 2016) contains relevant commentary on decommissioning and on remediation of abandoned mine/mill sites, and recognizes the need to ask important policy and process questions. That paper describes areas where clarity could be improved. It discusses the importance of record-keeping, and asks for public input on questions about how to handle the release of a site from CNSC regulation, an issue that has long been of significant concern to us. It is indeed encouraging to see that this questioning is going on, and it explains the difficulty that we experience now in evaluating the effectiveness of the regulatory system. There is a lack of clarity about our collective expectations, a lack of consensus about values and priorities, which make the role of the regulator somewhat unclear.

Our main focus in this response is the historic and decommissioned mine and mill sites in Saskatchewan. In particular, we review the Cluff Lake 2015 report, where we include a perspective from the ACFN. We also comment briefly on operating sites at Key Lake and Rabbit Lake. But before getting to specifics of individual sites, there are some general observations to be noted.

General Comments

Definition of vague terms:

Terms such as “As low as reasonably achievable”, “feasible”, “whenever possible” are too subjective to be very useful in determining whether an acceptable result has been achieved. Sometimes objectives are expressed as “keeping contaminant levels below regulatory limits and as low as reasonably achievable”, indicating that one should not just stop trying to do more once regulatory objectives have been achieved, but should continue to aim to do better. But how much better, and how hard one is expected to try, is unclear. That this is more widely problematic is demonstrated by the comment in the International Commission on Radiological Protection Publication 111 that “exposures below the reference level should not be ignored; they should also be assessed to ascertain whether protection is optimised”.

It would be good to see some discussion of how the CNSC staff decide and define what is reasonably achievable. How can we clarify our expectations – how might we arrive at consensus on the relative importance of the various priorities involved, rather than assuming that they are self-evident? In the absence of such clarity and consensus, it is difficult to arrive at an evaluation of satisfactory performance.

Recommendation: That CNSC undertake a consultative process to clarify a methodology for establishing performance expectations and for evaluating success.

Avoidance of very long-term considerations:

At several of the sites we have situations where there is the potential for contaminants to become mobile or to reach surface waters many decades or even centuries into the future. Obviously it is very difficult to make specific plans for unknown situations in the distant future, so it becomes important that responsibility for doing this remain with an agency that is well equipped and mandated for this task.

In planning decommissioning and remediation, there is a lot of dependence on a dubious assumption that if a situation appears to have been stable for 10 or 15 years, it will almost surely continue to do so in perpetuity. This leads to a readiness to transfer responsibility from CNSC to a level of government that has far less expertise and resources available to monitor and maintain such sites. We are concerned that the CNSC seems to feel that its responsibility for safeguarding the long-term health of the environment will be satisfied by handing it over to a provincial government with less resources and expertise, one that will then have to deal with the problem of responsible management over an indefinite future.

CNSC's Discussion Paper on Decommissioning recognizes the need for greater clarity in dealing with the challenge of long-term care and maintenance of remediated sites, and

suggests that requirements for transfer of residual CNSC regulatory responsibility to an institutional control agency should be defined. The Discussion Paper also refers to considering alternative processes to a 'licence to abandon' while continuing to provide a clear end point for CNSC regulatory oversight. At some of the sites covered in the current Oversight Report it is doubtful that a clear end-point can be provided.

Recommendation: That CNSC acknowledge its on-going responsibility for protecting health, safety, security and the environment in perpetuity, including during the period after sites are transferred to provincial regulatory care; and that CNSC describe how it will fulfill that responsibility for an indefinite future.

Recommendation: That when a decommissioned or remediated site is turned over to the Province, the federal government should a) retain joint responsibility with the Province for ensuring that the site remains in a safe and stable condition, and b) should retain joint financial responsibility for addressing the issues that arise on the site in the centuries ahead.

Inspections

As was recently pointed out by the federal Commissioner of the Environment and Sustainable Development in an audit of inspection of nuclear power stations by CNSC, site inspections are one of the key verification tools the CNSC uses. In that Commissioner's report some areas were identified where change is needed.

This raises some questions about whether similar concerns might exist in the inspection of mine/mill sites. For example, the Oversight Report does not describe the nature or specific objectives of the CNSC site inspections, exactly what an inspector is looking for, or how they document their findings. Does each site inspection start with a specific list of questions? Are regulatory activities based on a rigorous, well-documented system of risk analysis? Is the basis for assigning ratings for regulatory performance clear and unambiguous? Generally, the current Oversight Report simply tells us that an inspection took place, that a licensee was performing adequately, and perhaps that a discussion took place.

It would be interesting to know just what an inspection consists of, how the objectives for a specific inspection are created, and how the effectiveness of the inspection process is evaluated.

Recommendation: That the CNSC review its system of inspection of mine/mill sites to provide more clarity for the public about the objectives, the nature, and the value of inspection procedures.

Satisfactory, or fully satisfactory?

The Oversight Report uses several labels to indicate CNSC staff's level of satisfaction with licensees' performance. In all but one situation performance is designated as "SA" (satisfactory). There is also a possible designation of "FS" (fully satisfactory), which requires that "*Safety and control measures implemented by the licensee are highly effective. In addition, compliance with regulatory requirements is fully satisfactory, and compliance within the safety and control area or specific area exceeds requirements and Canadian Nuclear Safety Commission (CNSC) expectations. Overall, compliance is stable or improving, and any problems or issues that arise are promptly addressed.*" (Appendix C of Oversight Report).

Should we be concerned that apparently none of the site performances achieved this level of satisfaction?

Recommendation: That CNSC comment on the failure of all projects to achieve the Fully Satisfactory rating and explain what would have been required in specific cases to merit this rating.

The issue of exports

The CNSC's mandate includes a requirement "*to implement Canada's international commitments on the peaceful use of nuclear energy*". The Saskatchewan Environmental Society has previously commented on the Commission's reluctance to discuss, during licensing and EA reviews for uranium mines, the fact that uranium from Saskatchewan's mines is exported to a country that has not signed the Nuclear Non-Proliferation Treaty, and that we largely lose control of the use of our exports once they leave Canada.

This topic is seen as outside the scope of the current Oversight Report, but is addressed in the recently published REGDOC-2.13.2 Import and Export. This document points out that bilateral Nuclear Co-operation Agreements form the basis of much of Canada's uranium export policy, with reliance on the IAEA to monitor the use of nuclear materials world-wide. However, bilateral safeguard agreements are more difficult to enforce than a ratified international agreement. It's difficult for the Canadian public to know how effective these controls are, hence the repeated raising of the issue during licensing and EA processes that regulate the production of nuclear materials.

Recommendation: That CNSC convene a public forum on Canada's role and responsibilities as a uranium supplier in reducing the risk of the use of nuclear weapons world-wide.

CNSC Regulatory Framework Plan 2016-2021

CNSC is apparently in the early stages of an ambitious review and updating of its entire regulatory framework, including legislation, regulation and documentation. It should be anticipated that some of the issues that we raise here will be examined as this review process is undertaken. For example, it appears that at this point (Q3 of 2016-2017) consultation is currently taking place on Targeted Amendments to Uranium Mines and Mills Regulations. CNSC is at the analysis/development stage on review of Import and Export Control Regulations, on a Licence Application Guide for Uranium Mines and Mills, on a Process for Establishing Release Limits and Action Levels, on Management of Uranium Mine Waste Rock and Mill Tailings and on Decommissioning Planning. This Framework Plan should provide an opportunity to clarify expectations of the regulatory system and to make more straightforward the task of evaluating its effectiveness.

Comments on Specific Sites

BEAVERLODGE SITE

In 2013 the SES submitted comments on the re-licensing proposal for the historic Beaverlodge site. In the current Oversight Report we looked for some indication of changes that resulted from that re-licensing review.

We note that CNSC now reports that Cameco anticipates applying to release further portions of the site to the ICP following “comprehensive review and verification by the province and CNSC in 2015 and 2016.”

This raises a rather important question about the decision-making process regarding transfer of responsibility. We wonder what is the nature and status of that comprehensive review. In the past we have been assured that transfers would not take place unless both the province and the federal regulator were satisfied that the transferred site could, and would be safely managed in perpetuity. We do not know what process takes place at either level to judge whether a transfer is appropriate and in the public interest. How does either level evaluate the capacity and readiness of the province to assume the responsibility for the indefinite future? Is there publicly accessible documentation of the decision-making process? Is there a clear mechanism for the federal regulator to step in after transfer if there is an indication that the province is unable to carry out the required monitoring and maintenance at some future date?

These questions are particularly relevant for a site such as the general Beaverlodge area which will remain contaminated after Cameco's present remediation plan is completed. “The public has been advised of the lakes and creeks in the area where no fish should be consumed. The public has also been advised of those water bodies where fish consumption should be limited due to elevated selenium levels as a result of past mining and milling

activities at Beaverlodge site and milling at the nearby Lorado site", comments CNSC in the Oversight Report. Re-naming the Precautionary Fish Advisory as a "Healthy Fish Consumption Guideline" does not remove the fact that there are still long-term problems with contaminant levels in fish and that there will continue to be a need to control human behaviour with respect to land use and food sourcing, a need that is not solved by just posting signs. We have not seen adequate discussion of how this will be achieved.

In our comments on the re-licensing proposal we had made some suggestions, including one concerning potential additional remedial options that did not appear to have been considered. We questioned whether the impacts of future climate change had been sufficiently taken into account in planning the remediation. We claimed that the site-specific objectives lacked ambition.

We had also raised the question of responsibility for remediation of the downstream regions that are officially beyond the scope of the current project.

We expressed the need for a regional approach to the clean-up of the Beaverlodge Lake area. Cameco's plans for the old mine/mill sites in the Ace Lake and Fulton Creek Watersheds do not deal with the downstream contamination that these sites have contributed to Beaverlodge Lake and beyond. It is clear that the present sad condition of that lake is due largely to the impact of the sites which are now managed by Cameco, but the contribution of other mine/mill sites close to the lake cannot be ignored. The reality is that when the current remediation work, as proposed, is completed, we will still be left with four important northern watersheds that are contaminated with uranium and selenium. That is surely an unacceptable legacy to pass on to the next generation of northern Saskatchewan residents.

We have proposed that, because Cameco's current responsibilities do not include Beaverlodge Lake, being outside of the actual mine/mill sites, and because other legacy sites have contributed to the contamination in Beaverlodge Lake, a regional remediation plan for the area is needed. The federal government should have the major financial responsibility for such a planning and remediation process, given that the major source of the contamination was a federal crown corporation.

Recommendation: That CNSC clarify the process for 'comprehensive review and verification' that precedes a decision to transfer a site to the ICP.

Recommendation: That CNSC assume a leadership role in ensuring that a regional remediation of the Beaverlodge Lake area take place.

Recommendation: That CNSC deny any further transfers of Beaverlodge property to Institutional Control until the regional contamination issues caused by Cameco's corporate predecessor – Eldorado Nuclear – are properly addressed.

Recommendation: That CNSC require a study of the options for management of human behaviour, including controlling fish consumption and land use, over very long time periods.

LORADO SITE

Overall, the Oversight Report indicates satisfaction with the performance of Saskatchewan Research Council (SRC) at Lorado. The Report notes that CNSC is currently reviewing SRC's plans for the transition to long-term monitoring and that the aim is to transfer the site to Saskatchewan's Institutional Control Program (ICP) after 10 or 15 years.

In our earlier (2014) comments on the Lorado site Environmental Impact Study (EIS), the SES had raised a question about the potential for using a Permeable Reactive Barrier (PRB) at the Nero Lake berm in order to reduce the flow of contaminants into Beaverlodge Lake. We have not seen a substantive explanation of why this was not more seriously pursued.

SES had also questioned the decision to treat the Nero Lake water in situ rather than off-site, given that the in situ approach is going to leave the contaminants in the lake sediment in perpetuity.

Also we would have expected to see more analysis of the potential impact of very intense precipitation on the covered tailings. The EIS had referred to the potential for upward percolation through the tailings and had noted that regular inspections will be required to assess the cover's integrity, and that long-term monitoring and maintenance programs will likely be required *indefinitely*. We will at some point need to know how that is to be accomplished in an uncertain future. However, given that the CNSC did not require SRC to address these issues more substantively at this time, we acknowledge that SRC has met its current obligations. The major remaining questions are about the planning for long-term monitoring and maintenance of the site, and we realise that this is still being developed.

As noted above in the section on the Beaverlodge site, SES suggests the need for a regional remediation plan to address the downstream issues to which Lorado has contributed. Because this was not included as part of the requirements for the Lorado remediation, the apparent lack of progress on addressing this suggestion is not commented on in the Oversight Report. However, we would include it in CNSC's oversight responsibilities.

Recommendation: that CNSC ensure that the Lorado site is not transferred to Saskatchewan's regulatory care without a public review of a plan to ensure on-going maintenance of the site for an indefinite future.

Recommendation: that CNSC assume a leadership role in ensuring that a regional remediation of the Beaverlodge Lake area take place.

GUNNAR SITE

The Oversight Report provides a brief description of the management and planning for remediation of the Gunnar site and reports satisfaction with SRC's performance. The Saskatchewan Environmental Society agrees with this assessment.

The CNSC's approach to approval and regulation at this site is very interesting, in that it is broken down into a number of sequential phases. The three basic phases (one with two parts) represent first, background studies and development of the remediation concept, then development of detailed plans for remediation of a) the tailings, and then b) other site aspects, and finally post-remediation monitoring and maintenance. There are thus 4 logically sequenced opportunities to review and comment on the remediation process. This makes it possible to avoid some of the guess-work and ambiguities that create concerns in some other approval processes. There is public involvement at each stage, leading to a better understanding of the issues involved as the work progresses. Perhaps this approach could be used in other regulatory planning situations.

We note in the Oversight Report that the expectation is that the site will be ready to transfer to ICP in 2035. This date is more realistic than the previous estimate of 2026 as a transfer date that was suggested during the review of the tailings remediation plan.

As with other sites, SES's major concerns are around long-term monitoring and maintenance, especially after the CNSC's role as regulator ends. In our submissions during the Phase 2 reviews we had commented on questions about the long-term stability of the tailings cover, the ecological impact of radium levels in Catchment 3, and the fact that the remediation plan was designed for only a 100-year lifetime. We suggested that SRC be asked how the plan would change if it were designed for 500 years. We asked about long-term record-keeping issues. We would still like to see these questions addressed.

We very much appreciated the identification by SRC of potential failure modes, and noted that the analyses for these were still incomplete by the time of the 'other site aspects' hearing. We look forward to the opportunity to participate in a review of Phase 3 when we expect these longer-term issues to be addressed.

Recommendation: That CNSC consider the option of designing more approval processes using a phased approach.

Recommendation: That CNSC require SRC to describe a 500-year design plan for remediation of the Gunnar site.

RABBIT LAKE

In April 2016 Cameco announced suspension of production at Rabbit Lake and the transition to a care and maintenance program.

The Oversight Report describes progress made in stabilizing or reducing the contaminant flow since the issuing of the 10-year licence in 2013. During the review leading up to the licence approval, SES had opposed a 10-year licence as several issues appeared to have been inadequately addressed. We had commented on the unacceptable level of contaminant releases, the very high level of COPCs in the Link Lakes, the B-zone water quality, the failure to appoint an Environmental Management Committee as recommended by the FEARO Panel that reviewed Cameco's application to develop the Eagle Point and the A- and D- Zone deposits in 1993, and the non-recognition of potential impacts of future increases in the severity of precipitation events. We felt that up to that point there had been a lack of ambition on Cameco's part toward environmental responsibility, as well as a lack of encouragement from the regulator, and that a shorter term licence would give them both an opportunity to demonstrate more serious commitment. Now that production has ceased, both Cameco and CNSC will be able to focus more resolutely on improving the environmental condition of the site, a condition that currently reflects past inadequate attention.

The Oversight Report informs us that the mill effluent in 2015 contained 52 µg/L of uranium (Table 2.7). This is over 3 times the officially accepted surface water quality objective level of 15 µg/L. However, on p. 29/214 CNSC notes that it is using 0.1 mg/L (i.e. 100 µg/L) rather than 15 µg/L as an interim objective for uranium mine and mill facilities, which allows them to rate Cameco's performance as satisfactory. This is inconsistent with a statement in Areva's Cluff Lake Follow-up Program v3 (Sept, 2015) that "Due to the continued uncertainty associated with the potential influence of water hardness as a modifying factor of uranium toxicity, the uranium water quality guideline of 15 µg/L was used as a conservative screening tool in the updated environmental risk assessment presented in the Cluff Lake Project Environmental Performance." (Technical Information Document EP TID, Volume 2, AREVA 2015d).

This would seem to indicate a need for CNSC to review and clarify its licence requirements. Allowing significantly higher levels of contaminants in effluent than in surface water would seem to reflect a policy of "solution by dilution" and to ignore the cumulative impact on the receiving water body. This issue now becomes more or less irrelevant at Rabbit Lake now that the mill has ceased operation, but it does raise questions about releases at other active mill sites.

In 2015, CNSC tells us, Rabbit Lake implemented six action plans with a focus on a reduction of radiation exposures, regulatory compliance, and achieving overall site targets. This is all good! – But one wonders why such planning was not required many years ago.

We are pleased to see that guidelines have been established for designing corrective actions to address elevated radon progeny in underground working areas "whenever possible". Again, it is somewhat ironic that this was not required much earlier while mining was actually taking place. The ambiguity of the term "whenever possible" is also noted.

We note that there is still no plan for remediation of the B-zone pit, but that the CNSC will review such a plan when it is submitted. I do not recall any Environmental Impact Study

being published for a decommissioning plan for the Rabbit Lake site; presumably at some point we will see a plan for the B-zone as part of such a study. CNSC reports that the Link Lakes are described as “stable”. Stability presumably implies that the serious contamination in the sediment is unchanged and that risk still exists that contaminants will eventually re-enter the water column and become bioavailable.

KEY LAKE

CNSC expresses satisfaction with the licensee's performance at Key Lake in all the Safety and Control Areas on which they focussed, while noting the recurring problems with a new calciner. While follow-up actions by Cameco and CNSC seem appropriate, we are not told what, if any, problems might be anticipated as a result of the continuing reliance on the old calciner, given that the new one is not expected to be available for the foreseeable future. The Environmental Protection Program apparently met all regulatory requirements.

A confusing situation in CNSC's process developed in 2013. Key Lake's operating licence expired on October 31st 2013. A review of Cameco's request for renewal of the licence led to its approval and the issuance of a new licence on November 1st 2013. At the same time, a joint federal/provincial Environmental Assessment process was under way regarding a proposed extension of the Key Lake project, which included significant changes to the Deilman Tailings Facility. This extension was not considered in the licensing process although it would take place during the period covered by the new licence. Following a public hearing in July 2014, CNSC approved the extension in August 2014. We note that Saskatchewan had already approved it in May 2014, before the federal hearing had taken place.

This sequence of events made it impossible for problems identified through the EA review to be addressed at the licensing level, a process that generally provides for a sequential level of control.

One of our major concerns with the Environmental Assessment of the Key Lake extension related to the proposal to allow the tailings level in the Deilman Pit to be raised to a level where tailings would come in contact with the sandstone upper layer of the pit, thus increasing the likelihood of contaminants leaching into the surrounding area. We still feel that this concern has not been adequately addressed by CNSC.

Recommendation: That CNSC avoid creating situations where a project is licensed before it has received environmental approval.

Recommendation: That the acceptable level of tailings in the Deilman Pit be adjusted downwards to avoid the tailings coming in contact with sandstone.

CLUFF LAKE SITE

Having reviewed both the Areva document titled "Cluff Lake 2015 Annual Report" (258 pages) and the 10-page section (Appendix J) of the CNSC Regulatory Oversight document titled "Cluff Lake Mid-term Update, 2009-2015", overall we are impressed with the thoroughness of Areva's work in evaluating the site condition and the effects of the decommissioning work done to date and also in identifying remaining issues to be addressed. Our focus will be mainly on the latter and on CNSC's responses to these issues. We believe that CNSC may be under-estimating the need for long-term monitoring and maintenance that will be required and that hopes of transferring the site to the province's ICP in the foreseeable future are over-optimistic.

Acceptability of uranium levels

Until recently Areva assumed, and CNSC accepted, that higher levels of uranium in surface waters were acceptable if the water was relatively hard. As a result, Decommissioning Objectives were accepted that were much higher than the current Saskatchewan Surface Water Quality Objectives (SSWQO) of 15 µg/L.

In their 2003 Comprehensive Study Report (CSR), Areva, in commenting on the Island Lake uranium level having increased to 248 µg/L, had suggested that the hardness factor made this less of a problem. More recent versions of Areva's CSR recognise that the hardness argument is questionable, and the Canadian Council of Ministers of Environment (CCME) approved level of 15 µg/L is now accepted as the standard towards which the decommissioning must aim. So where we see 2014 surface run-off figures at monitoring site TMA4501S ranging up to 152 µg/L, with "no further sampling planned", this raises questions. Is CNSC comfortable with no further sampling where uranium levels are 10 times the acceptable level?

In the Areva 2015 report it is noted that the uranium level at the Island Lake outflow (ISL4000S) was 143 µg/L in February 2015, 96 µg/L in June 2015, figures that are compared favorably to the old hardness-related decommissioning objectives that allow 342 µg/L or more.

Moreover, impacts on uranium toxicity of possible future increased acidity in surface waters in the Cluff region have not been addressed. D.S. Jeffries et al reported in *J. Limnol.*, 69 (suppl 1)45-55, 2010 that additional acidifying emissions from expanding oil sand processing...may increase the threat to a large population of very sensitive lakes in the west-central part of Saskatchewan. Richard R. Goulet et al, *Environmental Toxicology and Chemistry* 2015; 34; 562-574 suggest that pH is a more significant factor than hardness in affecting uranium toxicity to aquatic organisms. Given this uncertainty, it would be wise to continue long-term monitoring of the pH of the impacted lakes and to check whether the toxicity is being affected. There are still clearly some questions about uranium toxicity levels that will need on-going attention.

Selenium trends in Island Lake fish

Present elevated levels of selenium in Island Lake fish are found to be decreasing. We would caution against assuming that this trend will be linear. This is another area in which plans will be needed for very long-term monitoring.

Retention of contaminants in sediments

There are at least a couple of locations where COPCs are seen to be transferring from the water column to sediment. This is assumed to be happening in Island Lake and Claude Lake, and probably also in Snake Lake. This obviously has the positive effect of removing contaminants from the water column. However, we should not assume that this is an irreversible process. Areva acknowledges that at some point the sediment can start releasing contaminants, as appears to be happening in Beaverlodge Lake. Such changes may not become apparent for several decades, so projecting from trends observed over only a few years may not be adequate.

Dealing with reactive barriers

Areva has carried out some interesting work on using peat barriers to trap contaminants carried from the Claude Waste Rock Pile. The company reports having found that the peat trenches successfully retained uranium temporarily, but, as expected, the material became saturated and would no longer continue to absorb more. They have therefore concluded that this is not a useful contribution to the decommissioning process or perhaps not cost effective. The way permeable reactive barriers are most effectively used is that they are periodically removed and replaced with fresh absorbent. The contaminant-loaded barrier material is either managed as solid hazardous waste or entrained components may be recovered if they have some value. Just leaving the loaded absorbent in place in the peat trenches seems to be a lost opportunity to remove more contaminants from the flow from the waste rock pile before they reach the sediment in Island Lake. Areva's Follow-up Plan v3 (2015) observes that the peat barriers are already beginning to release entrained nickel.

Concrete covers on portals

Concrete covers on old mine entrances etc. can be expected to have a limited lifetime. We would like CNSC to comment on this choice, especially given the decision at the Gunnar site to replace concrete covers with steel ones for greater longevity. "The design objective in remediating the mine openings risks is to permanently close off the openings. The Mines Regulations (2003) and/or the requirements of the Ontario Ministry of Northern Development and Mines will be used in the detailed design. The Ontario guideline is considered best practice and is widely used in Canada" (from Gunnar plan).

Potential release of COPCs from Island Lake fen

Island Lake fen is acting as a filter, building up contaminants in its organic matter above and below surface. As with sediment, we need to be concerned about what happens to this contaminated material in the long term. Might it eventually be consumed by wildlife? Will it start to release contaminants at some stage? Will it become necessary to remove contaminated vegetation at some point?

Malfunctions in monitoring equipment

There is a heavy reliance on remote monitoring and weather recording using automated equipment. We note the gaps in data that reflect malfunctions, damage or theft of monitoring equipment. We would hope to see CNSC asking for concrete plans to address this problem, which could become more serious as site inspections become less frequent.

Assumptions about future land use

Human safety estimates are based on the assumption that no one will spend more than 42 days per year at the site. This reflects current traditional occupancy of the area. However, as the climate changes and the north becomes more appealing for year-round residence (and other parts of the world become less habitable), we suggest that CNSC should be addressing the possibility of more intense occupation of the region. The traditional response to this dilemma has been that the governments will enact regulations to prevent year-round residence, or that signage warning of risks will be maintained “in perpetuity”. We all know the impossibility of ensuring that either regulations or warnings can be maintained over periods of hundreds of years. The CNSC has never been able to come to terms with the challenge of very long-term monitoring and maintenance in a world in which political, social and environmental change are unpredictable.

Concerns expressed by ACFN

The Athabasca Chipewyan First Nation (ACFN) holds Treaty and Aboriginal rights that are protected by Section 35 of the *Constitution Act, 1982*. *Further, the Crown's unique relationship with Aboriginal peoples gives rise to the duty to consult, and where appropriate, accommodate Aboriginal peoples when the Crown/Industry contemplates conduct that may potentially adversely impact the environment on established Aboriginal and/or treaty rights.*

Cluff Lake is located in the N22 area of Saskatchewan (see maps at the end of this document). This area is part of the Athabasca basin watershed. Hence, lakes and tributaries

run into the Douglas River, which in turn becomes the Old Fort River in Alberta and on to Lake Athabasca bordering one of ACFN's Reserves. We have now, and also in the past have had ACFN band members who lived and trap around Cluff Lake area. They still consider that area their home lands. The late Alec Flett had his cabin at Cluff Lake. His granddaughter, Joy Flett, now has possession of the trap line and cabin, and still frequents the family trap line.

In general, the comments from ACFN reflect a lack of confidence in the regulatory system and in Areva's protection of the health and safety of the land.

From ACFN's perspective, the real concerns are the game, medicine plants, berries and drinking water. Local people are not convinced that these are safe to consume. They question the water quality around Cluff Lake and the streams that flow into Lake Athabasca. ACFN would require monitoring of uranium content in the Old Fort River near ACFN's Reserve on a monthly basis for a year, and then consideration for quarterly sampling thereafter. ACFN has community based monitors (CBM) in place for such a venture. For more information, enquire at ACFN-IRC office.

There are significant local concerns about the tailings management area (TMA). Is the berm there structurally sound and the overburden over the tailings pond thick enough and competent to withstand the worst or record rain seasons? There is fear about the potential for degradation and wash out of berms and erosion of the TMA cover.

There is a suggestion that the tailings should have been put underground as initially planned. Initially, it was understood that the tailings were to be encased in concrete containers and eventually placed in the mine adit and sealed up when the mine closed. This TMA legacy may come back to haunt future generations of land users in the Cluff Lake area, a possibility for which Areva Resources must be held accountable.

Questions are raised about the dangers of alpha radiation and the potential for damage to the health of humans, plants and other life forms. It is suggested that trappers and other land users should be provided with portable alpha radiation meters to carry when they are in the area. People are worried about how to limit access to hazardous places and maintaining warning signs.

Local land users also raise a safety issue concerning a steep-banked open pit containing contaminated water into which wildlife or humans or machines could fall.

Clearly more work is needed before local land users feel confident that the Cluff Lake region is a safe and healthy place for people and other living things. A necessary sense of trust has not been established.

Conclusion, re: Cluff Lake site

These are some of the issues that we believe the CNSC needs to be addressing as they review the decommissioning process at Cluff Lake. While Areva appears to be responsibly carrying out monitoring and maintenance tasks as required by their licence, we suggest that

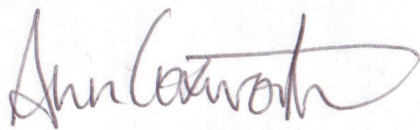
the many uncertainties about the future condition of the site mean that it will require the oversight of federal experts for several decades. We appreciate the help of Areva staff in patiently responding to our questions and providing access to documentation.

Recommendation: That CNSC require on-going sampling in locations on the Cluff Lake site and downstream where the surface water contaminant levels significantly exceed SSWQO.

Recommendation: That the peat barriers on the Cluff Lake site be periodically removed and replaced with fresh absorbent.

Recommendation: That CNSC require the use of steel covers – rather than concrete covers – on old mine entrances to ensure greater longevity.

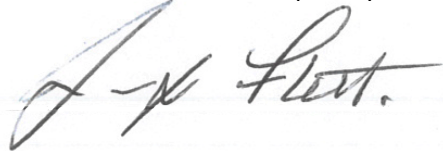
Submitted on behalf of
The Saskatchewan Environmental Society



Ann Coxworth, Board Member
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And

The Athabasca Chipewyan First Nation



Jack Flett, Regulatory Coordinator
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14th November 2016

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ACFN Consultation Area



Athabasca Chipewyan First Nation

1:3,600,000



Legend

- Consultation area
- Treaty 8 area
- ACFN reserves
- Parks and protected areas

DRAFT

This map does not capture the complexity of ACFN's relationship to their traditional lands or the extent of the practice of treaty and aboriginal rights. Boundaries of the Consultation Area are subject to change over time as the recorded knowledge of ACFN land and resource use increases.



Map produced by Steven DeRoy of the Firelight Group on February 23, 2011. Base map data originates from the National Topographic System and Natural Resources Canada.

This map is preliminary, based on available information and constraints of time, budget and scope. This map is a living document and is intended to be amended and refined over time. It is not an expression of the extent of Athabasca Chipewyan First Nation's Aboriginal or treaty rights and interests. The data used to produce this map originate from multiple sources and are presented without prejudice. This map is property of the Athabasca Chipewyan First Nation and may only be reproduced with written permission.

