

**DRAFT**

**PROJECT-SPECIFIC GUIDELINES SCOPING DOCUMENT**

**FOR THE**

**PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT**

**KEY LAKE OPERATION EXTENSION PROJECT**

**CAMECO CORPORATION**

**February 2011**

This document has been prepared to meet the requirements for Project-Specific Guidelines for the Saskatchewan environmental impact assessment process under *The Environmental Assessment Act* and for the federal environmental impact assessment process under the *Canadian Environmental Assessment Act*. The document has been prepared by the Saskatchewan Ministry of the Environment (MOE) and the Canadian Nuclear Safety Commission (CNSC) to assist Cameco Corporation with the environmental impact assessment of the proposed Key Lake Operation Extension Project.

Public comment on the document, in draft form, is invited before the document is made final. To ensure consideration, written comments should be submitted by 2 April, 2011 to:

Lynn Kelley, P. Geo., Saskatchewan Ministry of Environment  
3211 Albert Street, REGINA, SK S4S 5W6  
Phone: (306) 787-6190; Fax: (306) 787-0930; E-mail: [lynn.kelley@gov.sk.ca](mailto:lynn.kelley@gov.sk.ca)

or

Nicole Frigault, Canadian Nuclear Safety Commission  
280 Slater Street, P.O. Box 1046, Station B OTTAWA, ON K1P 5S9  
Phone: 1(800) 668-5284; Fax: (613) 995-5086; E-mail: [ea@cnsccsn.gc.ca](mailto:ea@cnsccsn.gc.ca)

## TABLE OF CONTENTS

|             |  |                      |
|-------------|--|----------------------|
| <b>1.0</b>  | <b>INTRODUCTION</b> .....  | - 1 -                |
| <b>2.0</b>  | <b>ENVIRONMENTAL ASSESSMENT PROCESS</b> .....  | - 2 -                |
| <b>2.1</b>  | <b>Federal and Provincial Cooperation in the Environmental Assessment</b> .....  | - 2 -                |
| <b>2.2</b>  | <b>Requirement for Provincial Environmental Impact Assessment</b> .....  | - 2 -                |
| 2.2.1       | Provincial Scope of Project.....   | - 3 -                |
| <b>2.3</b>  | <b>Requirement for Federal Environmental Assessment</b> .....  | - 3 -                |
| 2.3.1       | Application of the CEEA.....   | - 3 -                |
| 2.3.2       | Federal Coordination .....   | - 4 -                |
| <b>2.4</b>  | <b>Scope of the Federal EA</b> .....   | - 4 -                |
| 2.4.1       | Scope of Project.....  | - 4 -                |
| 2.4.2       | Factors to be Considered.....  | - 5 -                |
| 2.4.3       | Scope of the Factors to be Considered.....   | - 5 -                |
| <b>2.5</b>  | <b>Determining the Type of Screening EA Process</b> .....  | - 6 -                |
| <b>3.0</b>  | <b>PROJECT-SPECIFIC GUIDELINES FOR THE ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED KEY LAKE OPERATION EXTENSION PROJECT</b> ..... | - 6 -                |
| <b>4.0</b>  | <b>EIS EXECUTIVE SUMMARY</b> .....   | - 8 -                |
| <b>5.0</b>  | <b>EIS PROJECT DESCRIPTION</b> .....   | - 8 -                |
| <b>5.1</b>  | <b>Project Concept</b> .....   | - 8 -                |
| <b>5.2</b>  | <b>Milling and Waste Management</b> .....  | - 9 -                |
| <b>5.3</b>  | <b>Ancillary Operations and Facilities</b> .....   | - 12 -               |
| <b>5.4</b>  | <b>Other Project Elements</b> .....  | - 12 -               |
| <b>6.0</b>  | <b>DESCRIPTION OF THE ENVIRONMENT</b> .....  | - 13 -               |
| <b>6.1</b>  | <b>Environmental Data</b> .....  | - 13 -               |
| <b>6.2</b>  | <b>Atmospheric Environment</b> .....   | - 13 -               |
| <b>6.3</b>  | <b>Geology and Hydrogeology</b> .....  | - 14 -               |
| <b>6.4</b>  | <b>Terrestrial Environment</b> .....   | - 14 -               |
| <b>6.5</b>  | <b>Aquatic Environment</b> .....   | - 15 -               |
| 6.5.1       | Fish and Fish Habitat .....  | - 15 -               |
| 6.5.2       | Surface Hydrology and Water Quality.....   | - 17 -               |
| <b>7.0</b>  | <b>SOCIO-ECONOMIC ENVIRONMENT</b> .....  | - 17 -               |
| <b>7.1</b>  | <b>Socio-Economic Issues</b> .....   | - 17 -               |
| <b>7.2</b>  | <b>Public and Occupational Health and Safety</b> .....   | - 17 -               |
| <b>7.3</b>  | <b>Heritage Resources</b> .....  | - 18 -               |
| <b>8.0</b>  | <b>PUBLIC AND ABORIGINAL INVOLVEMENT</b> .....   | - 19 -               |
| <b>8.1</b>  | <b>Federal Process Requirements</b> .....  | - 19 -               |
| <b>8.2</b>  | <b>Proponent Led Public Engagement</b> .....   | - 20 -               |
| <b>9.0</b>  | <b>ENVIRONMENTAL IMPACT ASSESSMENT</b> .....   | - 21 -               |
| <b>9.1</b>  | <b>General Concepts</b> .....  | - 21 -               |
| <b>9.2</b>  | <b>Regional/Cumulative Impacts</b> .....   | - 21 -               |
| <b>9.3</b>  | <b>Project-Specific Impacts</b> .....  | - 22 -               |
| <b>9.4</b>  | <b>Effects of the Environment on the Project</b> .....   | - 22 -               |
| <b>10.0</b> | <b>MITIGATION AND CONTINGENCY PLANNING</b> .....   | - 23 -               |
| <b>11.0</b> | <b>MONITORING AND FOLLOW-UP PROGRAMS</b> .....   | - 23 -               |
| <b>11.1</b> | <b>Monitoring Program</b> .....  | - 24 -               |
| <b>11.2</b> | <b>Follow-Up Program</b> .....   | - 24 -               |
| <b>12.0</b> | <b>DECOMMISSIONING, RECLAMATION AND ABANDONMENT</b> .....  | - 24 -               |
| <b>12.1</b> | <b>Conceptual Decommissioning Plan</b> .....   | - 25 -               |
| <b>12.2</b> | <b>Reclamation</b> .....   | - 25 -               |
| <b>12.3</b> | <b>Abandonment and Institutional Control</b> .....   | - 26 -               |
| <b>13.0</b> | <b>SUMMARY</b> .....   | - 26 -               |
| <b>14.0</b> | <b>REFERENCES</b> .....  | - 27 - <del>26</del> |

## 1.0 INTRODUCTION

The Key Lake Operation is a uranium milling operation located in northern Saskatchewan operated by Cameco Corporation (Cameco). The Key Lake operation is a partnership between Cameco (operator and 83.3% owner) and AREVA Resources Canada Inc. (16.7%). For the purposes of the environmental assessment, Cameco is the operator of the Key Lake operation Extension Project (the project). The Key Lake operation site consists of three major facility components and processes: milling facilities and mill utilities; other site infrastructure; and waste management facilities and systems (including the Deilmann Tailings Management Facility (DTMF)).

From 1983-2000 the Key Lake mill processed ore from two on-site deposits. In January 2000, the Key Lake operation began processing ore slurry from the McArthur River mine. The McArthur River ore slurry is transported to the Key Lake operation by truck over an 80-km all-weather road. By the end of 2009, the Key Lake mill had in total, produced more than 375 million pounds (lbs) of uranium ( $U_3O_8$ ) concentrate. After 26 years of milling ore from these different deposits, Cameco is seeking to extend the life of the Key Lake operation by increasing the throughput capacity of the mill and increasing the storage capacity of the DTMF.

On March 3, 2010 Cameco submitted a proposal to the Saskatchewan Ministry of Environment (MOE), the Canadian Nuclear Safety Commission (CNSC) and the Major Projects Management Office (MPMO), to extend the life of the Key Lake operation entitled *Key Lake Extension Project-Project Description*. The expansion would facilitate continued production from McArthur River and provide ability to accommodate the processing of uranium ore from other deposits (such as Millennium) at the Key Lake operation.

Cameco has been informed that the proposed expansion of the Key Lake operation will require an environmental assessment (EA) under both *The Environmental Assessment Act* (Saskatchewan), hereafter referred to as “The Act”, and the federal *Canadian Environmental Assessment Act* (CEAA). Cameco is required to conduct an environmental impact assessment (EIA) and prepare an environmental impact statement (EIS) for technical and public review. This Project-Specific Guidelines Scoping Document (guidelines) has been prepared with input from provincial and federal experts to assist Cameco with the conduct of the EIA and the preparation of the EIS.

The MOE, CNSC staff and identified FAs will review the EIS and prepare Technical Review Comments to be addressed by Cameco, and CNSC staff will prepare an EA Screening Report based on the results of the Environmental Impact Assessment. The MOE will conduct a minimum 30-day public review concerning the proponent's EIS, the province's Technical Review Comments and the federal EA Screening Report.

## **2.0 ENVIRONMENTAL ASSESSMENT PROCESS**

### **2.1 Federal and Provincial Cooperation in the Environmental Assessment**

Under the *Canada-Saskatchewan Agreement on Environmental Assessment Cooperation (2005)* (the agreement), federal and provincial EA processes, directed respectively by the CEAA and The Act, are coordinated for projects with joint federal and provincial jurisdiction, where not limited by individual statutory or process requirements of the respective processes. Information requirements of both federal and provincial agencies have been included in these guidelines so that the information in the EIS should be sufficient to address the environmental concerns of both the Government of Saskatchewan and the Government of Canada. Under the agreement, MOE is the lead agency and contact for the project. Working with MOE on the project is the CNSC, who is the Federal Environmental Assessment Coordinator (FEAC) and the lead Responsible Authority (RA) under CEAA.

### **2.2 Requirement for Provincial Environmental Impact Assessment**

Cameco's proposal to expand the throughput capacity of the mill and the storage capacity of the DTMF represents changes not consistent with the current EA approvals for the Key Lake operation. Under Section 16(2) of The Act, upon notification of such proposed change, determination from the MOE is required. Ministerial decision options under Section 16(2) of The Act are:

- (a) Approve the proposed change and impose any terms and conditions that are considered advisable;
- (b) Refuse to approve the change in the development; or
- (c) Direct the proponent to seek approval for the proposed change in the manner prescribed in Sections 9 to 15 of The Act.

The MOE has determined that application of option (c) is appropriate. Cameco was notified of this determination in a letter dated 8 June, 2010. As a consequence, Cameco is required to conduct an EIA of the project and submit an EIS to the MOE.

Should the project be found environmentally acceptable on the basis of the EIS, the MOE would consider the proponent's applications for the necessary modifications to the approvals, permits, and licences that regulate operation of the facilities. The proponent would also be expected to obtain all necessary approvals, permits, and licenses from other regulatory agencies, as applicable.

The province also has a constitutional obligation to consult with affected Aboriginal peoples before any decision is made that may adversely impact the ability to successfully exercise Treaty or Aboriginal rights, particularly the right to hunt, fish and trap. The province will utilize the EIS, and any other relevant sources of information, to inform itself of the project and any cumulative impacts of the development on traditional uses, and therefore on Treaty and

Aboriginal rights, to determine the level of provincial Crown consultation required. Mitigation proposed within the EIS may provide accommodation for any rights affected by the proposed project.

Resolution of these matters would take place in conjunction with the environmental regulatory processes that follow the completion of the EA process and issuance of approvals, licences, and permits that are required prior to the commencement of construction and operation of a project.

### 2.2.1 Provincial Scope of Project

The provincial project scope for the proposal to expand the mill throughput capacity and increase the tailings storage capacity at the Key Lake operation includes:

- Increasing the tailings storage capacity of the DTMF by depositing tailings above the currently approved elevation of 466 m to an elevation of approximately 510 m; and
- Increasing the nominal annual production capacity of the Key Lake Mill from 18.7 million lbs of U<sub>3</sub>O<sub>8</sub> per year to 25 million lbs.

## 2.3 Requirement for Federal Environmental Assessment

### 2.3.1 Application of the CEAA

Cameco's proposal would require amendments to the existing Uranium Mine Operating Licence (UMOL) for the Key Lake operation. The amendment of a licence is a power exercised under the authority set out in subsection 24(2) of the *Nuclear Safety and Control Act* (NSCA). Subsection 24(2) is listed as a 'trigger' under the *Law List Regulations* established under the CEAA; therefore, there is a 'trigger' for this proposal pursuant to paragraph 5(1)(d) of the CEAA for the project.

The physical works for this proposal are the facilities and associated infrastructure related to the project. The proposal involves an undertaking in relation to the physical works, and thus there is a 'project' as defined in Section 2 of the CEAA.

There are no other CEAA 'triggers', such as funding, being a proponent or disposing of an interest in land to support the project, pursuant to subsection 5(1) of the CEAA, that involve the CNSC.

The project is not of a type identified in the *Comprehensive Study List Regulations* of the CEAA. The CNSC is not aware of any potential environmental effects or public concerns associated with the project that would warrant referral to a mediator or review panel pursuant to section 25 of the CEAA. Furthermore, there are no identified exclusions from the conduct of an EA for this project pursuant to section 7 of the CEAA which includes Schedule 1 of the *Exclusion List Regulations*, nor do any previous EAs apply.

Therefore, pursuant to subsection 18(1) of the CEAA, the CNSC is required to ensure the

conduct of a screening EA and the preparation of a screening report before the proposed licence amendment can be considered by the CNSC pursuant to the NSCA. Cameco has been notified of this requirement by the CNSC. The CNSC is delegating the conduct of the EA technical studies pursuant to subsection 17(1) of the CEEA to Cameco.

### 2.3.2 Federal Coordination

The CNSC, as the lead RA for the project, must ensure that the EA is conducted in accordance with the provisions of the CEEA. This includes determining the scope of the project, the factors to be considered in the assessment and the scope of those factors.

Pursuant to the *Federal Coordination Regulations* under the CEEA, the following federal departments/agencies with an interest related to their mandate are participating in the review of this project and, under the CEEA, are Federal Authorities (FAs) in relation to the project: Environment Canada (EC); Natural Resources Canada (NRCan); and Health Canada (HC) .

Fisheries and Oceans Canada (DFO) will be a joint RA for this assessment. *Fisheries Act* triggers for the proposed project are likely to be:

- Section 32 - No person shall destroy fish by means other than fishing except as authorized by the Minister or under regulations made by the Governor in Council under this Act; and
- Section 35(2) - No person contravenes subsection (1) by causing the alteration, disruption or destruction of fish habitat by any means or under any conditions authorized by the Minister or under regulations made by the Governor in Council under this Act.

## 2.4 Scope of the Federal EA

### 2.4.1 Scope of Project

Pursuant to section 15 of CEEA, the Scope of the Project for the proposal to extend the life of the Key Lake operation includes:

- An increase to the approved capacity of the existing DTMF;
- An increase in the nominal average annual production capacity of the Key Lake mill from 7.2 million kilograms of uranium (18.7 million lbs U<sub>3</sub>O<sub>8</sub>) up to a nominal average annual production capacity of 9.6 million kilograms (25 million lbs U<sub>3</sub>O<sub>8</sub>) including any physical changes required to allow uranium processing and waste-handling and treatment systems at this higher production rate;
- Installation and/or modification of infrastructure and mill process equipment to permit the processing of a wider range of ore and receipt of waste rock types from other deposits; and
- Modification and conversion of the mill processes to use a strong acid strip solvent extraction, and to use hydrogen peroxide for uranium precipitation.

The scope of the project includes the milling of other uranium deposits at the Key Lake operation but does not include the transportation of ore from the ore deposits to the Key Lake operation.

#### 2.4.2 Factors to be Considered

The scope of the screening assessment under the CEAA must include all the factors identified in paragraphs 16(1)(a) to (d) of the CEAA and, as provided for under paragraph 16(1)(e), any other matter that the CNSC requires to be considered. Paragraphs 16(1) (a) to (d) require that the following factors be included in the screening:

- The environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;
- The significance of the effects identified above;
- Comments from the public that are received in accordance with the CEAA and its regulations; and
- Measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project.

#### 2.4.3 Scope of the Factors to be Considered

The proposed scope of the factors to be considered by the RAs in the EA includes the following list of environmental components likely to be affected:

- Atmospheric Environment (including air quality and noise);
- Geology and Hydrogeology;
- Aquatic Environment (including groundwater, surface water, fish and fish habitat, sediment and water quality);
- Terrestrial Environment (including habitat, fauna, flora and soil);
- Socio-Economic Environment (including land and resource use, aboriginal interest, physical and cultural heritage, and navigation); and
- Human Health and Safety.

Additional information on these factors can be found in Section 6 of this document.

#### 2.4.4 Spatial Boundaries

The spatial boundaries used in the EA encompass the geographical areas of the environment that may be potentially affected by the project, or are relevant to the assessment of cumulative environmental effects. The boundaries will remain flexible during the assessment to allow the full extent of a likely environmental effect to be considered as further information becomes available. For instance, should the results of modelling demonstrate that there is dispersion of a

contaminant that is likely to cause an environmental effect beyond the boundaries identified, it will be taken into account in the EA.

#### Site Study Area

The site study area is the project footprint (i.e. where project activities would be undertaken – including the proposed and existing mine site infrastructure).

#### Local Study Area

The local study area is where measurable changes to the environment resulting from the proposed activities may be anticipated. The geographic boundary will depend on the factor being considered (e.g., a local study area defined for the aquatic environment will differ from that defined for the atmospheric environment).

#### Regional Study Area

The regional study area is where the potential effects of this project may interact with the effects of other projects (including abandoned, operating and/or proposed mines), resulting in the potential for cumulative effects. The geographic boundary for the regional study areas are also specific to the factor being considered.

#### 2.4.5 Temporal Boundaries

The temporal boundaries will encompass the entire lifespan of the project, including site preparation, construction, operation and decommissioning (including closure and reclamation) and abandonment. The construction phase of the project will overlap with the current operational period of the Key Lake operation and the timeline for decommissioning activities are expected to remain the same as for the current operation, extending 10 to 50 years after closure. The project will, however, extend the operational period and therefore the overall temporal boundary of the currently approved Key Lake operation.

### **2.5 Determining the Type of Screening EA Process**

Criteria are used to determine whether screening EAs at the CNSC can follow a simple or complex track; depending on the potential risk that the proposal would have on the environment and the anticipated level of public interest. Taking into consideration the criteria and supporting rationale (Appendix A), the project was determined to follow the “simple” screening track. Although it was determined to be a simple screening, the province is the lead agency and thus the CNSC will support and assist in all provincial public participation processes outlined in section 8.0.

### **3.0 PROJECT-SPECIFIC GUIDELINES FOR THE ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED KEY LAKE OPERATION EXTENSION PROJECT**

These guidelines reflect the requirements and issues that have been raised by federal and



provincial officials and their respective Acts and Regulations regarding the proposed project and identify the information that should be included in the EIS.

Cameco's March 2010 Project Description notes the following points about the project:

- The project consists of a number of modifications to existing facility components and processes, and licensed activities at the Key Lake operation to extend the life of the operation, to allow the milling of ore from other mining projects, and to enhance operational flexibility;
- Increased tailings capacity is an essential aspect of the project and is to be achieved through increasing the approved capacity of the existing DTMF. Cameco proposes to expand the tailings management capacity to support operation of the Key Lake operation facilities to year 2040 at a minimum. The increase in tailings capacity is needed by 2015;
- Cameco proposes to increase the nominal annual production capacity of the Key Lake mill, currently at 7.2 million kilograms of uranium (18.7 million lbs. of  $U_3O_8$ ) up to a nominal 9.6 million kilograms of uranium (25 million lbs of  $U_3O_8$ ), including any physical changes required to allow uranium processing and waste-handling and treatment systems at this higher production rate; and
- There are several other modifications within the scope of the project; however these modifications remain subject to feasibility review at this time. These modifications include installation of infrastructure and mill process equipment to permit the processing of a wider range of ore and receipt of waste rock types from other deposits, modification to site infrastructure required to support mining of other deposits, and modification and conversion of the mill processes to use a strong acid strip in solvent extraction, and to use hydrogen peroxide for uranium precipitation.

Information provided in the EIS should be complete and in sufficient detail to allow assessment of the potential impacts brought about by the changes at the Key Lake operation contemplated under the proposed project.

In the event that the project receives EA approval, the regulatory processes that follow the completion of the EA process and issue the approvals, licences, and permits that are required prior to the commencement of operation, may require more detailed technical information.

Existing information on environmental parameters which will not be affected by the project, or information which is cited to provide context for the discussion of potential impacts, may be referenced and provided in summary form.

These guidelines should not be considered as either exhaustive or restrictive, as concerns other than those already identified could arise during the investigations associated with the EIA.

Reference to the MOE *General Guidelines for Conducting an Environmental Impact Assessment* and to guidance materials provided by the Canadian Environmental Assessment Agency (CEA Agency) ([http://www.ceaa-acee.gc.ca/012/newguidance\\_e.htm](http://www.ceaa-acee.gc.ca/012/newguidance_e.htm)) is recommended. In addition, MOE and the CNSC are prepared to provide advice and assistance throughout the EIA with

regard to the identification of environmental concerns and appropriate assessment methodologies.

#### **4.0 EIS EXECUTIVE SUMMARY**

An executive summary of the EIS is required. It should briefly summarize and cross-reference the EIS under the following topic areas:

- Description of the project;
- Purpose of and need for the project;
- Environmental effects of the project, including the potential spills/malfunctions/accidents;
- Any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;
- Technically and economically feasible mitigation measures;
- The significance of the environmental impacts;
- The need for, and the requirements of, any follow-up program in respect of the project;
- Comments from the public and Cameco's responses; and
- Identification of uncertainties in regards to the project elements and/or environmental impacts of the project, including those of a chemical, physical, and/or radiological nature.

The executive summary, which can be under separate cover, should avoid the use of technical terms and jargon. To enhance involvement of northern Saskatchewan residents, First Nations and Métis in the public participation process, the executive summary should be made accessible in video and/or audio form and translated into each aboriginal language of Cree and Dené.

#### **5.0 EIS PROJECT DESCRIPTION**

##### **5.1 Project Concept**

The EIS should provide a comprehensive description of the project, including the purpose of and need for the project. A description of how current operations will change as a result of the implementation of the project, if approved, is needed so that the changes that would occur at the Key Lake operation and the surrounding environment, and the potential environmental impacts of the project, can be placed in context with the existing environmental conditions.

All stages of the project and changes to the Key Lake operation, such as potential site requirements, construction, operation, maintenance, decommissioning and abandonment, should be described. The EIS should clearly identify where the project may differ from information and commitments contained in the March 2010 Project Description. This information is to be supported by technical data in sufficient detail and scope to enable an accurate assessment of the potential environmental impacts of the project. Any differences should be assessed for significance.

Generally, the EIS should include the following information:

- Ownership of the project and project components;
- Location, using local and regional maps with identifiable features;
- Status and map of surface lease and active mineral dispositions relevant to the project;
- The need for the project;
- Description of the project (including project life, dimensions, plans);
- Alternative means of accomplishing the project;
- Materials and power requirements;
- Sourcing of materials;
- Anticipated schedule for construction and implementation;
- Estimated manpower and skill requirements;
- Conventional/radiological occupational health and safety considerations;
- Potential accidents and malfunctions during construction, operation and decommissioning and their impact to human health and the environment;
- Emergency measures/contingency plans and procedures;
- Technical issues and new technologies specific to the project;
- A description of the potentially affected environment; and
- Technically and economically feasible monitoring and mitigation measures.

Any changes contemplated to the infrastructure at the Key Lake operation should be discussed.

## **5.2 Milling and Waste Management**

### **5.2.1 Milling**

The EIS should contain a description of the existing mill operations at the Key Lake operation and changes required to increase the mill capacity from 7.2 million kilograms of uranium (18.7 million lbs  $U_3O_8$ ) up to a nominal average annual production capacity of 9.6 million kilograms (25 million lbs  $U_3O_8$ ) per annum.

The March 2010 Project Description outlines feasibility studies currently underway to assess changes to the product end of the mill, changes needed to process a wide range of ores, and changes needed to increase capacity. Results of the feasibility studies should be described in terms of assessing environmental alternatives, and the selected alternatives should be fully described. The EIS should include:

- A brief description of existing milling operations at the Key Lake operation; and
- A detailed description of changes proposed for the product end of the mill.

### **5.2.2 Waste Management**

The EIS should include detailed information regarding changes to the anticipated quality, quantity and potential environmental impacts associated with management programs for all incremental wastes which would be generated as a result of the project. Relevant information

related to liquid effluent, surface drainage and atmospheric emissions should be addressed.

#### *5.2.2.1 Tailings Management*

Increased tailings storage capacity is a primary component of the project. Cameco expects the currently-permitted capacity of the DTMF to be reached by 2015, and forecasts that the proposed expansion would support continued operations to at least 2040. The proposal notes that ongoing improvements within the scope of existing approvals are underway, including slope stabilization and an upgrade of the dewatering system.

The DTMF is currently licensed to accept tailings to an elevation of 466 m. Cameco proposes that tailings continue to be stacked in DTMF to a final consolidated elevation of approximately 510 m. Studies are underway to determine the optimal final elevation and thickness of water cover. The EIS should include discussion of:

- Anticipated types of ore that could be processed at Key Lake as well any effects the varying types may have on tailings chemistry and management of the DTMF;
- Possible changes to tailings chemistry that new sources of ore, may introduce;
- Justification of the expansion of the present facility to demonstrate that the present facility has been performing as predicted. This should include a summary assessment of the performance of the DTMF since 1996, relative to the original predictions from the 1995 EIS. If predictions were not met, the proponent should discuss how appropriate mitigation was implemented and why future performance for the expanded facility is defensible;
- The impact of increasing the depth of the tailings on the tailings consolidation, the groundwater management and contaminant transport in the DTMF and how any differences compare to past EIS predictions; and
- Other options to expand tailings capacity should be discussed in terms of impacts on surrounding ecosystems along with technical economic feasibility.

#### *5.2.2.2 Waste Rock Management*

Information provided in the EIS should consider the following points:

- Possible changes to mineralized (special waste) waste rock management in relation to the proposed production rate increase and acceptance of mineralized waste rock from other mine sources;
- The management of blending the various mineralized waste rock provided from McArthur River, the existing stockpiles from previous Key Lake mining operations and that from possible other future mining sources, including their estimated volumes with respect to the rates of use and depletion;
- Characterization of mineralized waste rock from the potential new sources, including results of analyses of the chemical, physical and radiological characteristics (e.g., key metal contaminants, leachate data, potential for oxidation);
- Any changes to the potential for surface water and groundwater contamination by waste

- rock handling and disposal brought about by storage of waste rock from new sources;
- Dust control measures; and,
- Any changes required to existing facility and/or containment systems to collect/control any potentially contaminated runoff water from the waste rock.

#### 5.2.2.3 Liquid Effluent

Water balances should be provided, highlighting changes brought about by the project. Any water not meeting Saskatchewan's *Mineral Industry Environmental Protection Regulation* (MIEPR) limits and the *Metal Mining Effluent Regulations* (MMER) of the federal *Fisheries Act* and/or CNSC licence requirements will have to be treated prior to release.

If increases in water treatment capacity are required by the project, the EIS should demonstrate that design objectives of the water treatment facility are based on the principles of pollution prevention using best available techniques economically achievable (BATEA) rather than on simply meeting MMER and MIEPR regulatory limits.

The EIS should identify locations (e.g., Universal Transverse Mercators (UTMs)) where contaminant levels would, and would not, meet *Saskatchewan Surface Water Quality Objectives* (SSWQO) and *Canadian Surface Water Quality Guidelines* (CSWQG) downstream from the facility and provide an evaluation of any environmental impacts (e.g., the potential migration of effects beyond those expected from currently licensed activities).

The EIS should address:

- Qualitative and quantitative changes to effluents and implications for treatment processes, including contaminant loadings;
- Proposed pipelines/surface works;
- Anticipated changes in the quality and quantity of effluents to be released to the environment and their contribution to current assessments of waste loadings and dispersion in the aquatic receiving system(s). The dispersion of the effluent plume should be used to identify potential exposure sites for monitoring;
- Assessment of changes to the nutrient input to the watershed;
- Anticipated changes to quantity, quality and final disposal of slimes, sludge and precipitates from sumps, sedimentation ponds and treated water holding ponds (monitoring ponds) and facility features and handling procedures to minimize spills and environmental effects from disposal; and
- Proposed points for control, monitoring and final discharge to the environment.

#### 5.2.2.4 Landfill

The EIS should address:

- Any changes in type, quantity and quality of waste to be disposed brought about by the project including construction of mill infrastructure and decommissioning of replaced mill infrastructure;
- Any design changes needed in the land fill; and

- Any changes to decommissioning.

#### 5.2.2.5 Surface Drainage

The EIS should address any anticipated changes to:

- Surface diversion and drainage works during site preparation, construction and operation; and
- Collection, storage, sampling, and disposition of runoff from mineralized waste rock blending piles during site operation.

Any water not meeting MIEPR and MMER regulatory limits will have to be treated prior to release.

#### 5.2.2.6 Atmospheric Emissions

The EIS should address any anticipated changes to:

- The quality and quantity of all airborne emissions (e.g., dust (including total suspended particulates (TSP) and particulate matter)), hazardous substances (e.g., sulphur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), heavy metals, ammonia), radon and radionuclides.

### 5.3 Ancillary Operations and Facilities

Any changes in infrastructure at the Key Lake operation that would be necessary to complete the project should be described and the potential effects on the environment assessed. For example:

- Changes to water supply requirements (e.g., source, volumes);
- Incremental changes to existing potable water sources and treatment in comparison to their capacity;
- Any changes to domestic and industrial waste streams (types, volumes and disposal methods and waste minimization to be employed);
- Any changes to location of existing roads/trails;
- Proposed monitoring systems and maintenance plans; and
- Implications of the project with respect to decommissioning and reclamation plans.

### 5.4 Other Project Elements

Cameco is currently conducting feasibility studies on other modifications to the Key Lake operation including:

- Installation and/or modification of infrastructure and process equipment for processing of ore from other deposits; and
- Modification of mill processes currently using ammonia.

These or any other contemplated changes and their potential environmental repercussions should be discussed in the EIS.

## **6.0 DESCRIPTION OF THE ENVIRONMENT**

### **6.1 Environmental Data**

The project will be carried out within the surface lease boundary of the Key Lake operation. The Key Lake operation is located approximately 570 km north of Saskatoon, Saskatchewan, near the southern boundary of the Athabasca Basin. The Key Lake site has been described in previous assessments. The EIS for the current project should summarize previous findings, in terms of local and regional scales, and summarize environmental monitoring programs currently carried out at the site.

All environmental data that are included in the EIS should be collected using accepted methodologies and be available to MOE and the RAs. These methodologies should be consistent in order to allow comparative use of the data and facilitate ecosystem management.

Should changes/additions to the existing data be needed as a result of the project, the data in the EIS should provide a sound basis for not only the EIA of the project, but also the operational environmental monitoring and post-operational decommissioning, reclamation, and abandonment. The environmental data should contribute to, and be in a form compatible with, the existing environmental effects monitoring database for the assessment of potential effects on a regional scale.

Data in the EIS should satisfy the following criteria:

- The baseline data accurately describe the components of the existing environment that may be affected by the changes contemplated by the project as proposed;
- The data should provide a sound basis for comparative monitoring complementary to the ongoing monitoring, and the development of sound decommissioning, reclamation and abandonment procedures; and
- The EIS should be self-supporting, in terms of data availability and presentation.

Existing data on environmental parameters that will not be affected by the changes proposed at the Key Lake operation, but are cited to provide context for the discussion of potential impacts, may be referenced or provided in summary form.

### **6.2 Atmospheric Environment**

The current database of climatic, meteorological and air quality information, including dust and radon data for the Key Lake operation should be referenced. Any implications for the project, (e.g., effects on hydrologic balances arising from on-site conditions) should be discussed. Any use of off-site data must be thoroughly discussed and qualified with an understanding of local and regional variability and the geographic locations of on-site and off site meteorological stations.

The EIS should include the status of current and proposed operations with respect to climate change parameters.

### **6.3 Geology and Hydrogeology**

The EIS should contain a summary description of the regional geology and hydrogeology of the Key Lake operation site sufficient to discuss the implications of the changes brought about by the project. Relevant information on surficial geology/geomorphology should be discussed in terms of any potential effects on the project (e.g., ground stability, slumping, and acid/metal release).

The structural geology such as faults, joints and shears, and their potential impact on the project should also be discussed. The special hydrogeologic characteristics (e.g., artesian conditions) and preferential flow channels, which may have an important impact on the project, should be identified and described.

The EIS should include information on the containment model and management of tailings deposited within the DTMF and the effects or changes to this model due to the proposed increase in tailings deposition level discussed. This information should include changes to the DTMF cap at decommissioning and a discussion on the pit geology in relation to the model.

The various geologic units in the DTMF should be discussed in terms of insights gained from previous episodes of slope instability and sloughing and measures being taken to prevent future sloughing.

The EIS should include information on the existence, spatial extent and quality of any existing groundwater contaminant plumes, identifying those that may interact with any of the proposed activities/modifications associated with the project. This information should indicate how the proposed activities/modifications may be influenced by these plumes, and/or the implications of these activities/modifications to the proposed remediation plans associated with these plumes.

The EIS should discuss any anticipated changes in the current hydrologic conditions, where appropriate. Any anticipated changes in quantity, quality, and flow rates of groundwater likely to be affected by the proposed project should be provided.

Implications of raising the tailings elevation in the DTMF on the current groundwater management practice should be discussed, and results of modeling under incremental increases in tailings elevation should be presented. Any changes to the current groundwater management system in the DTMF that may be necessitated by the increase in tailings thickness should be discussed and modeled.

### **6.4 Terrestrial Environment**

Relevant information on the terrestrial environment likely to be affected by the project should be included in the EIS. The information should address:

- Description of any potentially affected plant communities, including species lists, dominant species and densities for canopy, understory and ground cover;



- Numbers and characteristics of any potentially affected wildlife species, sensitive habitats, resident/migrant populations and species with commercial and/or subsistence values;
- Plant or animal species considered “rare”, “endangered”, “threatened”, and “species of special concern” under the *Saskatchewan Wildlife Act*, the *Species at Risk Act* and/or the Committee on the Status of Endangered Wildlife in Canada (COSEWIC- [www.cosewic.gc.ca](http://www.cosewic.gc.ca)); and
- Results of any previous studies at the Key Lake operation site predicting impacts to wildlife and plants.

The status of the potentially impacted valued ecosystem components (VECs) in the relevant study areas in regards to their relative abundance and any measured levels of contaminants (radiological and non-radiological) should be documented to establish baseline conditions for monitoring potential contaminants and/or contaminant accumulation. The bioassay methods used should be indicated. Sample site selection should be sensitive to prevailing wind direction and topography. Any information on levels of contaminants of potential concern (COPCs) in country foods should be highlighted.

The EIS should identify potentially impacted species within the terrestrial environment that are important components of food chains leading to, and used by, people living in the region. Any anticipated changes to the status of these species in the impact area in regards to their relative abundance and any measured levels of contaminants in their tissues, especially heavy metals and radionuclides, should be documented.

The EIS should summarize results of any previous studies at the Key Lake operation site that predicted impacts to wildlife and plants. It should comment on how representative the results are over space and time and biological populations based on monitoring design factors of randomization, controls and replication; clearly separate factual lines of evidence from inference; and state any limitations on the inferences or conclusions that can be drawn from the results.

## **6.5 Aquatic Environment**

### **6.5.1 Fish and Fish Habitat**

For the purpose of the assessment, “fish” refers to all life stages of resident fish, shellfish and crustaceans, and “fish habitat” refers to the spawning grounds, nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life support processes.

Relevant information on fish and fish habitat likely to be affected (positively or negatively) by the project should be included in the EIS. Sufficient physical, chemical, radiological and biological data should be obtained to quantify any gains or losses in the productive capacity of fish habitat resulting from the project. This information should include the following:

- A description of all potentially impacted surface water resources (waters that currently

- function as fish habitat), if any, including wetlands, lakes, sloughs, and creeks;
- A quantitative and qualitative assessment of planned drainage or water management activities or undertakings for the project that are likely to impact fish and fish habitat including levels of uncertainty. The assessment should describe short-term and long-term impacts, seasonal or temporal changes in streamflow, changes in the timing and intensity of peak flows and response to storm events. For potentially affected fish-bearing streams this analysis should include:
    - a projection of likely changes to the average annual hydrograph from current conditions; and,
    - a projection of potential changes from current conditions to monthly flow exceedance curves, or weekly exceedance curves where required to show changes in the timing of peak flows (e.g., spring freshet) and how these changes would affect fish habitat (e.g., will the aquatic ecosystem be significantly drier or wetter from current conditions);
  - A quantitative and qualitative assessment of all fish and fish habitat potentially impacted during the project including alterations, disruptions and/or destruction of fish and fish habitat from changes to lake levels and stream flows, infilling of habitat, changes in water and sediment quality in downstream water bodies and effects on aquatic biota. Activities or actions that may potentially impact fish and fish habitat include :
    - shoreline or channel degradation due to alterations in lake levels and stream flow during construction or operations or improperly sized or installed stream crossing structures;
    - the harmful alteration of fish habitat due to construction activities or the replacement of natural substrates, or loss of habitat from channel or lake infilling; and
    - fuel, chemical, or hazardous waste spills or leakages occurring during use, transportation, or storage of these materials.
  - Fish habitat assessments should include qualitative and quantitative descriptions of channel and riparian features such as channel morphology, substrate type, and vegetation.
  - Biological indicator species for the project area, including a rationale for their selection;
  - Data on potentially impacted benthic invertebrate species composition and abundance;
  - Fish abundance/density and biomass; fish species diversity, growth rate and condition for various fish species at various trophic levels; sensitive and critical use habitats; and habitat use according to fish species, life stage, time of year, etc. for relevant representative waterbodies from potentially impacted drainages;
  - Information on fish species designated as “rare”, “endangered”; “threatened” and species of special concern” under the *Species at Risk Act* and the *Saskatchewan Wildlife Act*. (refer to Committee on the Status of Endangered Wildlife in Canada (COSEWIC) ([www.cosewic.gc.ca](http://www.cosewic.gc.ca)));
  - Sediment quality and limnology of any potentially affected waters adjacent to the Key Lake operation site; and,
  - Results of any previous studies at the Key Lake operation site predicting or measuring existing impacts to water quality, sediment quality, benthic invertebrates, fish, fish habitat

and aquatic vegetation.

Sufficient physical, chemical, radiological and biological data should be obtained to quantify any gains or losses in the productive capacity of fish habitat. Regarding fish habitat, the benthic community should be properly assessed in order to evaluate the availability of food items to fish.

Sample site selection should be sensitive to plume dispersion due to the drainage patterns and the flow of ground and surface water. The proponent should note that special collection permits may be required from the MOE for components of the fish data collection program.

The EIS should summarize results of any previous studies at the Key Lake operation site that predicted impacts to fish and fish habitat. It should comment on how representative the results are over space and time and biological populations based on monitoring design factors of randomization, controls and replication; clearly separate factual lines of evidence from inference; and state any limitations on the inferences or conclusions that can be drawn from the results.

#### 6.5.2 Surface Hydrology and Water Quality

The EIS should discuss any potential changes to surface hydrology and water quality in any watersheds in the project area, as a result of the proposed project. Data on watershed areas, drainage patterns, flow rates, bathymetry and water quality (including but not limited to pH, temperature, dissolved oxygen, hardness and alkalinity) from previous studies should be summarized.

### **7.0 SOCIO-ECONOMIC ENVIRONMENT**

#### **7.1 Socio-Economic Issues**

The EIS should provide a description of employment, skill levels, training/retraining, jobs targeted for Northerners and contractor opportunities associated with development of the project. Commitments to potential local, regional and Saskatchewan suppliers should be noted.

It is noted that, in the proposal, Cameco re-affirms its commitment to hiring northern contractors and creating opportunities for northern businesses, thus ensuring further economic benefits for local people. Any existing or new measures to be taken in order for Cameco to fulfill this commitment should be described.

The EIS should summarize the community health profile, regional health services and public health infrastructure in the site, local and regional study areas.

#### **7.2 Public and Occupational Health and Safety**

The EIS should discuss the impact of the project on both conventional and radiological public and worker health and safety.

The EIS documentation should include:

- Calculations documenting any anticipated changes to predicted annual radiation doses to all persons working at the Key Lake operation during normal operations and those as a result of malfunctions and accidents;
- Calculations of annual radiation exposure to residents of surrounding communities;
- Any change to the potential for non-radionuclide hazards to the public and workers in airborne dust, and programs that are, or will be, in place to monitor for these hazards;
- Potential radiation doses to mill workers as a result of any anticipated changes to current milling operations;
- A statement of any radiological design changes that will be required as a result of the project;
- Details on how the current source term throughout the facility will be affected as a result of the project; and
- Any changes as a result of the project to engineered controls, programs, Action Levels and a Radiation Protection Code of Practice proposed to control public and worker radiation doses and intake of radioactive prescribed substances.

The EIS should discuss any anticipated changes to existing radiation protection programs including changes to the routine radiological monitoring schedule, changes to the dosimetry monitoring strategy, changes in radioactive contamination control programs, and changes in training programs. This EIS should discuss the development of any additional training modules for environmental instrumentation, protection, and awareness and how Cameco's commitment to the ALARA (As Low As Reasonable Achievable) principle of radiation protection will be implemented.

Programs should meet the regulatory requirements of *The Occupational Health and Safety Act*, the *Occupational Health and Safety Regulations*, the *Saskatchewan Mines Regulations (2003)*, and the *NSCA Radiation Protection Regulations*.

The EIS should also include information on worker health and safety as a result of malfunctions and accidents.

### **7.3 Heritage Resources**

As noted in the March 2010 Project Description, heritage resource impact assessment reviews of the Key Lake operation were previously conducted in 1977, 1978 and most recently in 2008. The EIS should include a summary of these assessments and report on any subsequent heritage resource reviews conducted to assess the potential heritage resource impacts of the project.

The proponent should submit a description of the project to the Heritage Resources Branch, Saskatchewan Ministry of Culture, Youth and Recreation for heritage resource review. Should the land requirements of the project change, an additional evaluation of heritage potential would be required.

The proponent should also confirm heritage resource reviews and conclusions with local First

Nations and Métis during the conduct of the EIA.

## **8.0 PUBLIC AND ABORIGINAL INVOLVEMENT**

Local and regional residents and interested organizations should be fully informed of the project throughout the entire regulatory process. Potentially affected Aboriginal groups must be provided with information on the project and its potential impacts. The proponent must ensure that it engages with Aboriginal groups who may be affected by the project and who have asserted, established or potential Aboriginal rights, Aboriginal title or treaty rights. It is noted that, in the proposal, Cameco commits to a stakeholder engagement program as part of the EA.

The EIS should describe the proponent's program for consultation with northern residents, residents from First Nations, Métis and other northern communities should be included. Public involvement and any concerns or issues raised should be documented in the EIS and their significance evaluated. The documentation should provide information regarding the demographics of the communities that were part of the public involvement program and the level of consultation that took place with these communities.

The program should promote a broader understanding of both the potential impacts of the project and the monitoring programs and results. Efforts should be made to involve the public and Aboriginal groups in issue identification (e.g., contribution of traditional knowledge to the determination of VECs), and problem resolution. Elements of the plans for public and Aboriginal peoples information/engagement should provide a basis for discussion of enhancement of regional business and employment opportunities. This information should include a concise description of Cameco's public engagement program.

While licence applicants (proponents) and existing licensees of nuclear projects do not bear the Crown's legal obligation to consult Aboriginal peoples under section 35 of the *Constitution Act, 1982*, as proponents of a project that will need to be regulated by MOE and the CNSC, the proponent's role in engaging Aboriginal peoples is important to the efficacy of the Crown's decision-making. Licence applicant's consultation activities are valued as they can inform and assist the Crown's consultation activities. The outcome of all such activities, including any proposed accommodation measures by the license applicant, will also form part of the evidence presented by licence applicants for consideration by the MOE or CNSC.

Additionally, the MOE and the CNSC may use the information provided by the proponent on their stakeholder engagement efforts, which would include information provided to Aboriginal groups regarding the potential of the proposed activities to affect Treaty or Aboriginal rights to inform its decisions regarding any Crown Duty to Consult obligations that may be required with respect to the proposed project.

### **8.1 Federal Process Requirements**

A public registry for the project assessment has been established. This includes identification of the project assessment in the Canadian Environmental Assessment Registry (CEAR), which can be accessed on the Internet web site of the agency ([www.ceaa.gc.ca](http://www.ceaa.gc.ca)). The CEAR reference

number for the project is 10-01-55518.

In accordance with section 18(3) of the CEAA, the CNSC is responsible for determining the need for and level of public participation for a project. Based on the public participation criteria and rationale (Appendix B), it was determined that the project requires public participation. The CNSC will perform the following public participation activities:

- Post notice of availability of the draft Project-Specific Guidelines Scoping Document and allow a 30-day review and comment period; and,
- Post notice of availability of draft EA Screening Report and allow a 30-day review and comment period.

As the MOE is the lead for this EA, the project is also subject to the provincial public participation process. The CNSC will support the provincially-led public review of the EA Guidelines, EIS, and Technical Review Comments by posting a notice of availability of all documents on the CNSC website and the CEAR. Additionally, the public and Aboriginal groups will be provided an opportunity to comment on the CNSC EA Screening Report. The CNSC and MOE may consider a joint public review period for the EIS, Technical Review Comments, and EA Screening Report.

The CNSC is satisfied that the public participation processes to be implemented by the proponent and the province with the support of the CNSC will be sufficient. The public participation process will provide the public with a variety of opportunities to be informed and provide input at all stages of the study. The process will also allow the public to react to proposals in order to influence recommendations and decisions, and to be informed of all decisions.

## **8.2 Proponent Led Public Engagement**

Regional residents or organizations should be fully informed of the project as described in the project proposal. As interest in the development may extend beyond the project area, Cameco should be prepared to provide project information to, and address issues identified by, persons residing outside of the project area.

It is noted that, in the proposal, Cameco commits to a stakeholder consultation program as part of the EA. The program should promote a broader understanding of both the potential impacts of the project and the monitoring programs and results. Elements of the plans for public information/consultation should provide a basis for discussion of enhancement of regional business and employment opportunities.

Cameco should contact the Northern Mines Monitoring Secretariat (NMMS) - the Saskatchewan Provincial Agency dedicated to acquiring and disseminating information about Saskatchewan's uranium mining industry, and coordinating the activities of the Environmental Quality Committees (EQCs) within the Northern Administration District.

It is further expected that Cameco will:

- Provide information through community meetings or various media so that the public can be informed and participate effectively;
- Receive information and comments from the public;
- Discuss issues and clarify positions and concerns with the public;
- Build consensus among key groups or individuals particularly affected by the project, i.e.; the EQCs; and
- Inform participants of results and decisions.

The EIS should describe Cameco's public consultation efforts. Generally, the public includes: local residents, community groups, EQCs, aboriginal groups, environmental groups, the private sector, and any municipal governments. Comments and concerns raised should be documented and their significance evaluated.

## **9.0 ENVIRONMENTAL IMPACT ASSESSMENT**

### **9.1 General Concepts**

The EIA process must address factors identified in the introduction and provide the information necessary to determine the likelihood of significant adverse effects and whether the benefits to the Province of the proposed activity justify the environmental costs.

Incremental environmental effects of the project, and their significance, must be described, including the environmental effects of malfunctions or accidents that may occur in connection with the project. Any cumulative environmental effects that are likely to result from the project in combination with historic and ongoing operations at the Key Lake site should be described.

Residual environmental effects which cannot be mitigated during operation and decommissioning should be identified and their significance discussed, including how these residual effects may affect future land use. Environmental effects are defined in CEAA as (a) any change that the project may cause in the environment, and (b) any effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons, or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, and (c) any change to the project that may be caused by the environment, whether any such change occurs within or outside Canada.

### **9.2 Regional/Cumulative Impacts**

The EIS should discuss whether existing environmental conditions, including other uranium developments in the area, will influence the project. The discussion should address whether the project-specific effects of the project, combined with the impacts from historic and ongoing operations at the Key Lake site and existing and planned developments in the region will result in, or contribute to, any regional or cumulative environmental effects. Specific attention should be paid to the potential for cumulative effects of releases to the Wheeler River from the Key Lake operation. A comprehensive Wheeler River baseline would be required to support a long-term

monitoring program should there be the potential for cumulative effects.

The CEA Agency guidance documents *Operational Policy Statement OPS-EPO/3-1999 Addressing Cumulative Environmental Effects Under the Canadian Environmental Assessment Act, and Cumulative Effects Assessment Practitioners Guide* should also be consulted regarding the scope of cumulative impacts to be evaluated in the EIS.

### **9.3 Project-Specific Impacts**

The EIS should document and evaluate the significance of positive and negative project-related impacts on the environment. To provide context, the EIS should discuss whether historic exploration and industrial development activities have influenced the current status of the environment, fisheries, wildlife, or resource use at the Key Lake operation. The EIS should focus on the significance of incremental effects resulting from changes to the currently licensed activities needed to support the project.

Impact predictions should be categorized according to defined criteria, and should be as specific and quantitative as possible. Source terms for potential surface water, ground water and atmospheric impacts, together with contaminant transport and plume dispersion modelling results should be provided. For each source term, or combination of source terms, impact predictions should be categorized according to defined criteria (e.g., soil, sediment and water quality objectives) and should be as specific and quantitative as possible.

The EIS should assess the potential effects of any environmental changes on human health or the use of lands, waters and resources for traditional purposes by aboriginal persons and on the quality of any country foods that may be harvested. Potential entry of contaminants of concern in liquid and airborne waste streams, (e.g., radionuclides, heavy metals) into food chains and the terrestrial or aquatic environment, should be described to the extent that they are above levels predicted for currently licensed activities. As part of human health assessment, regional health services and public health infrastructure in the site, local and regional study areas should be discussed. Information on project-related contaminant transfer through the human food chain should also be included.

The EIS should discuss the project with respect to greenhouse gases and other climate change parameters.

### **9.4 Effects of the Environment on the Project**

The assessment must also take into account how the environment could adversely affect project; for example from severe weather and forest fires. Possible important interactions between the natural hazards and the project should be first identified, followed by an assessment of the effects of those interactions, the available mitigation measures (including design), and the significance of any remaining likely adverse effects on the project.

The assessment must take into account any potential effects of climate change on the project,



including an assessment of whether the project is sensitive to changes in climatic conditions during its lifespan. Guidance can be found on the CEAA website: *The Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment 2003. Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners*, (<http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=A41F45C5-1>).

## **10.0 MITIGATION AND CONTINGENCY PLANNING**

The EIS should discuss any anticipated changes to existing mitigation measures and current contingency planning at the Key Lake operation necessary to manage activities associated with the project.

Although the detailed mitigation and contingency plans would be designed in consultation with regulatory agencies during licensing and would be subject to periodic review during operations, the EIS should document mitigation and contingency plans which would be implemented in the event of containment failures, spills, malfunctions, accidents or inadvertent waste releases associated with the project. The proponent should identify commitments to adaptive management measures to be implemented should monitoring or follow-up programs identify unreasonable or unforeseen environmental impacts. The EIS should discuss any changes necessary to existing adaptive management, mitigation measures and current contingency planning at the Key Lake operation to manage activities associated with the project.

If needed as a result of modification to the currently licensed activities, a hazard analysis or other risk-based approach should be used to identify situations where mitigative measures may be needed, and if an engineering or administrative control solution is not technically and economically feasible, then a contingency plan should be developed.

Support for the regional mill concept was partially based on the recognition that an ongoing commitment to improved effluent quality and decreased contaminant loading is required based on improved water management, and the identification and implementation of advanced treatment technology and management practices over the extended life-cycle of a milling operation. Hence, the proponent should demonstrate that the design/infrastructure of the existing /proposed water treatment system does not restrict the ability to incorporate further upgrades to the system taking advantage of developed or developing treatment technologies, should the need arise over the proposed extended operational period.

## **11.0 MONITORING AND FOLLOW-UP PROGRAMS**

As a result of the various EA approvals in conjunction with federal and provincial operating licences, the Key Lake operation initiated and maintains monitoring and/or EA follow-up programs that are subject to regular reporting requirements. The EIS should identify the need for, and requirements of, any follow-up assessment or monitoring programs beyond those currently in place as they relate to the project.

### **11.1 Monitoring Program**

The EIS should identify the need for modifications to existing monitoring programs necessitated by the project.

Although the detailed monitoring programs would be designed in consultation with regulatory agencies during licensing and would be subject to periodic review during operations, the EIS should provide a description of proposed programs. Taking into consideration improved techniques, the monitoring programs should be consistent with baseline data sampling methodology and ongoing Key Lake operation monitoring programs and be compatible with the existing regional environmental database.

Monitoring should not only ensure compliance with regulatory requirements but should also allow the systematic audit of the EA process, specifically the accuracy of predictions and the adequacy of proposed mitigation measures. The monitoring programs, in verifying the environmental impact predictions, should confirm the design criteria for reclamation and abandonment objectives and planning procedures.

Prior to exceeding current production limits, the proponent will complete aquatic baseline investigations within Delta Lake and the Wheeler River.

Any monitoring program should incorporate and build upon the work undertaken in fulfillment of the environmental effects monitoring requirements of the MMER of the federal *Fisheries Act*.

### **11.2 Follow-Up Program**

If changes to the existing federal follow-up program are required as a result of the project, the program should include a detailed scope of the change in program together with schedule and reporting milestones. Changes to the existing follow-up program should be described in the EIS in sufficient detail to allow independent judgement as to the likelihood that it will deliver the type, quantity and quality of information required to reliably verify predicted effects (or absence of them), confirm EIS assumptions, and confirm effectiveness of mitigation. The EIS should include a description of the objectives of the follow-up program, the elements of the plan required to achieve the objectives, the implementation plan and reporting commitments.

The CNSC would ensure the implementation of any required follow-up program through the licensing and compliance process. The CEAA follow-up may be a component of the larger monitoring program, but should be specifically defined and presented.

## **12.0 DECOMMISSIONING, RECLAMATION AND ABANDONMENT**

Although the detailed plans for decommissioning, reclamation, and abandonment would be developed in consultation with regulatory agencies through regulatory processes, and would be subject to periodic review during operations, the EIS should provide descriptions of the key elements of these plans and changes that would result from the project.

## 12.1 Conceptual Decommissioning Plan

The EIS should briefly describe the existing conceptual decommissioning plans for the Key Lake Operation and any changes to those plans as a result of the project, including:

- Decommissioning objectives;
- Alternative procedures for decommissioning site facilities;
- Preferred procedures for decommissioning (the MOE supports progressive decommissioning);
- Decommissioning, reclamation and abandonment of all related works and surface disturbance;
- Identification of acceptable post-operational land use options for the project site;
- Environmental mitigation and reclamation measures (e.g., contouring, waste stabilization and re-vegetation);
- Post-operational landforms and drainage systems; and
- Proposed contingency measures.

The decommissioning plan should be developed with reference to the CNSC's regulatory guide G-219 *Decommissioning Planning for Licensing Activities* (CNSC 2000a).

The conceptual plan should reflect project impact assessment, mitigation and monitoring experience. The plan should identify, to the extent possible:

- Environmental impacts which can be mitigated by post-decommissioning procedures;
- Impacts which cannot be mitigated - these impacts constituting irretrievable environmental losses accruing to the province and to future generations and how these impacts may affect future land use after decommissioning and reclamation is complete; and
- Any potential opportunities for environmental enhancement.

Procedures to ensure that resources are available to implement the plan on mine closure, or at an unscheduled time, should be discussed.

## 12.2 Reclamation

Reclamation planning concepts which should be included in the EIS are described in the *Guidelines for Northern Mine Decommissioning and Reclamation* (MOE, 2008). These guidelines include criteria for cleanup of soils contaminated by chemical or radioactive materials.

All disturbed sites should be reclaimed as soon as possible after disturbance. Operation procedures which may minimize post-operational reclamation and abandonment requirements should be identified.

For the purposes of the EA, the EIS should provide any changes required to the existing reclamation plan as a result of the project. Supporting documentation for proposed changes to existing reclamation programs that are necessitated by the project and incremental to those currently in place for the Key Lake Operation should be included in the EIS.

### **12.3 Abandonment and Institutional Control**

The EIS should include any changes to the proposed criteria for abandoning the Key Lake Operation and associated infrastructure and commitments for the monitoring of decommissioning activities prior to final abandonment.

Changes to the anticipated provisions for the long-term institutional control should be discussed, including, but not being limited to:

- Record keeping or archiving that fully describes past operations (including containment from spills, malfunctions and accidents), decommissioning plans and assessments, final configurations, and release verification;
- Post-abandonment site monitoring and verification;
- Need for passive site management;
- Land controls; and
- Long term financial liabilities for monitoring, care, and maintenance, or contingency remediation.

### **13.0 SUMMARY**

The EIS should provide a concise, complete statement of the anticipated net environmental costs and benefits of the proposed project in both the short and long-terms. The discussion should include, if possible, any intangible costs and benefits that cannot be expressed in economic terms. To satisfy federal and provincial requirements, this statement must include conclusions specifically on whether the project is likely to cause significant adverse effects on the environment.

## 14.0 REFERENCES

- Canadian Environmental Assessment Agency (CEA Agency). 1999. Cumulative Effects Assessment Practitioners Guide. [http://www.ceaa-acee.gc.ca/Content/D/A/C/DACB19EE-468E-422F-8EF6-29A6D84695FC/Cumulative-Effects\\_e.pdf](http://www.ceaa-acee.gc.ca/Content/D/A/C/DACB19EE-468E-422F-8EF6-29A6D84695FC/Cumulative-Effects_e.pdf)
- Canadian Environmental Assessment Agency (CEA Agency). 2003. The Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment 2003. Incorporating Climate Change Considerations in Environmental Assessments: General Guidance for Practitioners. <http://www.ceaa-cee.gc.ca/default.asp?lang=En&n=A41F45C5-1>
- Canadian Environmental Assessment Agency (CEA Agency). 2007. Operational Policy Statement. Addressing Cumulative Environmental Effects Under the Canadian Environmental Assessment Act. [http://www.ceaa-acee.gc.ca/Content/D/A/C/DACB19EE-468E-422F-8EF6-29A6D84695FC/cea\\_ops\\_e.pdf](http://www.ceaa-acee.gc.ca/Content/D/A/C/DACB19EE-468E-422F-8EF6-29A6D84695FC/cea_ops_e.pdf)
- Canadian Nuclear Safety Commission (CNSC). June 2000a. G-219 Decommissioning Planning for Licensing Activities. [http://www.nuclearsafety.gc.ca/pubs\\_catalogue/uploads/G219\\_e.pdf?CFID=10060911&CF\\_TOKEN=27995734](http://www.nuclearsafety.gc.ca/pubs_catalogue/uploads/G219_e.pdf?CFID=10060911&CF_TOKEN=27995734)
- Letter, A. Wong (Cameco Corporation) to M. LeBlanc (CNSC), “Key Lake Operation: Licence Amendment Application and Project Description for the Key Lake Extension Project”. March 3, 2010. E-DOC: 3510184
- Ministry of Environment (MOE). January 1996. Saskatchewan Environmental Assessment Branch. The Saskatchewan Environmental Assessment Review Process.
- Ministry of Environment (MOE). 2008. Guidelines for Northern Mine Decommissioning and Reclamation. EPB 381. <http://www.environment.gov.sk.ca/Default.aspx?DN=52a8a117-332f-4c49-89b9-2f90d79bca5a>

## APPENDIX A - SIMPLE SCREENINGS DETERMINATION

### Record of Determination

|    | Criteria Evaluation Questions for Simple Screenings  | Yes/True                            | Uncertain | No/False |
|----|--|-------------------------------------|-----------|----------|
| 1. | The site is well characterized, as are its programs.   | <input checked="" type="checkbox"/> |           |          |
| 2. | The proposed project is related to an existing licensed facility.  | <input checked="" type="checkbox"/> |           |          |
| 3. | The proposed project represents an incremental change to the overall facility.   | <input checked="" type="checkbox"/> |           |          |
| 4. | The environmental performance of the existing licensed activities meets CNSC expectations.   | <input checked="" type="checkbox"/> |           |          |
| 5. | The proposed project is based on technology that is known to the proponent and CNSC staff.   | <input checked="" type="checkbox"/> |           |          |
| 6. | The proposed project would only require mitigation measures with which the proponent has a demonstrated familiarity, and/or that are considered standard technology within the industry.   | <input checked="" type="checkbox"/> |           |          |
| 7. | The proposed project does not introduce project-environment interactions that cannot be mitigated with standard or proven technology.  | <input checked="" type="checkbox"/> |           |          |
| 8. | Based on potential project-environment interactions, the proposed project is not likely to pose any significant adverse effects on the health of workers and the public, cumulative effects, or those that may arise as a result of accidents or malfunctions. | <input checked="" type="checkbox"/> |           |          |

Rationale and additional comments to support determination:

1. The site is well characterized as it has been subject to a number of EAs. The proposed project is located on an existing licensed facility. The construction and operation of the Key Lake Operation was approved in 1981 by the province based on the Key Lake Board of Inquiry Report, 1981. In 1995, the province and the government of Canada approved Cameco’s proposal to convert the Deilmann pit to an in-pit tailings management facility. In 1995, the McArthur River project was approved by the Joint Panel, which included the deposition of McArthur River tailings in the DTMF. Other EA;s (e.g. Key Lake Mill Services 2009) have been conducted for mining and milling activities that have been undertaken at the Key Lake Operation site, which have contributed to site characterization.
  
2. The proposed project is located on an existing licensed facility.
  
3. The proposed project consists of activities (i.e., increased tailings capacity, increased production capacity) that represent an incremental change to the overall licensed facility.
  
4. CNSC staff conducted a review of the Environmental Protection Program area to assess the adequacy with respect to the CNSC S-296 standard, *Environmental Protection Policies, Programs and Procedures for a Class I Nuclear Facility and Uranium Mines and Mills*. It was concluded that the environmental policy, identification of environmental aspects, the use of objectives and targets, roles and responsibilities, communication, emergency preparedness and response, and documentation processes meet expectations.  
  
Cameco is required to submit a Quarterly Environmental and Hydrological Report to comply with requirements specified in the operating approval and license issued to Cameco Key Lake Operation by the MOE and CNSC, respectively.
  
5. CNSC staff is familiar with the technology being presented in this project. All project activities are based on technology that is known to Cameco and CNSC staff.
  
6. Cameco is familiar with all mitigation measures required for the project activities and these mitigation measures are considered standard technology within the industry.
  
7. Any new project-environment interactions are expected to be adequately mitigated with standard and/or proven technology.
  
8. At this stage of the EA, it appears that this project is not likely to cause significant adverse effects on the health of workers and the public; cumulative effects; or those that may arise as a result of accidents or malfunctions. The EA will identify all potential project-environment interactions and confirm that the project is not likely to cause significant adverse effects.

As a result of the scan above, is a simple screening appropriate in the circumstances?

[Cut and paste the following check mark ✓ in the appropriate box and delete these italicized instructions.]

|     |                                     |    |    |                          |
|-----|-------------------------------------|----|----|--------------------------|
| YES | <input checked="" type="checkbox"/> | or | NO | <input type="checkbox"/> |
|-----|-------------------------------------|----|----|--------------------------|

## APPENDIX B - PUBLIC PARTICIPATION DETERMINATION

### Evaluation of Criteria

| Assessment Criteria   | None                                | Low                                 | Moderate                            | High |
|---|-------------------------------------|-------------------------------------|-------------------------------------|------|
| 1. There is an indication of existing or likely public interest in :<br>a. the type of project<br>b. the location of the project or<br>c. the ways the project might affect the community.      |                                     | <input checked="" type="checkbox"/> |                                     |      |
| 2. The stakeholders who may be interested have a history of being involved.   |                                     | <input checked="" type="checkbox"/> |                                     |      |
| 3. The project could generate conflict between environmental and social or economic values of concern to the public   |                                     | <input checked="" type="checkbox"/> |                                     |      |
| 4. The project could be perceived as having the potential for significant adverse environmental effects (including cumulative environmental effects and effects of malfunctions and accidents). |                                     | <input checked="" type="checkbox"/> |                                     |      |
| 5. There is potential to learn from community knowledge or Aboriginal traditional knowledge.  |                                     |                                     | <input checked="" type="checkbox"/> |      |
| 6. The direct and indirect environmental effects of the project and their significance are uncertain.   | <input checked="" type="checkbox"/> |                                     |                                     |      |
| 7. The project has not been subject to other public participation processes of appropriate scope and coverage that would meet CNSC objectives.  |                                     | <input checked="" type="checkbox"/> |                                     |      |

|  |          |     |     |     |
|--|----------|-----|-----|-----|
| Count number of check marks in each column | 1        | 5   | 1   | 0   |
| Multiply by:                               | x 0      | x 1 | x 2 | x 3 |
| Total for each column is:                  | 0        | 5   | 2   | 0   |
| Add totals for an overall score of:        | <b>7</b> |     |     |     |

### Rationale for determination

|  |
|--|
| <p><i>Criterion 1.</i></p> <p>a) Cameco began early efforts to consult and engage northern community members and leaders (including Métis), businesses, organizations and regulators stakeholders regarding the initial stages of the project including an EQC Workshop and Meetings (May 2008, December 2008, and May 2009), a Tailings Workshop (July 2008), a Key Lake Focus Group Meeting (November 2008), Northern Leaders Roundtable (April 2009) and Key Lake Operation Extension Project Community Workshops (November 2009). Most questions and concerns were in relation to the protection of the environment, tailings management and economic benefits to the communities. The groups also requested that Cameco continue to engage communities as the project develops.</p> |
| <p><i>Criterion 2.</i></p> <p>Four oral interventions and eight written interventions were presented by stakeholders during the September 2009 Key Lake Operating licence renewal hearing. This is an indication that stakeholders</p>   |



|   |
|---|
| <p>who may have an interest in activities related to the Key Lake operation site have a history of being involved. Tailings management was a common concern, although most stakeholders were overall in favour of renewing the operating licence for the Key Lake operation, therefore, there is still an indication of stakeholders having a history of being involved.</p>  |
| <p><i>Criterion 3.</i><br/>The Key Lake operation extension project is not anticipated to generate conflict between environmental and social or economic values of concern to the public as the project is intended to renew production facilities and provide the necessary infrastructure and waste management facilities to support continued uranium milling at the Key lake operation to 2040 or longer. The project is expected to result in a small incremental increase in the level of effects that has resulted, or is expected to result from the existing Key Lake operation.</p>   |
| <p><i>Criterion 4</i><br/>Previous public hearings for the Key Lake operation (i.e., 2008 operating licence renewal) in conjunction with the comments received during Cameco’s recent early stakeholder engagement for the project does not indicate that the public could perceive the project as having potential for significant adverse environmental effects.</p>  |
| <p><i>Criterion 5.</i><br/>Local communities and Aboriginal groups were involved in previous EAs and were provided the opportunity to share relevant community and traditional knowledge. However, Cameco intends to continue proactive dialogue with Aboriginal groups in northern Saskatchewan in regards to the project in an effort to learn from community and Aboriginal tradition knowledge.</p>   |
| <p><i>Criterion 6.</i><br/>There is minimal uncertainty regarding direct and indirect environmental effects relating to the project.</p>  |
| <p><i>Criterion 7.</i><br/>The project will be subject to the Province of Saskatchewan’s public participation processes. This includes public consultation on the EA Project-Specific Guidelines, the EIS and the Technical Review Comments. Technical Review Comments are issues identified by the SMOE, CNSC staff and identified FAs during their review of the EIS, and are to be addressed by Cameco. Cameco will make all necessary revisions based on the Technical Review Comments, and a revised EIS will be submitted. The revised EIS and Technical Review Comments are subject to the provincial public review process. The CNSC will co-ordinate with the provincial public participation processes, and post appropriate notices concerning public participation on the Canadian Environmental Assessment Registry and the CNSC website. Furthermore, the CNSC will conduct a public review period on the EA Screening Report, which may occur concurrently with the public review of the EIS and Technical Review Comments. CNSC staff will revise the EA Screening Report based on comments received, prior to submission to the Commission for decision.</p> |

Additional reasons, if any, why public participation *is* **or** *is not* appropriate for this project:

|    |
|----|
| 1. |
| 2. |

As a result of the scan above, is public participation appropriate in the circumstances of this screening-level EA?

|     |                                     |    |    |                          |
|-----|-------------------------------------|----|----|--------------------------|
| Yes | <input checked="" type="checkbox"/> | or | No | <input type="checkbox"/> |
|-----|-------------------------------------|----|----|--------------------------|

If yes, indicate the level of participation required, based on the tabulated score.

|                |                          |               |                                     |                     |                          |                  |                          |
|----------------|--------------------------|---------------|-------------------------------------|---------------------|--------------------------|------------------|--------------------------|
| None<br>0 to 2 | <input type="checkbox"/> | Low<br>3 to 7 | <input checked="" type="checkbox"/> | Moderate 8<br>to 14 | <input type="checkbox"/> | High<br>15 to 21 | <input type="checkbox"/> |
|----------------|--------------------------|---------------|-------------------------------------|---------------------|--------------------------|------------------|--------------------------|