

EXECUTIVE SUMMARY

Introduction

AREVA Resources Canada Inc. (AREVA) is the majority owner and operator of the Midwest Project. AREVA is a Canadian company with its head office located in Saskatoon, Saskatchewan, approximately 750 km south of the Midwest site. AREVA is also the majority owner and operator of the McClean Lake Operation, a uranium mine and mill facility located approximately 17 km east of the Midwest Project. Both the Midwest Project and the McClean Lake Operation lie within the eastern margin of a region in the northern Saskatchewan known as the Athabasca Basin.

In December 2005, AREVA submitted a proposal to Saskatchewan Ministry of Environment (MOE), the Canadian Nuclear Safety Commission (CNSC) and the Canadian Environmental Assessment Agency (CEAA) to extend mining activities at the McClean Lake Operation to include the Midwest Project.

The purpose of the Project is to mine the Midwest ore body and to produce a uranium concentrate, which is commonly referred to as yellowcake. The Midwest Project is needed to add to the ore reserves available for processing at the McClean Lake Operation and thereby add to the positive economic, employment and business opportunities related to uranium developments in northern Saskatchewan. From a broad perspective, world uranium production currently falls far short of projected future demands. Uranium from the Midwest Project will help meet the future needs for nuclear power and assist in reducing greenhouse gas emissions on a global scale.

AREVA was informed that the proposed Midwest Project would require an environmental assessment (EA) under both *The Environmental Assessment Act* of Saskatchewan (SEAA) and the *Canadian Environmental Assessment Act* (CEAA). AREVA is required to conduct an EA and prepare an environmental impact statement (EIS) for technical and public review. This report constitutes the required EIS.

Assessment Scope and Methodology

The scope of the Midwest Project has been provided by MOE and the federal Responsible Authorities (RAs). It includes the physical works and activities associated with the construction, operation and decommissioning of the following project components:

- the dewatering of Mink Arm of South McMahon Lake;
- the Midwest open pit mine, including associated infrastructure;
- waste rock management facilities located at the Midwest site;
- the transportation and utility corridor, to be utilized as a dedicated haul road;
- the waste water management system that is proposed for treating and transporting waste water from the Midwest Project to the Sink/Vulture Treated Effluent Management System (S/V TEMS) at the McClean Lake Operation;
- the modifications at the JEB mill to facilitate milling Midwest ore;
- all physical works and undertakings associated with the fish habitat compensation plan

Similarly, MOE and the federal RA's have determined the scope of the assessment. The following factors are required to be included in the Midwest Project EA:

- the environmental effects of the Midwest 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 these environmental effects;
- comments from the public that are received in accordance with the cooperative environmental assessment process;
- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the Project;
- the purpose of the Project;
- alternative means of carrying out the Project that are technically and economically feasible and the environmental effects of any such alternative means;

- the need for, and the requirements of any follow-up program in respect of the Project; and
- the capacity of renewable resources that are likely to be significantly affected by the Project to meet the needs of the present and those of the future.

The Midwest Project entails activities at the Midwest site, at the McClean Lake Operation, and along a proposed transportation and utility corridor connecting the two sites. For some components, such as waste water management, and waste rock management, an integrated assessment of environmental effects of both the Midwest Project and current and future activities at the McClean Lake Operation is necessary to confirm that environmental effects from the combined projects will not likely result in significant adverse effects.

The assessment methodology systematically considers how the Project facilities and operations interact with the environment. Where potential adverse effects are identified, feasible mitigation measures are selected, and an assessment carried out on the residual effects. The proposed mining and milling of the Midwest ore body primarily utilizes previously proven methods and many existing facilities which enables the application of a robust approach to the conduct of this assessment.

Description of the Project

The proposal describes mining at the Midwest Project and the processing of the ore at the JEB Mill. The Midwest Project will be operated as part of the McClean Lake Operation, with the activities integrated into the McClean Lake Integrated Quality Management System. The Midwest Project therefore consists of three major components:

- developing the Midwest ore deposit as an open pit mine;
- construction of a transportation and utility corridor, linking the Midwest Project site with the McClean Lake Operation; and
- modifying the JEB mill, to accommodate the processing of ore from the Midwest Project.

The Midwest ore body lies approximately 200 m below Mink Arm of South McMahon Lake. Key features of development at the Midwest Project are:

- dewatering of Mink Arm ;
- installation of a dewatering well ring around the proposed open pit;

- construction of a water treatment plant to produce high quality treated effluent for transfer to the S/V TEMS at the McClean Lake Operation;
- development of the open pit using methods similar to those practiced at the McClean Lake Operation;
- construction of the associated surface facilities such as ore stockpile pads, waste rock stockpile pads, surface drainage earthworks, maintenance shops, mine offices and dry facilities;
- management of waste rock at the Midwest site; and
- implementation of the fish habitat compensation plan.

The preferred route for the transportation utility corridor between the Midwest Project and the JEB Mill is approximately 17 km in length. Its function is identical to that of the Sue haul road at the McClean Lake Operation. Ore from the Midwest Project will periodically be transported to the JEB Mill for processing. This corridor will also be used to support mining activities: transport of mine workers, parts and supplies to and from the JEB site. The right of way for the corridor incorporates a treated effluent pipeline and a potential power line. Mine water will be treated at the Midwest site and transferred via the pipeline to the McClean Lake Operation for release into the S/V TEMS.

Relatively minor modifications to the JEB Mill are required to process ore from the Midwest Project. Alterations are necessary to optimize the process for the treatment of the ore and to increase the production capacity of the JEB Mill. Midwest tailings will be deposited in the JEB TMF. However, no changes are required to the operation of the TMF or to the JEB WTP for the processing of ore from the Midwest Project at the McClean Lake Operation.

The development of the Midwest open pit is expected to take approximately five years. It is anticipated that initial ore will be accessed and fed to the JEB Mill approximately two years after commencing mining. Milling of the Midwest ore is expected to continue for approximately 5 years.

Upon completion of mining operations at the Midwest site, decommissioning activities will commence. In general, stockpiles will be contoured, buildings and equipment will be dismantled and salvaged, contaminated material and remaining material that cannot be salvaged will be disposed of in the Midwest pit. The Midwest WTP will be used during decommissioning, and when it is no longer required, it will be dismantled, equipment salvaged, and remaining non salvageable material will be disposed of in the Midwest pit. A till cap will be constructed over the wastes in the pit. Upon decommissioning, the partially backfilled Midwest pit will be allowed to flood to natural levels and remain isolated from South McMahan Lake.

The major decommissioning steps for the McClean Lake Operation, including dismantling of the mill and other physical structures, closure of the JEB TMF and waste rock disposal locations, and remediation of disturbed areas are detailed in McClean Lake Operation “Preliminary Decommissioning Plan and Financial Assurance”. The incorporation of the proposed Midwest Project will not significantly alter the plan that is currently in place.

Description of Existing Environment

In Section 3, the Midwest Project is described, including those components of the Project that require changes at the existing McClean Lake Operation, and the transportation and utility corridor options that connect the two sites. Section 2 outlines the hierarchy of spatial and temporal assessment boundaries chosen to facilitate the assessment and interpretation of the potential Project-environment interactions.

The environment is comprised of dynamic ecosystems, whose composition reflects the complex interaction of the biotic (living) and abiotic (nonliving) components. To address potential Project-environment interactions, it is necessary to have a broad understanding of the environment within which the project will be undertaken. It is also necessary to understand the dynamic nature of key components of the environment in order to establish a basis upon which effective monitoring programs can be established.

Project activities will occur within a geographic area which straddles several watersheds. Mining will occur within the Smith Creek watershed and will be closely associated with the Nicholson Creek watershed. Transportation will require the development of a transportation and utility corridor between the Midwest Project and the McClean Lake Operation located in the upper Collins Creek watershed. For the Midwest Project, a local assessment boundary was established which encompassed the upper Collins Creek watershed, the Smith Creek watershed and the Nicholson Creek watershed.

Section 4 provides a comprehensive characterization of the terrestrial and aquatic environments within this local assessment boundary, with particular attention to changes which may have been associated with past and current licensed activities. The characterization of environmental components is based on extensive baseline investigations, complemented with extensive operational monitoring activities. A comprehensive Environmental Monitoring Program (EMP), which built on existing baseline data collection, was implemented in 1996 following the commencement of mining activities at the McClean Lake Operation. The McClean Lake Operation EMP incorporates robust study designs to assess the effects of mining and milling on the surrounding environment and enables comparisons between baseline and operational periods and between reference and exposure areas.

Throughout the baseline and operational periods, a large amount of information has been obtained on the existing environment within the local assessment boundary. In preparation for this EIS, supplemental investigations were conducted between 2003 and 2007 to update and refine the environmental baseline to better characterize potential Project-environment interactions. These studies include additional characterization of the potential for rare and endangered species, fish habitat and heritage resources along the proposed road corridors. Furthermore, the ecosite phase classification, which incorporated a large portion of the local assessment boundary, facilitated the evaluation of wildlife habitat and the identification of those habitats with the potential to support rare and endangered species.

Thus the characterization of the physical, aquatic and terrestrial environment within the local assessment boundary provides a comprehensive basis with which to evaluate potential project-environment interactions, characterize potential effects and gauge their significance.

Stakeholder Consultation

A Public Consultation Plan was developed and implemented for this EIS. The primary goals of this Plan, in the context of this Project, are to provide information and to ensure that environmental and health and safety questions and concerns that may arise as a result of the proposed project activities are effectively communicated to, and addressed by AREVA. During 2006/2007, twenty-one community meetings in northern Saskatchewan were held and provided the opportunity to engage the public concerning the Midwest Project. Three meetings were also held in the southern communities of La Ronge and Saskatoon. In addition, eight Midwest EA presentations were made to key stakeholder groups, including two to the Peter Ballantyne Cree Nation. Comments received during the consultation process that are relevant to this EA were appropriately considered in the EIS.

Comments and questions received during the 2006/2007 community consultation and key stakeholder group meetings covered a wide range of topics; employment and business opportunities remain the communities' primary concern. Following the submission of the February 2010 Draft Midwest EIS, meetings were held with First Nation, Métis and municipal leadership to further discuss the Midwest Project. A community tour was conducted in September 2010 presenting aspects of the Project in an open house style to residents of the Athabasca Basin. All questions and comments received are discussed in the EIS and its appendices. Topics included: the EA process, project description clarification, fish habitat compensation, waste rock management, and treaty land entitlement issues. AREVA continues to provide information on the progress of the Midwest Project through various communications, including publications, meetings and responding to comments.

Environmental Effects of the Project

Potential Project-environmental interactions arise from the inputs and outputs associated with the mining and milling activities which comprise the project. The assessment was carried out in a systematic manner that involved the identification of Project-environment interactions, the consideration of available mitigation measures, and the determination of potential residual adverse effects. This systematic approach identified the following residual effects that required further detailed assessment:

- changes to air quality from air emissions and dust deposition during construction, operation and decommissioning;
- changes to groundwater levels from the construction and operation of the Midwest Project;
- changes to surface water quality from the long-term release of COCs related to tailings and waste rock disposal;
- permanent loss of fish habitat from the Mink Arm portion of South McMahon Lake;
- potential aquatic and terrestrial habitat disturbance related to mine construction, operation, and decommissioning;
- altered movement and behaviour of wildlife from sensory disturbance related to the construction, operation, and decommissioning of the Midwest Project;
- changes to surface water quality and sediment quality from the release of treated effluent during operation and decommissioning;
- interaction of COCs in air, water, and sediment with aquatic and terrestrial VECs, and human receptors during construction, operation, and decommissioning;
- radiation exposure and conventional health and safety of workers during the construction, operation and decommissioning of the Midwest Project;
- changes in the continued opportunity for traditional land use from the construction, operation, and decommissioning of the Midwest Project; and
- effects of the Midwest Project on the capacity of renewable resources.

Assessment of Residual Effects

Within the local assessment boundary, the relatively small areas of surface disturbance will be limited to the life of the project, after which reclamation activities will return the site to a terrestrial environment reflective of that which existed prior to development. No rare or endangered species were identified which would require special management consideration.

Historically, the area has had limited use for traditional purposes. Thus, the Project is expected to have a negligible effect on traditional land use.

Design, mitigation and compensation measures are incorporated into the Midwest Project to minimize the potential adverse effects of project interactions with the aquatic environment. Fish habitat losses will be subject to habitat compensation. Atmospheric and effluent emissions were modeled to assess operational residual effects. Dispersion modeling was utilized to predict changes in air quality and deposition onto terrestrial environments resulting from air emissions, and to predict changes in constituent concentrations in downstream surface water and sediments resulting from effluent emissions. Where appropriate, modeling inputs incorporated actual performance data, and the assumptions on future performance reflect operational experience to date. The predicted effects to surface water and sediment quality for the project were similar to those of the current operations to date and were generally below previously predicted values.

Air quality and surface water and sediment quality were also considered within the integrated assessment to further evaluate the potential adverse effects to VECs as represented by a wide range of aquatic and terrestrial receptors. Outputs from the dispersion models were coupled with a pathways model to simulate environmental transfer of constituents, and estimates of constituent uptake by aquatic and terrestrial vegetation and animals. Potential adverse effects identified were largely confined to S/V TEMS, generally limited to potential effects on individual organisms, and primarily associated with molybdenum and selenium.

Groundwater contaminant transport modeling determined the long-term effects to surface water quality due to tailings disposal in the JEB TMF and special waste rock disposal in the Midwest pit. The calculated long-term peak incremental surface water concentrations were found to be negligibly different from baseline conditions, and therefore considered to be not significantly adverse.

Significance of Residual Effects of the Project

The significance of the residual adverse effects, were evaluated with respect to criteria contained in *CEAA* guidelines. Various reasoned arguments, including spatial, temporal, reversibility and low ecological significance, were used in arriving at the conclusion that the potential residual environmental effects of the Project were not significant.

Overall, the integrity of local ecosystems and their productivity capacity will be maintained. The effects outlined will be temporary, and maintained within the assimilative capacity of local ecosystems. The post decommissioning effects on the capacity of renewable resources are anticipated not to be significant.

Effects of the Project on Human Health

The residual environmental effects from the Midwest Project air and effluent emissions were also assessed with respect to the human health of workers and residents at the nearest locations. The results of watershed and airshed dispersion modeling, followed by pathways modeling was conducted to predict concentrations in the components of the environment that may affect human health (*i.e.*, VECs). Estimates were made of potential exposures for adults and children, to potential contaminant intakes from drinking water and ingesting soil, and from eating vegetables, berries, fish and game obtained from the study area. The results of the human health risk assessment indicated no effects from either radiological or non-radiological constituents of concern from the Midwest Project for workers and residents at nearby communities.

AREVA is committed to providing a healthy and safe workplace, and the protection of workers remains AREVA's highest priority. Dose exposure for mill and mine workers have been, and will continue to be, below the annual effective dose limit for a nuclear energy worker. Consistent with the McClean Lake Operation's quality assurance approach to all facets of the operation, health and safety and radiation protection performance is continually monitored for opportunities for further optimization and improvement.

Cumulative Effects

With respect to cumulative effects assessment, the discussion of potential future projects encompassed the proposed development of the Caribou deposit and the potential for continued utilization of the Midwest Project waste water treatment facilities for the remaining life of the McClean Lake Operation.

The cumulative effects of developing the Caribou deposit, in combination with other projects or activities that have been or will be carried out, were determined to not be significant.

It was determined that no overlap of emissions to air or water from the McClean Lake Operation and the Rabbit Lake Operation would result in a significant cumulative effect.

Follow Up Programs

For this environmental assessment, best estimates based on actual operational data, and conservative assumptions where appropriate, minimize uncertainties and provide the necessary information to identify adverse potential effects, and gauge their significance. Follow-up programs have been designed to address areas identified in the assessment where additional information can refine the assessment methodology and improve the accuracy, and provide verification of prediction and assessment of effects. Focused data collection and iterative

interpretation relative to the environmental assessment predictions provide a mechanism for adaptive management of potential unanticipated effects, and the continual improvement of the accuracy of predicted effects. Therefore, on-going monitoring and follow-up programs provide a systematic means of further confirming that satisfactory performance is being maintained, or should this not be the case, triggering appropriate mitigative measures, which AREVA is committed to implementing.

Conclusion

This integrated approach to environmental protection used by AREVA Resources Canada provides assurance that the following conclusion is warranted:

“taking into account the implementation of any available mitigation measures, the project is not likely to cause significant adverse environmental effects.”