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14-H5, 15-H10, 16-H6

A Licence Renewal

Saskatchewan Research Council

Request for 18-month Licence Renewal for Gunnar Remediation Project

Hearing in writing based solely on written submissions

Scheduled for:

November 2024

Submitted by:

CNSC Staff

Renouvellement d’un permis

Saskatchewan Research Council

Demande de renouvellement, pour 18 mois ans, du permis de projet de remise en état du site Gunnar

Audience par écrit fondée uniquement sur des mémoires

Prévue pour:

Novembre 2024

Soumis par:

Le personnel de la CCSN

e-Doc 7306533 (WORD)
e-Doc 7367162 (PDF)

Summary

This CMD presents information about the following matters of regulatory interest with respect to Saskatchewan Research Council's Gunnar Remediation Project:

- Application for an 18-month licence renewal.

CNSC staff recommend the Commission consider taking the following actions:

- Accept CNSC staff's recommendation to renew the CNSC licence issued to Saskatchewan Research Council, WNSL-W5-3151.00/2024, for a period of 18 months expiring on May 31, 2026, with no new authorizations.
- Delegate authority as set out in section 5.5 of this CMD

The following items are attached:

- Current licence WNSL-W5-3151.00/2024
- Proposed licence NSL-W5-3151.00/2026
- Proposed draft licence conditions handbook
    - As part of a Commission proceeding, this document – including any items mentioned in the footnotes – will be part of the public record unless the Commission rules in favour of a request for confidentiality.

Résumé

Le présent CMD fournit de l'information sur les questions d'ordre réglementaire suivantes concernant le projet de remise en état du site Gunnar de Saskatchewan Research Council :

- Demande de renouvellement de permis pour une période de 18 mois.

La Commission pourrait considérer prendre les mesures suivantes :

- Accepter la recommandation du personnel de la CCSN de renouveler le permis de la CCSN délivré à Saskatchewan Research Council, WNSL-W5-3151.0/2024, pour une période de 18 mois, soit jusqu'au 31 mai 2026, sans nouvelle autorisation.
- Déléguer les pouvoirs tel qu'il est établi à la section 5.5 du présent CMD

Les pièces suivantes sont jointes :

- Permis actuel WNSL-W5-3151.00 /2024
- Permis modifié proposé NSL-W5-3151.00/2026
- Manuel des conditions de permis proposé
- Dans le cadre d'une procédure de la Commission, ce document - y compris les éléments mentionnés dans les notes de bas de page - fera partie du dossier public, à moins que la Commission ne se prononce en faveur d'une demande de confidentialité.

Signed/Signé le

20 September 2024 / 20 septembre 2024

Luc Sigouin

Director General

Directorate of Nuclear Cycle and Facilities Regulation

Directeur général de la

Direction de la réglementation du cycle et des installations nucléaires

TABLE OF CONTENTS

Plain Language Summary

The Gunnar uranium mine and mill site (Gunnar site), located in northern Saskatchewan, is being remediated by the Saskatchewan Research Council (SRC) under a CNSC Waste Nuclear Substance Licence (WNSL). The Gunnar site is in historic Treaty 8 territory, the Homeland of the Métis, and is within the traditional territories of the Dene, Cree, and Métis people. The Gunnar mine and mill was operated by the former Gunnar Mining Limited from 1955 to 1963 and was decommissioned in 1964. The Gunnar site consisted of open pit and underground mine workings, mining infrastructure, 3 mine tailings deposits covering over 70 hectares of land, and waste rock piles. At decommissioning, the open pit and underground workings were flooded, and the mine shaft and associated openings were plugged with concrete. The buildings at the site were demolished in 2010.

The SRC is currently in Phase 2 of the project and in order to complete the remaining remediation work, SRC submitted an application pursuant to section 24(2) of the *Nuclear Safety and Control Act* for a renewal of their Waste Nuclear Substance Licence requesting a licensing term of 18-months.

CNSC staff have assessed SRC's application and performed compliance verification activities throughout the current licence term, and on the basis of these activities CNSC staff support an 18-month renewal which is a timeframe that will provide a sufficient period of time for the completion of remediation work. SRC's application is for a licence renewal for a low-risk site and does not propose to alter any of the requirements or authorizations currently in place.

As described within this Commission Member Document (CMD), CNSC staff have rated SRC's performance for all applicable safety and control areas as 'satisfactory' during the current licence term (2015 to present). CNSC staff have also concluded that there has been adequate provision for the protection of the environment during the current licence term.

CNSC staff recommend that the Commission accept CNSC staff's assessment and conclusions and issue a Nuclear Substance Licence, NSL-W5-3151.0/2026 with an expiry date of May 31, 2026. As described in this CMD, CNSC staff will continue to conduct compliance verification activities to ensure that the remaining remedial work at the Gunnar site remains in compliance with the requirements of the CNSC-issued licence.

Referenced documents have been included in this CMD.

CMD STRUCTURE

This Commission Member Document (CMD) is presented in 2 parts.

Part 1 of this CMD includes:

1. an overview of the matter being presented;
2. overall conclusions and overall recommendations;
3. general discussion pertaining to the safety and control areas (SCAs) that are relevant to this submission;
4. discussion about other matters of regulatory interest; and
5. appendices material that complements items 1 through 4.

Part 2 of this CMD provides all available information pertaining directly to the current and proposed licence if applicable.

1. Overview

1.1 Background

The Gunnar Legacy Uranium Mine site (Gunnar site) is the location of a former uranium mine and mill being remediated by the Saskatchewan Research Council (SRC), under waste nuclear substance licence WNSL-W5-3151.00/2024 (provided in Part 2 of this CMD).

The Gunnar site is located approximately 600 km north of Saskatoon on the north shore of Lake Athabasca in northwest Saskatchewan (Photo **1**).

Photo 1: Map showing location of Gunnar site

The Gunnar mine and mill was operated by the former Gunnar Mining Limited from 1955 to 1963 and was decommissioned in 1964. The Gunnar site consisted of open pit and underground mine workings, mining infrastructure, 3 mine tailings deposits covering over 70 hectares of land, and waste rock piles (Photo 1). At decommissioning, the open pit and underground workings were flooded, and the mine shaft and associated openings were plugged with concrete.

The remediation project consists of the clean-up of mine tailings, waste rock piles, an open pit, mine shaft and demolition debris. The remediation work is being carried out in 3 phases:

- Phase 1 (now complete) involved characterizing and monitoring the onsite waste and developing remediation plans;
- Phase 2 (currently ongoing) consists of implementing the remediation plans.

- Phase 3 will involve long-term monitoring and maintenance to verify that the site remains stable and safe.

1.2 Highlights

On July 4, 2024, Saskatchewan Research Council (SRC) submitted a revised application to renew their CNSC waste nuclear substance licence for the Gunnar historic uranium mine and mill site, for a period of 18-months in order to complete the remaining remedial work which falls into the Phase 2 of the project, namely the construction of the Langley Bay tailings management area and the demolitions of SRC's work camp. [1,2]. Should the Commission decide to renew the licence as requested, SRC has indicated its intent to apply for a longer-term licence renewal and licence amendment to authorize the transition to Phase 3 of the project, prior to the end of this 18-month period.

After a hearing in September of 2015 (CMD 15-H10), the Commission approved the partial removal of the Phase 2 regulatory hold point regarding the remediation design plan and options for the tailing deposits at the Gunnar site. SRC submitted a request to the Commission for the removal of the remainder of this hold point which went before the Commission in September 2016 (CMD 16-H6) and was accepted in November 2016. [3,4] This decision also delegated the review and approval of the detailed design description report and project schedule for the remediation of the other site aspects of the Gunnar site to the Director General of Directorate of Nuclear Cycle and Facilities Regulation or Executive Vice-President and Chief Regulatory Operations Officer. [5,6,7]

Based on CNSC staff's regulatory oversight activities (which included compliance inspections, document reviews and technical assessments) conducted at the Gunnar site between September 2016 and September 2023, CNSC staff have confirmed SRC's performance for all applicable safety and control areas (SCAs) is satisfactory.

1.3 Overall Conclusions

CNSC staff's assessment is that SRC's application under consideration by the Commission complies with regulatory requirements as set out in Appendix B of this CMD.

CNSC staff concluded that SRC's performance during the licensing term was satisfactory and the licensee met all regulatory requirements.

1.4 Overall Recommendations

CNSC staff recommend that the Commission:

1. Conclude, pursuant to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act*, that the licensee/applicant:

    a) Is qualified to carry on the activities authorized by the licence

    b) Will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance

of national security and measures required to implement international obligations to which Canada has agreed

2. Renew the Waste Nuclear Substance Licence (now Nuclear Substance Licence) for the Gunnar site and issue the proposed licence, NSL-W5-3151.0/2026, with no new authorizations.
3. Delegate authority as set out in section 5.3 of this CMD.

2. Environmental Protection Review

CNSC staff conduct environmental protection reviews (EPRs) for all licence applications with potential environmental interactions, in accordance with the CNSC's mandate under the NSCA and associated regulations. The EPRs help inform the Commission's conclusion on whether the proposal provides adequate protection of the environment and the health of people.

CNSC staff reviewed the licence application to identify which type of environmental review was required to be conducted, if applicable. As part of this process, CNSC staff must assess whether an integrated impact assessment or a federal lands review under the *Impact Assessment Act* is required. For this licence application, neither are required because the application does not include activities listed in the *Physical Activities Regulations* that require an impact assessment, or that meet the definition of a project on federal lands.

CNSC staff's assessment of the Gunnar site included a review of the licence application and supporting documents, including annual compliance monitoring reports and past environmental protection performance for the site.

CNSC staff determined that the information provided by SRC regarding environmental protection is sufficient to meet the applicable regulatory requirements under the NSCA and associated regulations for the short-term licence renewal as the proposed work has already been assessed in the CEAA 2012 Environmental Assessment Report that was completed in August 2014 [8].

CNSC staff will use ongoing licensing and compliance activities and reviews to verify the environment, and the health and safety of persons are protected over the proposed licence period.

3. General Assessment of SCAs

CNSC staff review and assess an applicant's proposed measures and controls, and if applicable, a licensee's past performance in each SCA. Although CNSC staff's assessment of the application considers multiple SCAs, only those that are most relevant in providing a good overall indication of how regulatory requirements will be met by applicants and the past safety performance of the licensees are covered in this CMD. CNSC staff may also choose to combine multiple SCAs together as with this being a decommissioned site with limited areas of regulatory focus, this approach provides a more integrated picture of the licensee's

performance over the licensing period. Rating level categories for the SCAs are provided in Appendix A.

The regulatory and technical basis for the matters discussed in this CMD arise directly *General Nuclear Safety and Control Regulations* as well as other regulatory requirements associated with the NSCA. Further information regarding the regulatory and technical basis for the matters discussed in this CMD are provided in Appendix B to this document.

The specific areas that comprise the SCAs for the Gunnar site are identified in Appendix C, section C.2. If specific areas are listed for an SCA in section 3, then related regulated activities/information about them are provided in Appendix C to this CMD. If specific areas are not listed for a given SCA in section 3, then a decision has been made to encompass them in an overall approach to that SCA or they will be combined into a more pertinent SCA.

As the Gunnar Site is a decommissioned site going through remedial work, regular updates have been provided in CNSC staff's regulatory oversight reports (RORs) on a 3-year basis. Within these RORs, staff provide the SCA ratings for radiation protection, environmental protection and conventional health and safety. These 3 SCAs for Gunnar have been rated as "satisfactory" as reported in the RORs (2015, 2017 and 2020). The SCA evaluation included within this CMD is more comprehensive than the information provided in these RORs, as all relevant SCAs are included, but the conclusions are consistent with the information presented in those RORs.

3.1 Management System

The management system SCA covers the framework that establishes the processes and programs required to ensure an organization achieves its safety objectives, monitors its performance against these objectives and fosters a healthy safety culture. CSA standard N286-12, *Management System Requirements for Nuclear Facilities* contains the requirements for a management system for nuclear facilities and extends to all SCAs. Note that this licence class is limited to Section 4 and certain items of Section 9 of this standard. The management system must satisfy the requirements set out in the NSCA, regulations made pursuant to the NSCA, the licence and the measures necessary to ensure that safety is of paramount consideration in implementation of the management system. An adequately established and implemented management system provides the evidence that the licensing basis remains valid.

3.1.1 Trends

The following table indicates the overall rating trends for the Management System SCA over the current licensing period:

TRENDS FOR MANAGEMENT SYSTEM							
OVERALL COMPLIANCE RATINGS							
2016	2017	2018	2019	2020	2021	2022	2023
SA	SA	SA	SA	SA	SA	SA	SA
Comments There are no comments for this SCA							

3.1.2 Discussion

SRC developed the Environmental Remediation Management System program to manage both the safety and performance of the remediation project. Management system components are also incorporated in a number of other SCA programs such as the Occupational Health and Safety (OHS) Program, Environmental Protection Program, Communication Program (both internal and external) and the Quality and Training Program related to both the Radiation Protection and OHS training. SRC has demonstrated that they have management system processes in place to be able to monitor and manage all of the aspects of the remediation project at the Gunnar site.

During the current licence term (2015-2023) and for the proposed licence term, all remedial activities have been and will continue to be performed by a contractor under SRC's contractor management system. SRC's contractor management system governs safety at the site and ensures regulatory requirements are met. CNSC staff reviewed the program against management system requirements and accepted the program during the initial licensing hearing in November of 2014. In addition, during annual inspections, CNSC staff verified SRC's and their contractor's compliance against their own programs, associated plans, and regulatory requirements.

3.1.3 Past Performance

Through compliance verification, CNSC staff have concluded that SRC has an appropriate management system in place to monitor and maintain the Gunnar site, and acceptable measures are in place to complete the remaining remedial activities during the current licence term, and CNSC staff are confident that the SRC's management system related programs will be maintained during the proposed 18-month licence renewal.

There were no reportable events during the licensing terms for which the management system SCA was the main contributing factor, nor any non-compliance raised by CNSC staff under the management system SCA.

3.1.3.1 Regulatory Focus

CNSC staff have concluded that there are no challenges with respect to this SCA.

3.1.3.2 Proposed Improvements

CNSC staff will continue to monitor performance in this area through regulatory oversight activities such as desktop reviews. SRC continues to have programs in place to ensure compliance with this SCA at the Gunnar site.

3.1.4 Conclusion

CNSC staff concluded that SRC met its regulatory requirements and has maintained and implemented a satisfactory management system program at the Gunnar site.

3.2 Human Performance Management

This SCA is not relevant to this CMD as there are no full-time personnel on site year-round and the work is limited to remedial activities. In addition, this SCA is also encompassed within both the management system, radiation protection and conventional health and safety SCAs within the current licence. There are no licence conditions under this SCA in the current licence, WNSL-W5-3151.00/2024 (provided in Part Two of this CMD), nor are any proposed.

3.3 Operating Performance

The operating performance SCA includes an overall review of the conduct of the licensed activities and other activities that enable effective performance. The specific areas that comprise this SCA are not addressed individually in this document.

3.3.1 Trends

The following table indicates the overall rating trends for the operating performance SCA over the current licensing period:

TRENDS FOR OPERATING PERFORMACE							
OVERALL COMPLIANCE RATINGS							
2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
SA	SA	SA	SA	SA	SA	SA	SA
Comments							
There are no comments for this SCA							

3.3.2 Discussion

The operating performance SCA requires that the licensee implement and maintain an operating performance program for the conduct of licensed activities, which for this remedial project involves managing the various radioactive and hazardous material left on-site from the mining operations. In the case of the Gunnar site this includes such undertaking as the construction of tailings

management areas and landfills as well as regrading and revegetating the site. This SCA focuses on the conduct of operations and the controls that are in place to manage risks from licensed activities.

The CNSC expects SRC to take all reasonable precautions to protect workers and to control the release of nuclear and hazardous substances into the environment during the conduct of activities. The necessary precautions include engineering and administrative controls to minimize risks.

SRC is currently authorized to possess, store and manage uranium mill tailings and residual waste rock for the decommissioned site. During the licence term, a number of remedial activities were conducted, and will be described in section 3.5 Physical Design SCA.

Based on CNSC's risk-based inspection program, a CNSC inspection of the Gunnar site is currently required at a minimum frequency of once every year; however, due to restrictions from the Covid pandemic, inspections for the years of 2020 and 2021 were postponed.

3.3.3 Summary

A summary of the licensee's past performance, challenges and proposed improvements are presented in the following subsections.

3.3.3.1 Past Performance

As reflected in CNSC's REGDOC-3.1.3, *Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices,* SRC is required to report unplanned events to the CNSC and take necessary corrective actions to improve safety and to prevent recurrence.

As identified in the attached licence conditions handbook (LCH), SRC is required to submit detailed reports on unplanned situations or events. During the licence term 8 reportable events of low safety significance were reported for the Gunnar site related to various SCAs. Corrective measures were implemented for all of them.

Table 3.1 lists the number of events reported to the CNSC by the licensee over the current licence period. The events included a:

- small fire
- vehicle accident
- discovery of legacy explosive material
- high water levels at adjacent Lake Athabasca
- non-authorized visitors outside field season
- minor health and safety events.

Table 3.1: Number of reported events, 2016-2023

Year	2016	2017	2018	2019	2020	2021	2022	2023
Total number of events	0	2	1	1	2	1	1	0

SRC maintains the documentation and processes for an effective operating performance program, including the processes for the reporting of information to the CNSC. Over the licensing period, CNSC staff have conducted technical assessments of various reports, including but not limited to licensing documentation, as-built reports, and designs. In addition, annual reports were also reviewed for regulatory compliance and to assess the environmental monitoring data provided.

A summary of the SRC's past performance, challenges and proposed improvements are presented in the following subsections.

3.3.3.2 Past Performance

During the current licence term, there were 9 low risk notices of non-compliance issued as a result of inspection findings. The findings covered such issues as;

- lack of proper radiation protection signage
- inconsistent or missing information on labels for radioactive waste stored on-site
- fire extinguishers or other emergency equipment that were not easily accessible.

These findings have all been adequately addressed by SRC and are closed. CNSC staff will continue to verify compliance through inspections to ensure SRC is maintaining the health and safety of persons and protecting the environment.

3.3.3.3 Regulatory Focus

CNSC staff concluded that there are no challenges with respect to this SCA.

3.3.3.4 Proposed Improvements

CNSC staff will continue to monitor performance in this SCA through regulatory oversight activities including inspections and desktop reviews. SRC continues to have measures in place to ensure the safe operation of the Gunnar site and that the site is compliant with regulatory requirements.

3.3.4 Conclusion

During the current licence period, CNSC staff observed that SRC has operated the Gunnar site in compliance with the CNSC's regulatory requirements.

CNSC staff concluded that SRC has maintained and satisfactorily implemented its operational performance programs and has made adequate provision for safe operation of the Gunnar site. The operational performance program will continue to be implemented and maintained during the proposed 18-month licence renewal.

3.4 Safety Analysis

This SCA is not relevant to this CMD as safety analysis SCA includes the systematic evaluation of the potential hazards associated with the licensed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards. As the Gunnar site is a decommissioned site with on-going remediation, the licensee controls hazards via programs in the radiation protection, conventional health and safety, and environmental protection SCAs. There are no licence conditions under this SCA in the current licence, WNSL-W5-3151.00/2024 (provided in Part Two of this CMD), nor are any proposed.

3.5 Physical Design

The physical design SCA relates to activities that impact on the ability of systems, structures and components to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account. SRC has maintained a physical design program including design change control to manage the remediation work at the Langley Bay tailings management area.

In 2023, SRC provided CNSC staff with the as-built reports for the completed remedial work (i.e., the constructed tailings management area of Gunnar Main, as well as catchment-3 and the waste rock piles) which were reviewed and determined to meet regulatory requirements.

3.5.1 Trends

The following table indicates the overall rating trends for the Physical Design SCA over the current licensing period:

TRENDS FOR PHYSICAL DESIGN							
OVERALL COMPLIANCE RATINGS							
2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
SA	SA	SA	SA	SA	SA	SA	SA
Comments There are no comments for this SCA							

3.5.2 Discussion

The remediation work for the former workings of uranium mine and mill began once the submitted detailed designs for the tailings management areas were accepted by CNSC staff and approved by delegated authority (April 2017). The other site aspects including the 2 landfills built to contain non-tailings radioactive

waste and hazardous waste began once the designs were reviewed and accepted by CNSC staff and approved by delegated authority (March 2020 and June 2020).

3.5.3 Summary

A summary of the licensee's past performance, challenges and proposed improvements are presented in the following subsections.

3.5.3.1 Past Performance

CNSC staff verified the detailed designs during the 2019 geotechnical inspection at the Gunnar site. CNSC staff inspected the construction work related to the 2 tailings management areas as well as the preparatory work for the 2 landfills. CNSC staff determined the detailed designs met regulatory requirements.

During the licensing period from 2016 to 2023, design efforts as well as remedial work conducted and completed at the Gunnar site consisted of:

- Gunnar Main Tailings area cover system was 100% completed in 2022 and vegetation is growing well. Approximately 90% of the engineered cover over the Gunnar Central Tailings (GCT) area is completed. The remaining work is the construction of the GCT channel, some repairs and installation of soil borrow cover which will be completed once the Langley Bay cover construction is complete.
- All mine openings on site have been remediated (i.e. capping of mine shaft and vent raises).
- Waste rock piles on site were excavated and regraded thereby reducing their overall volume and the material was used to build landforms for the tailings cover systems, stabilize slopes and maintain positive drainage on the crests.
- Work on the open pit area was performed thereby minimizing the contaminated waste flowing into the pit. Maintenance work on the rock barrier which surrounds the pit was performed to maintain the pit's isolation from Lake Athabasca.
- Work was completed on Catchment 3, the dam exclusion zone and the Beaver Pond. As-built reports were provided and reviewed by CNSC staff in 2023.
- Construction of landfills A and B were completed. Landfill A was designed and designated to contain all non-hazardous, non-contaminated legacy and demolition debris, while landfill B was designed as a non-pervious containment cell for the disposal of all hazardous/contaminated materials.
- Legacy waste sweeps and consolidation were completed, and all material was moved into the appropriate landfills.

Additional remediation work is scheduled to continue until the end of 2025, this will include:

- Remediation of Langley Bay tailings management area. Some remediation began in 2023 with the placement of rip rap and stocking of clean material.

Once the remediation of Langley Bay is complete, the remaining work listed above at Gunnar central can be undertaken and completed.

- Revegetation of remediated areas.
- Once all remedial work is complete, SRC's work camp will be demolished.

A geotechnical inspection is scheduled for the Fall of 2024 to verify the completed remedial work as well as verify the progress of the construction work for the Langley Bay tailings management area.

3.5.3.2 Regulatory Focus

CNSC staff have concluded that there are no challenges with respect to this SCA.

3.5.3.3 Proposed Improvements

SRC has implemented quality assurance measures to ensure that the designs are properly implemented and that the remedial work is compliant with regulatory requirements.

3.5.4 Conclusion

Through inspections and desktop reviews, CNSC staff confirmed that SRC has satisfactorily implemented their design plans and programs. CNSC staff rated SRC's performance for the physical design SCA at the Gunnar site as satisfactory for the current licence period and are confident that this will be maintained during the proposed 18-month licence renewal.

3.6 Fitness for Service

The fitness for service SCA covers activities that impact the physical condition of structures, systems and components to ensure that they remain effective over time. This SCA includes programs that verify equipment is available to perform its intended design function when called upon to do so.

3.6.1 Trends

The following table indicates the overall rating trends for the fitness for service SCA over the current licensing period:

TRENDS FOR FITNESS FOR SERVICE							
OVERALL COMPLIANCE RATINGS							
2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
SA	SA	SA	SA	SA	SA	SA	SA
Comments							
There are no comments for this SCA							

3.6.2 Discussion

The fitness for service SCA at the Gunnar site covers activities that are carried out to ensure that the physical condition of structures remain effective over time. The CNSC requires that the licensee includes an inspection and maintenance program that will verify that the structures are and continue to operate as designed, comply with regulatory requirements, and ensure that both the public and the environment remain protected.

3.6.3 Summary

A summary of the licensee's past performance, challenges and proposed improvements are presented in the following subsections.

3.6.3.1 Past Performance

CNSC staff performed a geotechnical inspection in June 2019 to verify the construction work to date at the Gunnar site. The inspection confirmed that the licensee was following their design plans and that the structures that had been completed at the time of the inspection were constructed as designed. As indicated in the previous SCA, CNSC staff will be performing a geotechnical inspection in the Fall of 2024 during which CNSC staff will inspect the completed structures against the as-built reports provided by SRC.

In addition, SRC continues to verify the newly constructed structures are working as designed and determine if any maintenance is required.

3.6.3.2 Regulatory Focus

CNSC staff plan on performing a fitness for service inspection (Fall 2024) to verify the constructed structures on-site and that SRC's maintenance and monitoring plan is being effectively implemented.

3.6.3.3 Proposed Improvements

There are no other proposed improvements for this SCA.

3.6.4 Conclusion

CNSC staff concluded that SRC's performance in the fitness for service SCA at the Gunnar site is satisfactory and are confident this will be maintained during the proposed 18-month licence renewal.

3.7 Radiation Protection

The radiation protection (RP) SCA covers the implementation of an RP program in accordance with the *Radiation Protection Regulations* (RPR). The program must ensure that radiation doses received by individuals and contamination levels are monitored, controlled and maintained as low as reasonably achievable (ALARA), social and economic factors taken into account.

This CMD addresses the following individual specific areas of the RP SCA:

- application of ALARA
- worker dose control
- radiation protection program performance
- radiological hazard control

3.7.1 Trends

The following table indicates the overall rating trends for the radiation protection SCA over the current licensing period:

TRENDS FOR RADIATION PROTECTION							
OVERALL COMPLIANCE RATINGS							
2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
SA	SA	SA	SA	SA	SA	SA	SA
Comments							
There are no comments for this SCA							

3.7.2 Discussion

The RPR require licensees to implement an RP program to keep exposures ALARA, social and economic factors taken into account, through the implementation of a number of controls. These controls include management control over work practices, personnel qualification and training, control of occupational and public exposures to radiation, and planning for unusual situations. The RPR also prescribe dose limits for nuclear energy workers (NEWs) and members of the public.

As per the *General Nuclear Safety and Control Regulations* (GNSCR), SRC has an RP program in place at the Gunnar site. The RP program includes continuous and routine radiological monitoring, dosimetry, and contamination control during the field season, generally from April until early November.

Application of ALARA

The RP program describes how SRC manages radiation protection hazards and meets applicable regulatory requirements at the Gunnar site. SRC's application of ALARA within its RP program at the Gunnar site includes management commitment and oversight, personnel qualification, and training.

CNSC staff are satisfied with SRC's measures in applying the ALARA principle to radiation exposures at the Gunnar site.

Worker dose control

During the field season the main source of radiological exposure at the Gunnar site is from mine tailings. The effective dose contributors to NEWs at the Gunnar site are gamma radiation, long-lived radioactive dust (LLRD) and radon gas (RnG). As the remedial work has progressed, these hazards remain present but

have been greatly reduced. Gamma radiation hazards are controlled through the effective use of time, distance and shielding. Exposures to LLRD and RnG are controlled through ventilation and contamination control measures such as dust abatement practices on site (e.g., use of water trucks to control dust levels) and wearing of personal protective equipment.

SRC's RP program at the Gunnar site provides assurance that exposures to all persons on site remain compliant with the RPR. SRC's RP program describes how SRC manages radiation protection issues, meets applicable regulatory requirements and keeps radiation exposures ALARA. Worker doses as well as dust monitoring are found in the environmental protection SCA under section 3.9.1.

Radiation Protection Program Performance

Exposure Summary

SRC's RP program at the Gunnar site includes processes and criteria to adequately identify workers as NEWs, as defined in section 2 of the NSCA. The regulatory effective dose limit for a NEW is 50 mSv/year and 100 mSv over a 5-year dosimetry period. No Gunnar worker received an effective or equivalent dose that exceeded the corresponding regulatory dose limits pursuant to the RPR.

As required by the RPR, all NEWs are notified in writing of their status, of the risks associated with radiation that they may be exposed to in the course of their work, and of the applicable effective and equivalent dose limits.

Radiological Action Levels

The RPR requires that a licensee report any RP action level exceedances. The action level for effective doses identified in the Gunnar RP program is 1 mSv per calendar month.

There were no RP related action level exceedances at the Gunnar site during the current licence period. CNSC staff are satisfied with the performance of SRC's RP program implementation at the Gunnar site.

SRC has implemented contamination control measures with the intended goal of keeping radioactive substances within the work area boundaries and preventing potential spread of contamination to less radioactive areas as well as the camp area. For instance, the setup of Contamination Control Zones (CCZs) with adjacent Contamination Reduction Zones (CRZs) at the entrance of the tailings management areas for all workers to pass through prior to entering or leaving the contaminated area. The CRZs have an area where personnel and equipment are scanned and have any contamination removed, contained and directed to an appropriate location. In addition, weekly contamination surveys are performed at various locations throughout the site such as the camp, construction trailers and the inside of truck cabs to verify that contamination control measures are working as designed. A summary of the licensee's past performance, challenges and proposed improvements are presented in the following subsections.

3.7.3 Past Performance

CNSC staff assessed RP program performance at the Gunnar site over the current licensing period through various compliance verification activities including desktop reviews of the annual compliance reports. CNSC staff have observed and verified RP practices at the Gunnar site during 6 compliance inspections, including 1 focused RP inspection conducted in June 2018.

Overall, inspection findings have confirmed ongoing compliance with the RPR during the current licensing period. Non-compliant findings have been identified; however, these regulatory findings have been of low safety significance, such as posting of legible radiation signs and implementation of decontamination measures that follow the ALARA principle, were not indicative of widespread deficiencies in RP program implementation. The licensee has taken timely actions to address all regulatory findings. CNSC staff have verified that SRC has taken appropriate corrective actions, and these items of non-compliances are now closed.

Based on the review of SRC's annual compliance reports and CNSC staff's routine compliance verification activities, CNSC staff rate the performance for the RP SCA as satisfactory for the current licence period for the Gunnar site.

3.7.3.1 Regulatory Focus

CNSC staff will continue to monitor performance in this area through regulatory oversight activities including inspections and desktop reviews of SRC's compliance reporting and revisions to relevant program documentation at the Gunnar site pertaining to the radiation protection SCA.

3.7.3.2 Proposed Improvements

There are no other proposed improvements for this SCA.

3.7.4 Conclusion

CNSC staff assessed SRC's documentation and analyses at the Gunnar site under the RP SCA and found them to be acceptable. CNSC staff are satisfied with SRC's efforts in applying the ALARA principle to keep the doses to persons ALARA over the current licence. Therefore, CNSC staff concluded that the overall performance for this SCA is satisfactory.

3.8 Conventional Health and Safety

The conventional health and safety SCA covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

The specific areas that comprise this SCA at the Gunnar site addressed individually in this document are:

- performance

- practices
- awareness

3.8.1 Trends

The following table indicates the overall rating trends for the conventional health and safety SCA over the current licensing period:

TRENDS FOR CONVENTIONAL HEALTH AND SAFETY							
OVERALL COMPLIANCE RATINGS							
2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
SA	SA	SA	SA	SA	SA	SA	SA
Comments							
There are no comments for this SCA							

3.8.2 Discussion

The CNSC, through the NSCA and regulations, requires SRC to identify potential safety hazards, assess the associated risks, and implement the necessary materials, equipment, programs and procedures to effectively manage, control and minimize these risks at the Gunnar site during the remedial work.

The occupational health and safety program at the Gunnar site has been developed so that individuals present at this environmental remediation site are able to work in an environment where identified hazards are controlled at acceptable levels.

To assure continued strong safety performance and continual improvement, SRC's conventional health and safety program includes some of the following aspects:

- Incident Reporting and Investigation
- Personal Protection Equipment
- Hazard Management
- Field Level Risk Assessment
- Safety Meetings/Information
- Toolbox Meetings
- Weekly Safety Meetings

Employees at the Gunnar site have daily safety cards to fill in throughout the workday and which are reviewed and signed off by the supervisor at the end of the workday. These safety cards have a number of benefits such as actively involving employees in the occupational health and safety program, monitoring the safety performance on site and being able to make improvements or take corrective actions.

Site orientation is required on an annual basis for everyone from employees to visitors when they first arrive at the site. This orientation covers various topics

from general site rules, emergency procedures and camp life thereby providing the necessary information for a safe time at the site.

3.8.3 Summary

A summary of the licensee's past performance, challenges and proposed improvements are presented in the following subsections.

3.8.3.1 Past Performance

A key performance measure for this SCA is the number of lost-time injuries (LTIs) that occur per year. An LTI is an injury that takes place at work, resulting in the worker being unable to return to work and carry out their duties for a period of time.

During the licensing period, SRC only reported 1 LTI for the Gunnar site which was reported in July 2021. The employee in question had lost their footing while walking along an uneven and rocky path after leaving their equipment which resulted in their ankle being dislocated. The employee was on medical leave for 6 weeks. SRC investigated the incident and implemented corrective actions and safety reminders to prevent reoccurrence.

3.8.3.2 Regulatory Focus

The conventional health and safety criteria were also included in all of the annual inspections conducted at the Gunnar site by CNSC staff during the current licence term. All non-compliances identified were of low safety significance and SRC addressed all non-compliances and recommendations identified during the current licence period.

CNSC staff will continue to monitor performance in this area through regulatory oversight activities including inspections and desktop reviews pertaining to this SCA.

3.8.3.3 Proposed Improvements

There are no proposed improvements for this SCA.

3.8.4 Conclusion

CNSC staff concluded that the performance in the conventional health and safety SCA is satisfactory, and the conventional health and safety program will be maintained during the proposed 18-month licence renewal.

3.9 Environmental Protection

The environmental protection SCA covers programs that identify, control, and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities. SRC maintains an environmental monitoring program which reflects the current status of the site as a remediation project.

3.9.1 Trends

The following table indicates the overall rating trends for the environmental protection SCA over the current licensing period:

TRENDS FOR ENVIRONMENTAL PROTECTION							
OVERALL COMPLIANCE RATINGS							
2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
SA	SA	SA	SA	SA	SA	SA	SA
Comments							
There are no comments for this SCA							

Effective Doses to Workers

The following table describes doses to workers at the Gunnar site over the last 5 years of the current licensing period:

AVERAGE AND MAXIMUM EFFECTIVE DOSES TO WORKERS						
Dose Statistic	**2019**	**2020**	**2021**	**2022**	**2023**	**Regulatory Limit**
Total Persons Monitored (NEWs)	198	165	179	110	78	
Average Effective Dose (mSv)	0.24 mSv	0.074 mSv	0.10 mSv	0.18 mSv	0.11 mSv	
Maximum Individual Effective Dose (mSv)	2.08 mSv	0.75 mSv	0.41 mSv	0.58 mSv	0.33 mSv	50 mSv/year

3.9.2 Discussion

SRC's environmental monitoring during the current licence term included:

- **Water quality**

  Surface: 16 sampling stations which are sampled monthly during the active remediation season, analysed for trace metals, radium-226 and general chemistry.

- **Groundwater**

  Groundwater: 10 sampling stations which are sampled twice during the active remediation season and analysed for trace metals, radium-226, and general chemistry.

- **Water quantity**

  Surface hydrology which is monitored at 4 stations.

- **Radon**

  Concentrations measured in ambient air via 10 sampling stations. Detectors collected twice annually (changed in spring and fall).

- **Dust fall**

  Includes 13 sampling stations which are sampled monthly during the active remediation season and analysed for total dust mass, volatile dust mass, trace metals, and radionuclides (radium-226, thorium-230, lead-210, and polonium-210).

- **Gamma surveys**

  Includes pre-remediation, remediation and post-remediation surveys.

The environmental monitoring data is provided in SRC's annual compliance report for the Gunnar site which is submitted to CNSC staff for review.

3.9.3 Summary

A summary of the licensee's past performance, challenges and proposed improvements are presented in the following subsections.

3.9.3.1 Past Performance

SRC has developed, implemented and maintained an effective environmental protection program at the Gunnar site that protects the environment and the public in accordance with CNSC regulatory requirements.

Monitoring data collected to date indicates that ongoing remediation activities have not adversely affected water or ground water quality at the Gunnar site. There are certain parameters which exceed provincial guidelines however, these are generally within the long-term trends established during the initial environmental risk assessment or associated with the former mining and milling activities.

CNSC staff rate SRC's overall performance at the Gunnar site for this SCA as satisfactory for the current licence period.

3.9.3.2 Regulatory Focus

CNSC staff will continue to monitor performance in this area through regulatory oversight activities and desktop reviews of SRC's compliance reporting.

3.9.3.3 Proposed Improvements

There are no proposed improvements for this SCA.

3.9.4 Conclusion

SRC has implemented and maintains an environmental monitoring program that adequately protects the environment and the public in accordance with regulatory requirements.

CNSC staff concluded that the performance in the environmental protection SCA is satisfactory. The environmental monitoring program will be maintained during the proposed 18-month licence renewal.

3.10 Emergency Management and Fire Protection

The emergency management and fire protection SCA covers emergency plans and emergency preparedness programs that exist for emergencies and for non-routine conditions.

3.10.1 Trends

The following table indicates the overall rating trends for the emergency management and fire protection SCA over the current licensing period:

TRENDS FOR EMERGENCY MANAGEMENT & FIRE PROTECTION							
OVERALL COMPLIANCE RATINGS							
2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
SA	SA	SA	SA	SA	SA	SA	SA
Comments							
There are no comments for this SCA							

3.10.2 Discussion

As the Gunnar site is currently a remediation project with no permanent structures on site (camp and construction trailers etc.) fire protection is focused on wildfire prevention and response. Within SRC's Occupational Health and Safety Program the following plans related to this SCA are included:

- Wildfire Prevention and Preparedness
- Project CLEANS Emergency Medical Plan
- Emergency Response Plans (site-specific)

The prime contractor at the Gunnar site ensures that there are a minimum of 2 mock emergency drills per field season. These can range from drills about severe weather to stop work evacuation. SRC provides reports on these drills in their annual compliance report for CNSC staff review.

3.10.3 Summary

A summary of the licensee's past performance, challenges and proposed improvements are presented in the following subsections.

3.10.3.1 Past Performance

Based on CNSC staff's desktop reviews and inspections, CNSC staff concluded that SRC's emergency preparedness and fire protection program continues to be satisfactory at the Gunnar site. SRC continues to improve its emergency preparedness and response program including implementing lessons learned from the various exercises and drills performed regularly on site.

3.10.3.2 Regulatory Focus

CNSC staff have inspected aspects of this SCA during the annual inspections at the Gunnar site since 2017. All non-compliances identified such as improperly stored fire extinguishers or fire box missing equipment were of low safety significance and have been adequately addressed by the licensee.

3.10.3.3 Proposed Improvements

There are no proposed improvements for this SCA.

3.10.4 Conclusion

Appropriate emergency response plans/measures have been put in place as part of the implementation of the on-going remedial project at the Gunnar site. CNSC staff rate the emergency management and fire protection SCA as satisfactory. Within the conventional health and safety SCA, the emergency management program will be maintained during the proposed 18-month licence renewal.

3.11 Waste Management

The waste management SCA covers internal waste-related programs that form part of a facility's operations up to the point where the waste is removed from that facility to a separate waste management facility or placed into long-term storage on site. This area also covers the planning for decommissioning.

3.11.1 Trends

The following table indicates the overall rating trends for the waste management SCA over the current licensing period:

TRENDS FOR WASTE MANAGEMENT							
OVERALL COMPLIANCE RATINGS							
2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
SA	SA	SA	SA	SA	SA	SA	SA
Comments							
There are no comments for this SCA							

3.11.2 Discussion

SRC's waste management program at the Gunnar site is carried out in accordance with the plans listed below as well as CNSC approved remediation designs for the tailings covers, gamma shield covers, and landfills.

- Asbestos Management Plan
- Discharge Response Plan
- Discovery Response Plan
- Hazardous Materials Management Plan
- Legacy Waste Management Plan
- Waste Management Plan (Gunnar)

The goals of the waste management program at the Gunnar site are to reduce waste through reduction, reuse, and recovery and recycling as appropriate. The plans listed above provide general guidance for hazardous, legacy and waste management at the site to ensure that any waste or hazardous materials issues are addressed in an appropriate way. SRC has provided information on all types of waste on-site specifically as to the origins of the waste (legacy or remediation), volumes and scanning results in previous Gunnar annual reports.

As mentioned in the physical design SCA, SRC constructed 2 landfills to manage the waste on-site:

Landfill A: on-site engineered landfill designated to contain all non-hazardous, non-contaminated legacy waste and demolition debris.

Landfill B: non-pervious containment cell for the on-site disposal of Low-Level Radioactive Waste (LLRW), legacy petroleum hydrocarbon (PHC)-impacted soil, LLRW PHC-impacted spilled material created during remediation, and legacy pH-impacted material (treated with lime prior to placement in landfill).

Inventories of Low-Level Radioactive Waste

At the Gunnar site, the inventory of radioactive waste includes waste rock, tailings and assorted LLRW.

The site has an inventory of approximately 2.5 million m^3 of waste rock (some of which is radioactive) that was produced during mining operations and stockpiled at the site.

The largest amount of LLRW on site comprise of approximately 5 million tonnes of unconfined tailings which were produced during milling operations. These tailings were released to the environment resulting in 4 tailings areas (Gunnar Main Tailings (GMT), Beaver Pond Tailings (BPT), Gunnar Central Tailings (GCT) and Langley Bay Tailings (LBT)) which are being covered with engineered cover systems. The engineered covers at GMT and BPT are completed, and most of the tailings at GCT have been covered and will be completed along with the LBT cover. The construction of LBT cover has not started yet.

Approximately 198 m^3 of LLRW has been placed within Landfill B from 2020-2022. This waste includes the following items:

- PHC-impacted solids (spilled on Waste Rock and Tailings)
- PHC-impacted liquids collected during PHC spills cleanup
- Sulphur-impacted material
- Assorted debris (wood, rubber, etc.)
- Radiation protection equipment (PPE, tarps, etc.)
- Laboratory samples.

Inventories of Hazardous Waste

The approach to disposing of hazardous waste, both legacy and produced during remediation, is as follows:

- Legacy PHC-impacted soil was disposed of in Landfill B.
- Approximately 7,430 m^3 of pH-impacted material (treated with lime) has been disposed of in Landfill B.
- PHC-impacted soil created during remediation is disposed of off-site, except when also radioactive. In the latter case, it was disposed of in Landfill B.
- Approximately 15,650 m^3 of asbestos-containing material (ACM) has been disposed of in Landfill A. The ACM includes friable, non-friable, mixed materials and wood mixed ACM. The ACM was covered with non-hazardous waste and other materials as per design.
- All other hazardous waste, including both legacy and remediation waste, is disposed of off-site in accredited facilities. Until disposal off-site, this waste is stored on site in facilities approved by the Saskatchewan Ministry of Environment and is shipped off site annually on the ice road.

3.11.3 Summary

A summary of the licensee's past performance, challenges and proposed improvements are presented in the following subsections.

3.11.3.1 Past Performance

Through the review of waste management documentation and inspections during the current licence period, CNSC staff concluded that SRC's waste management program meets regulatory requirements.

3.11.3.2 Regulatory Focus

All of CNSC staff's annual inspections of the Gunnar site included waste management criteria during the current licence period. All non-compliances identified were of low safety significance and have been adequately addressed.

CNSC staff will continue to monitor performance in this area through regulatory oversight activities including inspections and desktop reviews of SRC's compliance reporting and revisions to relevant program documentation pertaining to this SCA.

3.11.3.3 Proposed Improvements

There are no proposed improvements for this SCA.

3.11.4 Conclusion

For the current licence period, CNSC staff rated SRC's overall performance for the waste management SCA at the Gunnar site as satisfactory.

3.12 Security

The security SCA covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders, or expectations for a facility or activity.

This SCA is not relevant to this CMD as the Gunnar site is located in a very remote area of northern Saskatchewan and is only accessible by air travel throughout the year, by boat or barge during the ice-free months, and by ice road during the winter, weather permitting. During the field season SRC's primary contractor discourages public access to the site in order to facilitate public safety. In addition, SRC has signage posted at various access points to the site warning the public of the potential hazards and directing them not to enter the area. During SRC's regular meetings with the Athabasca Basin communities, residents are provided with updates on the project as well as requested not to access the site.

Inspections of the overall site conditions which include site security, are performed by SRC staff at the Gunnar site at a minimum weekly frequency during the field season and monthly during the off-season months. Inspection reports are reviewed and any conditions that warrant future action are implemented and tracked to closure.

There are no licence conditions under this SCA in the current licence, WNSL-W5-3151.00/2024 (provided in Part Two of this CMD), nor are any proposed.

3.13 Safeguards and Non-Proliferation

The safeguards and non-proliferation SCA covers the programs and activities required for the successful implementation of the obligations arising from the Canada/International Atomic Energy Agency (IAEA) safeguards agreements, as well as other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons*.

Nuclear substances located at the site for which the licence renewal is being recommended are limited to natural uranium and its decay products, including radium-226. As per the *General Nuclear Safety and Control Regulations* 12(1) "Every licensee shall (i) take all necessary measures to facilitate Canada's

compliance with any applicable safeguards agreement". As part of Canada's international obligations under the Additional Protocol to its Comprehensive Safeguards Agreement with the IAEA, the CNSC has supplied, as part of a broader description of its nuclear fuel cycle activities, a list of past and present waste management locations including locations subject to this request. Under the terms of Canada's Additional Protocol, the IAEA may request physical access (called "complementary access") to locations declared by the CNSC.

3.13.1 Conclusion

There have been no inspections of the Gunnar site by IAEA inspectors over the licence term. CNSC staff concluded that the licence being recommended would not result in a failure to achieve conformity with international obligations to which Canada has agreed in relation to IAEA safeguards.

3.14 Packaging and Transport

This SCA is not relevant to this CMD as Gunnar is a decommissioned site and therefore there are no packaging or transport operations. There are no licence conditions under this SCA in the current licence, WNSL-W5-3151.00/2024 (provided in Part Two of this CMD), nor are any proposed.

4. Indigenous and Public Consultation and Engagement

4.1 Indigenous Consultation and Engagement

The common-law duty to consult with Indigenous Nations and communities applies when the Crown contemplates actions that may adversely affect potential or established Indigenous and/or treaty rights. The CNSC ensures that all of its licence decisions under the NSCA uphold the honour of the Crown and consider Indigenous peoples' potential or established Indigenous and/or treaty rights pursuant to section 35 of the *Constitution Act, 1982*.

CNSC staff are committed to building long-term relationships with Indigenous Nations and communities who have interest in CNSC-regulated facilities within their traditional and/or treaty territories. The CNSC's Indigenous engagement practices include sharing information, discussing topics of interest, seeking feedback and input on CNSC processes, and providing opportunities to participate in environmental monitoring. The CNSC also provides funding support (through the CNSC's Participant Funding Program) for Indigenous peoples to meaningfully participate in Commission proceedings and ongoing regulatory activities.

4.1.1 Discussion

CNSC staff have identified the following Indigenous Nations, communities and organization which may have an interest in the proposed licence renewal:

- Ya'thi Néné Land and Resource Office (YNLRO - representing Black Lake, Hatchet Lake, and Fond du Lac Denesųłiné First Nations as well as the

municipalities of Stony Rapids, Uranium City, Wollaston Lake, and Camsell Portage)

- Athabasca Chipewyan First Nation (ACFN)
- Métis Nation Saskatchewan (MN-S - Northern Region 1: Métis Local #50 – Uranium City & Métis Local #80 – Stony Rapids)

CNSC staff have established Terms of Reference (ToR) for long-term engagement with both the Ya'thi Néné Land and Resource Office as well as the Athabasca Chipewyan First Nation. The intent of each ToR is to work together to identify areas of interest and address issues and concerns related to the CNSC-regulated nuclear facilities and activities in the Indigenous Nation's traditional territory through on-going respectful and open dialogue. This includes a workplan that is developed between CNSC and the Indigenous Nation to identify key areas of interest which is used as a baseline for regular scheduled meetings between CNSC and the Indigenous Nation. The Gunnar Project is 1 of the topics for ongoing discussions included in both YNLR's and ACFN's ToR workplans. CNSC staff also regularly engage and meet with the Métis Nation Saskatchewan, which includes updates on CNSC regulated facilities and sites of interest, including the Gunnar Project.

These Indigenous Nations and communities, groups and organizations were identified because they all have previously expressed interest in being kept informed of CNSC-licensed activities occurring in their treaty lands and/or asserted traditional territories in relation to uranium mines and mills, including decommissioned sites, in northern Saskatchewan.

CNSC staff have been engaging with all of the identified Indigenous Nations and communities concerning the Gunnar site for a number of years. CNSC staff also participate in SRC's organized annual community tours to present and listen to any feedback provided by Indigenous Nations and communities to answer any questions and provide updates regarding the status of the Gunnar Project.

In addition, in late August and early September 2023, with the assistance of CNSC staff members, a Community Land Technician from Ya'thi Néné Lands and Resources, and CanNorth collected samples around Gunnar/Lorado/Beaverlodge as part of the CNSC's Independent Environmental Monitoring Program (IEMP). Members of ACFN were also invited to participate but were not available at the time of the sampling. The results have been posted on the CNSC's website and can be found at the following link: Independent Environmental Monitoring Program: Beaverlodge, Gunnar and Lorado (cnsc-ccsn.gc.ca)

CNSC staff determined that the IEMP results from 2023 are consistent with the results submitted by SRC, supporting CNSC staff's assessment that the licensees' environmental protection programs are effective for current licensed activities. The results add to the body of evidence that people and the environment in the vicinity of the Gunnar site are protected and that there are no anticipated health impacts from the sites.

In relation to SRC's current proposed request, CNSC staff sent letters of notification on July 15, 2024, to the identified parties providing information regarding the proposed 18-month licence renewal.

All of these parties have also received regular updates on the project and the proposed licence renewal, well in advance of these letters being sent out and the CMD being developed. Follow-up correspondence was conducted to ensure receipt of the letters and to answer any questions. As part of the communications, CNSC staff clarified that as SRC is proposing a short-term licence renewal that is administrative in nature in order to complete currently authorized remediation activities and to allow for more time to engage with Nations and communities in advance of a longer licence renewal request that there would not be any interventions for this particular licence application at this time. However, CNSC staff welcomed any feedback or input from interested Nations and communities. CNSC staff have not received any specific feedback or concerns from the Nations and communities contacted to date.

Should the Commission decide to renew the licence as requested, SRC has indicated its intent to apply for a longer-term licence renewal and licence amendment to authorize the transition to Phase 3 of the project, prior to the end of this 18-month period. The longer licence renewal application will involve further engagement with the Nations and communities, as well as the offer of participant funding and written interventions as part of the Commission hearing process.

4.1.2 Conclusion

Based on the information received and reviewed, CNSC staff concluded that this 18-month licence renewal will not cause any new potential adverse impacts to any potential or established Indigenous and/or treaty rights. The identified Indigenous Nations and communities have been notified and given the opportunity to raise any concerns to CNSC staff. CNSC staff have not been made aware of any specific concerns related to the short-term licence renewal for the Gunnar Project to date. CNSC staff will continue to provide opportunities for meaningful long-term engagement with interested Indigenous Nations and communities to address any concerns with regards to the licence renewal application and the Gunnar Project as appropriate and also conduct further engagement with the Nations and communities as part of SRC's longer licence renewal application for the Gunnar Project in 18 months' time.

4.2 Licensee Public Information and Engagement

As the Gunnar site is a Nuclear Substance Licence there are no regulatory requirements for a public information and engagement plan; however, SRC reports on site activities through local workshops and meetings, as well as posting updates on its website. These activities have been ongoing throughout the current licence term and SRC is committed to continue this approach to public information for the duration of the project.

4.3 Participant Funding Program

No participant funding was provided for this current application.

5. Other Matters of Regulatory Interest

5.1 Cost Recovery

The SRC is an agent of the Provincial Crown and is discharging the responsibilities of the Province of Saskatchewan with respect to remediating a Legacy contaminated site. Under these circumstances SRC meets all of the requirements of paragraph 2(e) of the Canadian Nuclear Safety Commission Cost Recovery Fees Regulations. Therefore, the regulation of this site is not subject to cost recovery.

5.1.1 Conclusion

There are no cost recovery requirements associated with this site.

5.2 Financial Guarantees

Under subsection 24(5) of the NSCA, the licensee is required to provide a financial guarantee in a form that is acceptable to the Commission. *General Nuclear Safety and Control Regulations*, paragraph 3(1)(l) stipulates that, "an application for a licence shall contain a description of any proposed financial guarantee related to the activity for which a licence application is submitted." The financial guarantee for decommissioning is established to fund the activities described in the Preliminary Decommissioning Plan (PDP). These requirements are found in REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*.

5.2.1 Discussion

Saskatchewan's Ministry of Energy and Resources has been assigned the responsibility for the management of all activities on the site on behalf of the Government of Saskatchewan. SRC is contracted by the Ministry of Energy and Resources to act as project manager for the Gunnar remediation project. The Government of Saskatchewan is the legal landholder and retains all legal and financial responsibilities for reclamation, decommissioning, monitoring and maintenance activities that are required under their CNSC licence. It is the Ministry of Energy and Resource's intent to remediate the site to an acceptable condition to where the site qualifies for a CNSC licence exemption and may enter Saskatchewan's Institutional Control Program.

In SRC's application, an updated letter of commitment from the Ministry of Energy and Resources dated October 5, 2023, has been provided confirming their continued responsibility associated with the Gunnar site.

5.2.2 Conclusion

CNSC staff have reviewed this submission and concluded that it meets the guidance of REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities* and that it is acceptable to cover the liabilities associated with the site.

5.3 Improvement Plan and Significant Future Activities

Not applicable to this application.

5.4 Nuclear Liability Insurance

There are no requirements for nuclear liability insurance associated with this site.

5.5 Delegation of Authority

The Commission may include in a licence any condition it considers necessary for the purposes of the NSCA. The Commission may delegate authority to CNSC staff with respect to the administration of licence conditions, or portions thereof.

There is 1 proposed licence condition in the current Gunnar licence and also within the proposed licence NSL-W5-3151.0/2026, that contains the phrase "the Commission or a person authorized by the Commission":

"*2.2 Reporting Requirements*

The licensee shall implement and maintain a program for reporting to the Commission or a person authorized by the Commission."

CNSC staff recommend the Commission delegate its authority for the purposes described in the above licence condition to the following staff:

- Director, Uranium Mines and Mills Division
- Director General, Directorate of Nuclear Cycle and Facilities Regulation
- Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch.

No change to this existing wording is proposed.

6. Overall Conclusions and Recommendations

CNSC staff's assessment confirms that SRC's application under consideration by the Commission complies with regulatory requirements.

CNSC staff concluded that the licensee's performance during the current licensing term was satisfactory and met regulatory requirements.

CNSC staff recommend that the Commission:

1. Conclude, pursuant to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act*, that the licensee/applicant:

    a) is qualified to carry on the activities authorized by the licence

b) will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed

2. Renew the Nuclear Substance Licence for the Gunnar site and issue the proposed licence, NSL-W5-3151.0/2026, with no new authorizations.

3. Delegate authority as set out in section 5.5 of this CMD.

References

[1] Letter to C. Salmon (CNSC) from D. Sanscartier (SRC) *RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site*, July 4, 2024 (e-Doc 7319100) (Public version in eDoc 7361624).

[2] Letter to D. Pandolfi (CNSC) from D. Sanscartier (SRC) *RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site*, October 20, 2023 (e-Doc 7197374) (Public version in eDoc 7361624).

[3] CMD 15-H10. *Submission from CNSC Staff on Gunnar Mine Site (Removal of Phase II Hold Point),* One-Day Public Hearing, September 30, 2015. Submitted by CNSC staff (e-Doc 4827817).

[4] CMD 16-H6. *Gunnar Remediation Project Hold Point*, One-Day Public Hearing, September 22, 2016. Submitted by CNSC staff (e-Doc 5043962).

[5] CNSC Memorandum (Internal) *Saskatchewan Research Council's Request for Approval of the Detailed Plans for Part of the Tailings Remediation Activities*, July 7, 2017 (e-Doc 5287909).

[6] CNSC Memorandum (Internal) *Saskatchewan Research Council's Request for Approval of the Detailed Plans for the Other Site Aspects Remediation Activities*, March 13, 2020 (e-Doc 6041290).

[7] CNSC Record of Approval (CNSC) *Request for approval by SRC of the construction of Landfill B of the other aspects work for the Gunnar Remediation Project*, June 22, 2020 (e-Doc 6287432).

[8] CNSC Environmental Review Identification -Request Form *RE: Renewal of Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 -Saskatchewan Research Council Gunnar Legacy Uranium Mine Site,* April 2024 (e-Doc 7197621).

Glossary

For definitions of terms used in this document, see *REGDOC-3.6, Glossary of CNSC Terminology*, which includes terms and definitions used in the *Nuclear Safety and Control Act* and the *Regulations* made under it, and in *CNSC regulatory documents* and other publications.

Additional terms and acronyms used in this CMD are listed below.

ACRONYMS

ACFN	Athabasca Chipewyan First Nation
ACM	Asbestos-contaminated Material
ALARA	As low as reasonably achievable
BPT	Beaver Pond Tailings
CCZs	Contamination Control Zones
CMD	Commission Member Document
CNSC	Canadian Nuclear Safety Commission
CRZs	Contamination Reduction Zones
CSA	Canadian Standard Association
EPR	Environmental Protection Review
GCT	Gunnar Central Tailings
GMT	Gunnar Main Tailings
GNSCR	General Nuclear Safety and Control Regulations
IAEA	International Atomic Energy Agency
IEMP	Independent Environmental Monitoring Program
LBT	Langley Bay Tailings
LCH	Licence Conditions Handbook
LLRD	Long-lived Radioactive Dust
LLRW	Low-level Radioactive Waste
LTI	Lost Time Incident
MN-S	Métis Nation Saskatchewan
mSv	Millisievert
NEWs	Nuclear Energy Workers
NSCA	Nuclear Safety and Control Act
NSL	Nuclear Substance Licence
OHS	Occupational Health and Safety
PHC	Petroleum Hydrocarbon
RnG	Radon Gas
ROR	Regulatory Oversight Report
RP	Radiation Protection
RPR	Radiation Protection Regulations
SCA	Safety and Control Area
SRC	Saskatchewan Research Council
ToR	Terms of Reference
WNSL	Waste Nuclear Substance Licence
YNLRO	Ya'thi Néné Lands and Resources Office

A. Safety Performance Rating Levels

Satisfactory (SA)

Licensee meets all of the following criteria:

- Performance meets CNSC staff expectations
- Licensee non-compliances or performance issues, if any, are not risk-significant
- Any non-compliances or performance issues have been, or are being, adequately corrected

Below Expectations (BE)

One or more of the following criteria apply:

- Performance does not meet CNSC staff expectations
- Licensee has risk-significant non-compliance(s) or performance issue(s)
- Non-compliances or performance issues are not being adequately corrected

Unacceptable (UA)

One or both of the following criteria apply:

- Risk associated with a non-compliance or performance issue is unreasonable
- At least one significant non-compliance or performance issue exists with no associated corrective action

Note: Starting in 2019, facility performance assessment ratings were simplified and the "Fully Satisfactory (FS)" was replaced by the "Satisfactory (SA)" rating. It is important to recognize that a facility that received an SCA performance rating of FS in previous Regulatory Oversight Report and now has a rating of SA, does not necessarily indicate a reduction in performance.

B. Basis for the Recommendation(s)

B.1 Regulatory Basis

The recommendations presented in this CMD are based on compliance objectives and expectations associated with the relevant SCAs and other matters. The regulatory basis for the matters that are relevant to this CMD are as follows.

Management System

The regulatory foundation for the recommendation(s) associated with Management System includes the following:

- The *General Nuclear Safety and Control Regulations* requires that an application for a licence shall contain, under paragraph:
    - 3(1)(k), the applicant's organizational management structure insofar as it may bear on the applicant's compliance with the Act and the regulations made under the Act, including the internal allocation of functions, responsibilities and authority.
- It is a requirement of the *General Nuclear Safety and Control Regulations* under section 15 that every applicant for a licence and every licensee shall notify the Commission of:
    - 15(a), the persons who have the authority to act for them (the applicant/licensee) in their dealings with the Commission.
    - 15(b), the names and position titles of the persons who are responsible for the management and control of the licensed activity and the nuclear substance, nuclear facility, prescribed equipment or prescribed information encompassed by the licence.
    - 15(c), any change in the information referred to in paragraphs (a) and (b) within 15 days after the change occurs.

Operating Performance

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- It is a requirement of the *General Nuclear Safety and Control Regulations* under subsection 29(1), that every licensee who becomes aware of any of the following situations shall immediately make a preliminary report to the Commission of the location and circumstances of the situation and of any action that the licensee has taken or proposes to take with respect to it:
    - 29(1)(a), a situation referred to in paragraph 27(b) of the Act.
    - 29(1)(b), the occurrence of an event that is likely to result in the exposure of persons to radiation in excess of the applicable radiation dose limits prescribed by the *Radiation Protection Regulations*.

- 29(1)(c) a release, not authorized by the licence, of a quantity of radioactive nuclear substance into the environment.
- 29(1)(d), a situation or event that requires the implementation of a contingency plan in accordance with the licence.
- 29(1)(f), information that reveals the incipient failure, abnormal degradation or weakening of any component or system at the site of the licensed activity, the failure of which could have a serious adverse effect on the environment or constitutes or is likely to constitute or contribute to a serious risk to the health and safety of persons or the maintenance of security.
- 29(1)(h), a serious illness or injury incurred or possibly incurred as a result of the licensed activity.
- 29(1)(i) the death of any person at a nuclear facility.

- It is a requirement of the *General Nuclear Safety and Control Regulations* under subsection 29(2), that every licensee who becomes aware of a situation referred to in subsection (1) shall file a full report of the situation with the Commission within 21 days after becoming aware of it, unless some other period is specified in the licence, and the report shall contain the following information:
  - 29(2)(a), the date, time and location of becoming aware of the situation.
  - 29(2)(b), a description of the situation and the circumstances.
  - 29(2)(c), the probable cause of the situation.
  - 29(2)(d), the effects on the environment, the health and safety of persons and the maintenance of security that have resulted or may result from the situation.
  - 29(2)(e), the effective dose and equivalent dose of radiation received by any person as a result of the situation.
  - 29(2)(f), the actions that the licensee has taken or proposes to take with respect to the situation.

Physical Design

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- Paragraph 3(1)(*d*) of the *General Nuclear Safety and Control Regulations* requires that an application for a licence shall contain a description of any nuclear facility, prescribed equipment or prescribed information to be encompassed by the licence.

Fitness for Service

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- Paragraph 3(1)(*d*) of the *General Nuclear Safety and Control Regulations* requires that an application for a licence shall contain a description of any nuclear facility, prescribed equipment or prescribed information to be encompassed by the licence.
- Paragraph 12(1)(*c*) of the *General Nuclear Safety and Control Regulations* requires that every licensee shall take all reasonable precautions to protect the environment and the health and safety of persons and to maintain the security of nuclear facilities and of nuclear substances.

Radiation Protection

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- The *General Nuclear Safety and Control Regulations* require, under subsection 3(1), that a licence application contain the following information under paragraphs:
  - 3(1)(e), the proposed measures to ensure compliance with the *Radiation Protection Regulations*.
  - 3(1)(f), any proposed action level for the purpose of section 6 of the *Radiation Protection Regulations*.
- The *General Nuclear Safety and Control Regulations* require, under subsection 17(b), that a worker comply with the measures established by the licensee to protect the environment and the health and safety of persons, maintain security, control the levels and doses of radiation, and control releases of radioactive nuclear substances and hazardous substances into the environment.
- It is a requirement for uranium mines and mills licensee to follow the *Radiation Protection Regulations*.

Conventional Health and Safety

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- The *General Nuclear Safety and Control Regulations* require, under paragraph 12(1)(c), that every licensee shall take all reasonable precautions to protect the environment and the health and safety of persons and to maintain the security of nuclear facilities and of nuclear substances.
- The *General Nuclear Safety and Control Regulations* require, under subsection 16(1), that every licensee shall make available to all workers the health and safety information with respect to their workplace that has been collected by the licensee in accordance with the Act, the regulations made under the Act and the licence.
- It is a requirement of the *General Nuclear Safety and Control Regulations* under section 17, that every worker shall:
  - 17(a), use equipment, devices, facilities and clothing for protecting the environment or the health and safety of persons, or for determining doses of radiation, dose rates or concentrations of radioactive nuclear substances, in a

responsible and reasonable manner and in accordance with the Act, the regulations made under the Act and the licence.

- 17(b), comply with the measures established by the licensee to protect the environment and the health and safety of persons, maintain security, control the levels and doses of radiation, and control releases of radioactive nuclear substances and hazardous substances into the environment.
- 17(c)(i), promptly inform the licensee or the worker's supervisor of any situation in which the worker believes there may be a significant increase in the risk to the environment or the health and safety of persons.
- 17(e), take all reasonable precautions to ensure the worker's own safety, the safety of the other persons at the site of the licensed activity, the protection of the environment, the protection of the public and the maintenance of the security of nuclear facilities and of nuclear substances.

Environmental Protection

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- The *General Nuclear Safety and Control Regulations*, under paragraphs 12(1)(c) and (f), require that each licensee take all reasonable precautions to protect the environment and the health and safety of persons, and to control the release of radioactive nuclear substances and hazardous substances within the site of the licensed activity and into the environment.
- The *Radiation Protection Regulations* prescribe dose limits for the general public, which under subsection 1(3) is 1 mSv per calendar year.
- It is a requirement of the *General Nuclear Safety and Control Regulations* under section 17, that every worker shall:
  - 17(a), use equipment, devices, facilities and clothing for protecting the environment or the health and safety of persons, or for determining doses of radiation, dose rates or concentrations of radioactive nuclear substances, in a responsible and reasonable manner and in accordance with the Act, the regulations made under the Act and the licence.
  - 17(b), comply with the measures established by the licensee to protect the environment and the health and safety of persons, maintain security, control the levels and doses of radiation, and control releases of radioactive nuclear substances and hazardous substances into the environment.
  - 17(c)(i), promptly inform the licensee or the worker's supervisor of any situation in which the worker believes there may be a significant increase in the risk to the environment or the health and safety of persons.
  - 17(e), take all reasonable precautions to ensure the worker's own safety, the safety of the other persons at the site of the licensed activity, the protection of the environment, the protection of the public and the maintenance of the security of nuclear facilities and of nuclear substances.

Emergency Management and Fire Protection

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- It is a requirement of the *General Nuclear Safety and Control Regulations* under subsection 12(1) that every licensee shall:
    - 12(1)(c), take all reasonable precautions to protect the environment and the health and safety of persons and to maintain security of nuclear facilities and of nuclear substances.
    - 12(1)(f), take all reasonable precautions to control the release of radioactive nuclear substances or hazardous substances within the site of the licensed activity and into the environment of the licensed activity.

Waste Management

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- The *General Nuclear Safety and Control Regulations* require, under subsection 3(1), that a licence application contain the following information under paragraphs:
- 3(1)(c) the name, maximum quantity and form of any nuclear substance to be encompassed by the licence.
- 3(1)(j) the name, quantity, form, origin and volume of any radioactive waste or hazardous waste that may result from the activity to be licensed, including waste that may be stored, managed, processed or disposed of at the site of the activity to be licensed, and the proposed method for managing and disposing of that waste.
- The *General Nuclear Safety and Control Regulations* require, under paragraph 12(1)(c), that every licensee shall take all reasonable precautions to protect the environment and the health and safety of persons and to maintain the security of nuclear facilities and of nuclear substances.

Safeguards and Non-Proliferation

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- It is a requirement of the *General Nuclear Safety and Control Regulations* under paragraph 12(1)(i) that each licensee take all necessary measures to facilitate Canada's compliance with any applicable safeguards agreement.
- Under subsection 21(1) of the *General Nuclear Safety and Control Regulations*, information that concerns any of the following, including a record of that information, is prescribed information for the purposes of the Act:
    - 21(1)(a), a nuclear substance that is required for the design, production, use, operation or maintenance of a nuclear weapon or nuclear explosive device, including the properties of the nuclear substance.
    - 21(1)(b), the design, production, use, operation or maintenance of a nuclear weapon or nuclear explosive device.

- 21(1)(c), the security arrangements, security equipment, security systems and security procedures established by a licensee in accordance with the Act, the regulations made under the Act or the licence, and any incident relating to security.
- 21(1)(d), the route or schedule for the transport of Category I, II or III nuclear material, as defined in section 1 of the *Nuclear Security Regulations*.

- It is a requirement of the *General Nuclear Safety and Control Regulations* under subsection 30(1), that every licensee who becomes aware of any of the following situations shall immediately make a preliminary report to the Commission of the situation and of any action that the licensee has taken or proposes to take with respect to it:
  - 30(1)(a), interference with or an interruption in the operation of safeguards equipment or the alteration, defacement or breakage of a safeguards seal, other than in accordance with the safeguards agreement, the Act, the regulations made under the Act or the licence.
  - 30(1)(b), the theft, loss or sabotage of safeguards equipment or samples collected for the purpose of a safeguards inspection, damage to such equipment or samples, or the illegal use, possession, operation or removal of such equipment or samples.
- It is a requirement of the *General Nuclear Safety and Control Regulations* under subsection 30(2), that every licensee who becomes aware of a situation referred to in subsection (1) shall file a full report of the situation with the Commission within 21 days after becoming aware of it, unless some other period is specified in the licence, and the report shall contain the following information:
  - 30(2)(a), the date, time and location of becoming aware of the situation.
  - 30(2)(b), a description of the situation and the circumstances.
  - 30(2)(c), the probable cause of the situation.
  - 30(2)(d), the adverse effects on the environment, the health and safety of persons and the maintenance of national and international security that have resulted or may result from the situation.
- The Agreement between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the *Treaty on the Non-Proliferation of Nuclear Weapons*.
- The Protocol Additional to the Agreement between Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the *Treaty on the Non-Proliferation of Nuclear Weapons*.

Decommissioning Strategy and Financial Guarantees

The regulatory foundation for the recommendation(s) associated with SRC's Gunnar Project post-decommissioning financial guarantees includes:

- The *General Nuclear Safety and Control Regulations* requires under paragraph 3(1)(l) that a licence application contains a description of any proposed financial guarantee relating to the activity to be licensed.

B.2 Detailed Summary of CNSC Assessment of Application

CNSC's staff assessment of Saskatchewan Research Council's licence application included a completeness check, a sufficiency check, and a technical assessment against regulatory requirements. The completeness check verified whether the application included the prescribed information in accordance with the *Nuclear Safety and Control Act* and applicable regulations. For all facilities (i.e., Class I and Class II facilities), it is important to consider and address all licence application requirements within the applicable CNSC regulations.

The sufficiency check verified whether the application included sufficient and quality information in order for CNSC staff to conduct the technical assessment. The technical assessment verified whether the application included adequate safety and control measures to address CNSC requirements. Documents originally submitted as part of the application may have been revised, updated, or replaced over the course of the assessment to address CNSC requirements.

Pursuant to Section 3 of the *General Nuclear Safety and Control Regulations* Licences – General Application Requirements	**Location in Application or Supporting Document(s) as Noted by Saskatchewan Research Council**	**Complete?**	**Sufficient?**	**Adequate?**
(1) An application for a licence shall contain the following information:				
(a) the applicant's name and business address;	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan - Research Council Gunnar Legacy Uranium Mine Site (October 2023) p.4	Y	Y	Y

Pursuant to Section 3 of the *General Nuclear Safety and Control Regulations* Licences – General Application Requirements	**Location in Application or Supporting Document(s) as Noted by Saskatchewan Research Council**	**Complete?**	**Sufficient?**	**Adequate?**
(b) the activity to be licensed and its purpose;	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan - Research Council Gunnar Legacy Uranium Mine Site (October 2023) p.4	Y	Y	Y
(c) the name, maximum quantity, and form of any nuclear substance to be encompassed by the licence;	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan - Research Council Gunnar Legacy Uranium Mine Site (October 2023) p.11	Y	Y	Y
(d) a description of any nuclear facility, prescribed equipment, or prescribed information to be encompassed by the licence;	N/A Remediation of Decommissioned Site			
(e) the proposed measures to ensure compliance with the *Radiation Protection Regulations;* (both Security and Transport Regulations do not apply to this application)	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan - Research Council Gunnar Legacy Uranium Mine Site (October 2023) p.16	Y	Y	Y

Pursuant to Section 3 of the *General Nuclear Safety and Control Regulations* Licences – General Application Requirements	**Location in Application or Supporting Document(s) as Noted by Saskatchewan Research Council**	**Complete?**	**Sufficient?**	**Adequate?**
(f) any proposed action level for the purpose of section 6 of the *Radiation Protection Regulations*;	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan - Research Council Gunnar Legacy Uranium Mine Site (October 2023) p.14			
(g) the proposed measures to control access to the site of the activity to be licensed and the nuclear substance, prescribed equipment, or prescribed information;	N/A			
(h) the proposed measures to prevent loss or illegal use, possession, or removal of the nuclear substance, prescribed equipment, or prescribed information;	N/A			
(i) a description and the results of any test, analysis or calculation performed to substantiate the information included in the application;	N/A information provided in initial application and annual reports			

Pursuant to Section 3 of the *General Nuclear Safety and Control Regulations* Licences – General Application Requirements	**Location in Application or Supporting Document(s) as Noted by Saskatchewan Research Council**	**Complete?**	**Sufficient?**	**Adequate?**
(j) the name, quantity, form, origin and volume of any radioactive waste or hazardous waste that may result from the activity to be licensed, including waste that may be stored, managed, processed, or disposed of at the site of the activity to be licensed, and the proposed method for managing and disposing of that waste;	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan - Research Council Gunnar Legacy Uranium Mine Site (October 2023) p.15	Y	Y	Y
(k) the applicant's organizational management structure insofar as it may bear on the applicant's compliance with the NSCA and the regulations made under it, including the internal allocation of functions, responsibilities and authority;	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan - Research Council Gunnar Legacy Uranium Mine Site (October 2023) Appendix B	Y	Y	Y
(l) a description of any proposed financial guarantee relating to the activity to be licensed;	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan - Research Council Gunnar Legacy Uranium Mine Site (October 2023) p.19	Y	Y	Y

Pursuant to Section 3 of the *General Nuclear Safety and Control Regulations* Licences – General Application Requirements	**Location in Application or Supporting Document(s) as Noted by Saskatchewan Research Council**	**Complete?**	**Sufficient?**	**Adequate?**
(m) any other information required by the [NSCA] or the regulations made under it for the activity to be licensed and the nuclear substance, nuclear facility, prescribed equipment or prescribed information to be encompassed by the licence.	N/A renewal is for a remediation project of a decommissioned site			

B.3 Technical Basis

The technical basis for recommendations, including several guidance documents, national standards and regulatory documents has been presented in this CMD and is addressed in detail in the LCH.

The technical basis for the recommendations presented in this CMD are listed in the table

Applicable Standards and Codes per Safety and Control Area

SCA	Document Title	Sufficient?	Adequate?
Management System	Management System Requirements for Nuclear Facilities (N286-12). Canadian Standards Association Group. 2017. (Section 4 and relevant items Section 9)	Y	Y
Human Performance Management	Not applicable		
Operating Performance	REGDOC-3.1.3 Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices	Y	Y
Safety Analysis	Not applicable		

SCA	Document Title	Sufficient?	Adequate?
Physical Design	Management System Requirements for Nuclear Facilities (N286-12). Canadian Standards Association Group. 2017. (Section 4 and relevant items Section 9) Canadian Dam Association, Canadian Dam Safety Guidelines	Y	Y
Fitness for Service	*Canadian Dam Association, Canadian Dam Safety Guidelines*	Y	Y
Radiation Protection	REGDOC-2.7.1 Radiation Protection	Y	Y
Conventional Health and Safety	REGDOC-2.8.1 Conventional Health and Safety	Y	Y
Environmental Protection	REGDOC-2.9.1 Environmental Protection: Environmental Principles, Assessments and Protection Measures	Y	Y
Emergency Management and Fire Protection	Not applicable, incorporated into Conventional Health and Safety SCA	Y	Y
Waste Management	REGDOC 2.11.1 Waste Management, Volume I: Management of Radioactive Waste & Waste Management, Volume II: Management of Uranium Mine Waste Rock and Mill Tailings and Canadian Dam Association Guidelines	Y	Y
Security	Not applicable		
Safeguards and Non-Proliferation	Not applicable just requires access to IAEA inspectors		
Packaging and Transport	Not applicable		
Public Information Program	Not applicable		
Aboriginal Consultation	Not applicable		
Financial Guarantee	REG-DOC 3.3.1 Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities	Y	Y

C. Safety and Control Area Framework

C.1 Safety and Control Areas Defined

The safety and control areas identified in section 2.2 and discussed in summary in sections 3.1 through 3.14 are comprised of specific areas of regulatory interest which vary between facility types.

The following table provides a high-level definition of each SCA. The specific areas within each SCA are to be identified by the CMD preparation team in the respective areas within section 3 of this CMD.

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	**Safety and Control Area**	**Definition**
Management	Management System	Covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives and continuously monitors its performance against these objectives and fostering a healthy safety culture.
	Human Performance Management	Covers activities that enable effective human performance through the development and implementation of processes that ensure that a sufficient number of licensee personnel are in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.
	Operating Performance	Includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.
Facility and Equipment	Safety Analysis	Covers maintenance of the safety analysis that supports that overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards.
	Physical Design	Relates to activities that impact on the ability of systems, components and structures to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	**Safety and Control Area**	**Definition**
	Fitness for Service	Covers activities that impact on the physical condition of systems, components and structures to ensure that they remain effective over time. This area includes programs that ensure all equipment is available to perform its intended design function when called upon to do so.
Core Control Processes	Radiation Protection	Covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination levels and radiation doses received by individuals are monitored and controlled and maintained ALARA.
	Conventional Health and Safety	Covers the implementation of a program to manage workplace safety hazards and to protect workers.
	Environmental Protection	Covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.
	Emergency Management and Fire Protection	Covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions. This also includes any results of participation in exercises.
	Waste Management	Covers internal waste-related programs which form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility. This area also covers the planning for decommissioning.
	Security	Covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders, or expectations for the facility or activity.

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	**Safety and Control Area**	**Definition**
	Safeguards and Non-Proliferation	Covers the programs and activities required for the successful implementation of the obligations arising from the Canada/International Atomic Energy Agency (IAEA) safeguards agreements, as well as all other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons*.
	Packaging and Transport	Covers programs for the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility.

C.2 Specific Areas for this Facility Type

The following table identifies the specific areas that comprise each SCA for the Gunnar Site:

SPECIFIC AREAS FOR THIS FACILITY TYPE		
Functional Area	**Safety and Control Area**	**Specific Areas**
Management	Management System	▪ Management System ▪ Organization ▪ Change Management ▪ Records Management ▪ Contractor Management
	Human Performance Management	▪ Not addressed individually
	Operating Performance	▪ Conduct of Licensed Activity ▪ Reporting and Trending
Facility and Equipment	Safety Analysis	▪ Not addressed individually
	Physical Design	▪ Components Design
	Fitness for Service	▪ Maintenance
Core Control Processes	Radiation Protection	▪ Application of ALARA ▪ Worker Dose Control ▪ Radiation Protection Program Performance ▪ Radiological Hazard Control
	Conventional Health and Safety	▪ Performance ▪ Practices ▪ Awareness
	Environmental Protection	▪ Effluent and Emissions Control (releases) ▪ Environmental Management System (EMS) ▪ Assessment and Monitoring ▪ Protection of People
	Emergency Management and Fire Protection	▪ Fire Emergency Preparedness and Response (Wildfire)
	Waste Management	▪ Waste Characterization ▪ Waste Minimization

SPECIFIC AREAS FOR THIS FACILITY TYPE		
Functional Area	**Safety and Control Area**	**Specific Areas**
	Security	▪ Not addressed individually
	Safeguards and Non-Proliferation	▪ Access and Assistance to the IAEA
	Packaging and Transport	▪ Not addressed individually

PART 2

Part 2 of this CMD provides all relevant information pertaining directly to the licence, including:

1. The current licence;
2. Any proposed changes to the conditions, licensing period, or formatting of an existing licence;
3. The proposed licence; and
4. The draft licence conditions handbook.

Current Licence

E-doc: 4496683

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

File / dossier: 2.05

WASTE NUCLEAR SUBSTANCE LICENCE
SASKATCHEWAN RESEARCH COUNCIL
GUNNAR LEGACY URANIUM MINE SITE

I) LICENCE NUMBER: WNSL-W5-3151.00/2024

II) LICENSEE: Pursuant to section 24 and 37 of the *Nuclear Safety and Control Act*, this licence is issued to:

Saskatchewan Research Council
#125-15 Innovation Blvd
Saskatoon, SK S7N 2X8

III) LICENCE PERIOD: This licence is valid from January 14, 2015 to November 30, 2024, unless otherwise suspended, amended, transferred, revoked, or replaced.

IV) LICENSED ACTIVITIES:

This licence authorizes the licensee, Saskatchewan Research Council (hereinafter "SRC"), to:

a) possess, manage and store nuclear substances that are required for, associated with or arise from Phase 1[1] activities associated with the remediation of the Gunnar Legacy Uranium Mine Site, described fully in Appendix A to this licence, and

b) possess, transfer, manage and store the nuclear substances except Category I, II and III nuclear- material as defined in section 1 of the *Nuclear Security Regulations*, that are required for, associated with or arise from Phases 2[2] and 3[3] of the Gunnar Remediation Project – Gunnar Legacy Uranium Mine Site (hereinafter Gunnar Site), described fully in Appendix A to this licence.

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1 - Phase 1 activities are defined as those activities related to the continued activities at the historic, legacy Gunnar mine, mill and tailings site, and are associated with ongoing care and maintenance.
2 - Phase 2 activities are those activities related to the remediation of the numerous components of the legacy Gunnar Site.
3 - Phase 3 activities are those activities related to the post-closure operation of the Gunnar Site associated with ongoing care and maintenance.

V) EXPLANATORY NOTES:

a) Unless otherwise provided for in this licence, words and expressions used in this licence have the same meaning as in the *Nuclear Safety and Control Act* and associated Regulations;

b) Appendix A of this licence forms part of the licence;

c) The "*Gunnar Legacy Uranium Mine Site Licence Conditions Handbook*" (LCH) provides compliance verification criteria in order to meet the conditions listed in this licence. The LCH also provides information regarding delegation of authority and current versions of documents.

VI) CONDITIONS:

1. GENERAL

1.1 The licensee shall operate the Gunnar Site in accordance with the licensing basis for the site.

1.2 The licensee shall not deviate from the requirement of condition 1.1 in any manner without the prior written approval of the Commission or a person authorized by the Commission.

2. OPERATIONS

2.1 The licensee shall prepare written reports on any failure to meet the requirements of this licence, results of monitoring programs, progress and end-state of the Gunnar Site within the timelines specified in the Act and Regulations. If no timeline is specified, a report shall be prepared within 5 working days of discovering the non-compliance.

2.2 The licensee shall implement and maintain a **Management System**. The licensee shall give written notification to the Commission or a person authorized by the Commission, prior to implementation of any policy and program changes to the Management System for the Gunnar Site.

2.3 The licensee shall implement an **Occupational Health and Safety Program**, including a **Radiation Protection Plan, Emergency Response Plan** for each Phase of activities at the Gunnar Site.

2.4 The licensee shall implement an **Environmental Protection Program** for each Phase of activities at the Gunnar Site.

2.5 The licensee shall implement and maintain a **Communication Program** for the facility, including a public disclosure protocol, for each Phase of activities at the Gunnar Site.

2.6 The licensee shall implement and maintain a **Quality Program** for each Phase of activities at the Gunnar Site.

2.7 The licensee shall have a **Training Program** for each Phase of activities at the Gunnar Site.

2.8 The licensee shall implement any **mitigation measures** and **follow-up programs** identified in environmental assessments leading to this licence.

SIGNED at OTTAWA, this 14th day of January, 2015

M. Binder

Michael Binder
President
Canadian Nuclear Safety Commission

APPENDIX A

LOCATION OF THE GUNNAR SITE

The location of the Gunnar Legacy Uranium Mine, Mill and Tailings Site is shown on Figure 1-1: Gunnar Remediation Project Site (E-Doc# 4476579).

The Inactive Gunnar Legacy Uranium Mine, Mill and Tailings Site is that area outlined below as Tailings Area, Waste Rock Areas and Transportation Corridors. It includes terrestrial and near shore tailings from the former Gunnar Uranium Mill, mine waste rock piles, the open pit and headframe footprint, and transportation corridors that will be utilized to affect the remediation of the contaminated sites.

Figure 1-1 shows the extent of the licensed areas.

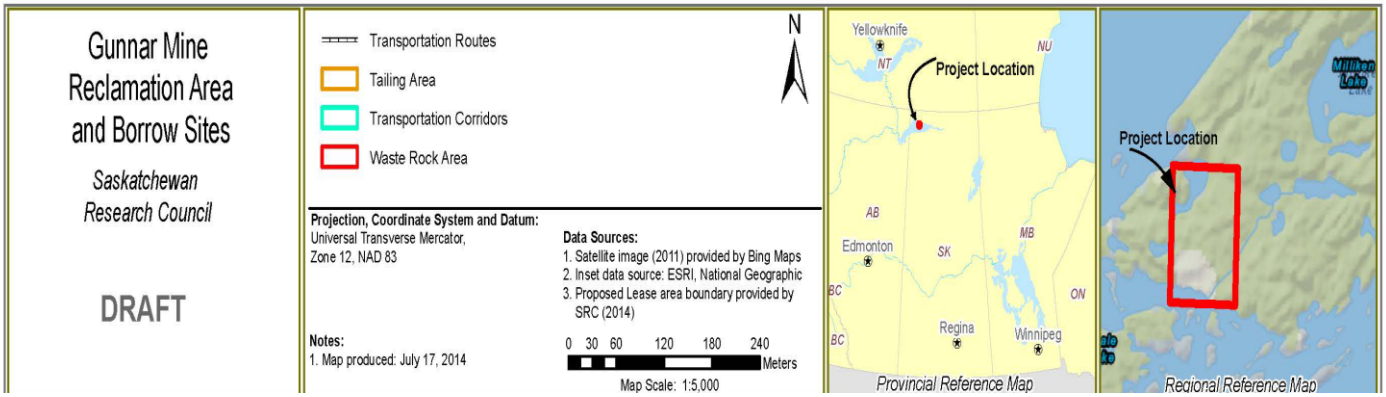
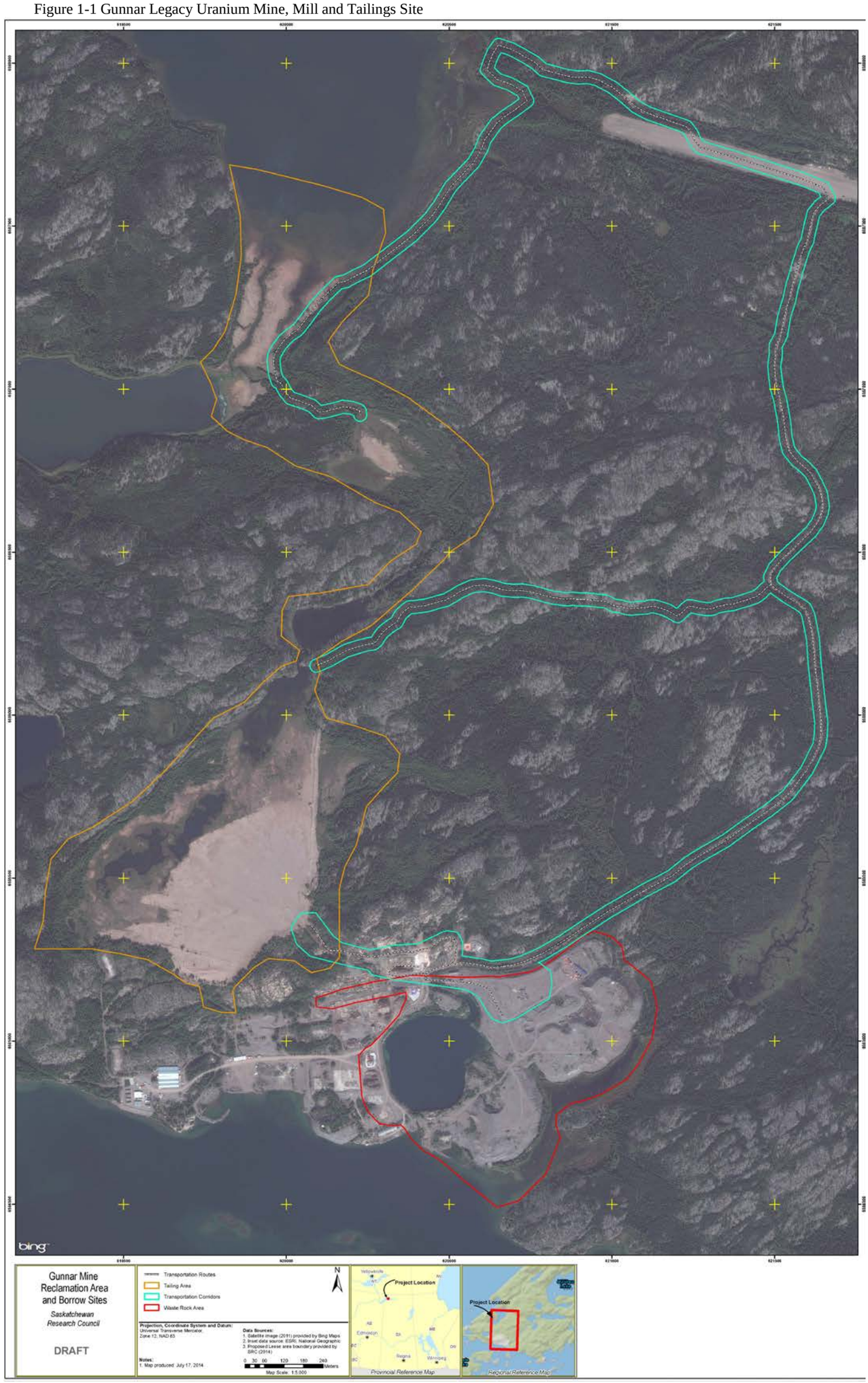


Figure 1-1 Gunnar Legacy Uranium Mine, Mill and Tailings Site



Proposed Licence Changes

Overview

There are no changes to the licence authorizations but changes to the format to update it. The licence term recommended for an 18-month period.

Licence Conditions

The licence conditions have been updated to remove now completed environmental assessment licence conditions which are no longer required.

Licence Format

The licence format has been updated to meet new standardized licensing template requirements.

Licence Period

In SRC's application to renew the CNSC-issued licence, for an 18-month licence term was requested. CNSC has a standardized licence and licence conditions handbook (LCH) framework which provides for effective regulatory oversight of the site.

This renewal is to allow time for SRC's final remedial work to be completed and as-built reports to be provided to CNSC staff for review. If the licence renewal is granted, SRC has indicated that they will apply for a longer-term licence within the 18-month timeframe to manage the site post-remediation.

Therefore, CNSC staff recommend that the Commission accept SRC's request for an 18-month licence for the Gunnar Project.

Proposed Licence

E-doc: 7345484

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

Word Ref: e-Doc 7345484
PDF Ref: e-Doc 7

NUCLEAR SUBSTANCES AND RADIATION DEVICES LICENCE

GUNNAR LEGACY URANIUM MINE SITE

I) LICENCE NUMBER: **NSL-W5-3151.0/2026**

II) LICENSEE: Pursuant to section 24 and 37 of the *Nuclear Safety and Control Act*, this licence is issued to:

Saskatchewan Research Council
#125-15 Innovation Blvd
Saskatoon, SK S7N 2X8

III) LICENCE PERIOD: This licence is valid from November 30, 2024 and remains in effect until **May 31, 2026**, unless otherwise suspended, amended, revoked, replaced, or transferred.

IV) LICENSED ACTIVITIES:

This licence authorizes the licensee to possess, manage, and store, subject to the conditions of this licence, the nuclear substances, except Category I, II and III nuclear material as defined in section 1 of the *Nuclear Security Regulations*, that are associated with remediation of historic uranium mine wastes in the licensed area. The licensed area is described in Appendix A.

V) EXPLANATORY NOTES:

(i) Unless otherwise provided for in this licence, words and expressions used in this licence have the same meaning as in the *Nuclear Safety and Control Act* and associated Regulations.

(ii) The Gunnar Legacy Uranium Mine Site Licence Conditions Handbook (LCH) provides compliance verification criteria including the Canadian standards and regulatory documents used to verify compliance with conditions listed in the licence.

VI) CONDITIONS:

The licensee shall comply with the following conditions, established pursuant to subsection 24(5) of the Nuclear Safety and Control Act.

G. GENERAL

G.1 Licensing Basis for Licensed Activities

The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:

(i) the regulatory requirements set out in the applicable laws and regulations;

(ii) the conditions and safety and control measures described in the facilities or activity's licence and the documents directly referenced in that licence;

(iii) the safety and control measures described in the licence application and the documents needed to support that licence application;

unless otherwise approved in writing by the Canadian Nuclear Safety Commission (hereinafter "the Commission").

G.2 Notification of Changes

The licensee shall give written notification of changes to the facility or its operation, including deviation from design, operating conditions, policies, programs and methods referred to in the licensing basis.

G.3 Financial Guarantee

The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.

1 MANAGEMENT SYSTEM

1.1 Management System

The licensee shall implement and maintain a management system.

2 OPERATING PERFORMANCE

2.1 Reporting Requirements

The licensee shall implement and maintain a program for reporting to the Commission or a person authorized by the Commission.

3 PHYSICAL DESIGN

3.1 Physical Design

The licensee shall implement and maintain a physical design program.

4 FITNESS FOR SERVICE

4.1 Fitness for Service

The licensee shall implement and maintain a fitness for service program.

5 RADIATION PROTECTION

5.1 Radiation Protection

The licensee shall implement and maintain a radiation protection program.

6 CONVENTIONAL HEALTH AND SAFETY

6.1 Conventional Health and Safety

The licensee shall implement and maintain a conventional health and safety program.

7 ENVIRONMENTAL PROTECTION

7.1 Environmental Protection

The licensee shall implement and maintain an environmental monitoring program.

8 EMERGENCY MANAGEMENT AND FIRE PROTECTION

8.1 Emergency Management and Fire Protection

The licensee shall implement and maintain an emergency management and fire protection program.

9 WASTE MANAGEMENT

9.1 Waste Management

The licensee shall implement and maintain a waste management program.

SIGNED this XX day of November XX, 2024

_____

Pierre Tremblay
President and Chief Executive Officer
Canadian Nuclear Safety Commission

APPENDIX A:

Gunnar Legacy Uranium Mine Site

The Gunnar Legacy Uranium Mine Site is a former uranium mine and mill located 21 km South of Uranium City, Saskatchewan. Gunnar Mine GPS UTM: 620456E, 6584727N, Zone 12, NAD 83, Latitude: 59o 23' 2" N Longitude: 108o 52' 46" W

Figure 1:

Draft Licence Conditions Handbook

E-Doc: 7345673

Canada's Nuclear Regulator

e-Doc 7345673 (WORD)
e-Doc 7 (PDF)

LICENCE CONDITIONS HANDBOOK

LCH-NSL-GUNNAR.0/2026

GUNNAR LEGACY URANIUM MINE SITE NUCLEAR SUBSTANCES AND RADIATION DEVICES LICENCE

NSL-W5-3151.0/2026

Revision 0

Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

Canada

Effective: October XX, 2024

Gunnar Legacy Uranium Mine Site
Nuclear Substances and Radiation Devices Licence
NSL-W5-3151.0/2026

SIGNED at OTTAWA this h day of October, 2024.

_____

Patrick Burton, Director
Uranium Mines and Mills Division
Directorate of Nuclear Cycle and Facilities Regulation
CANADIAN NUCLEAR SAFETY COMMISSION

Revision History:

Effective Date	Revision	Section(s) changed	Description of the Changes	DCR e-Doc
October XX, 2024	0	N/A	Original Document	(Word) (PDF)

TABLE OF CONTENTS

PART I - INTRODUCTION

The purpose of the licence conditions handbook (LCH) is to identify and clarify the relevant parts of the licensing basis for each licence condition (LC). This will help ensure that the licensee will maintain facility operations in accordance with the licence and the intent of the licensing basis. The LCH also provides information regarding delegation of authority, document version control and conflict resolution. The LCH should be read in conjunction with the licence.

The LCH typically has three parts under each LC: the Preamble, Compliance Verification Criteria (CVC), and Guidance. The Preamble explains the regulatory context, background, and/or history related to the LC. CVC are criteria used by the Canadian Nuclear Safety Commission (CNSC) staff to oversee compliance with the LC. Guidance is non-mandatory information, including direction, on how to comply with the LC.

The statement "a person authorized by the Commission" in the LCs or the LCH indicates that the Commission may delegate certain authority to CNSC staff. Unless otherwise specified, the delegation of authority by the Commission to act as a person authorized by the Commission (Delegated Officer) is only applied to the incumbents in the following positions:

- Director, Uranium Mines and Mills Division
- Director General, Directorate of Nuclear Cycle and Facilities Regulation
- Executive Vice President and Chief Regulatory Operations Officer, Regulatory Operations Branch

PART II - FRAMEWORK FOR EACH CONDITION

G. GENERAL

G.1 Licensing Basis for Licensed Activities

The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:

(i) the regulatory requirements set out in the applicable laws and regulations;

(ii) the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence;

(iii) the safety and control measures described in the licence application and the documents needed to support that licence application;

unless otherwise approved in writing by the Canadian Nuclear Safety Commission (hereinafter "the Commission").

Preamble

Licence condition G.1 requires activities (defined in Part IV of the licence) be conducted in accordance with the licensing basis. Further information on the licensing basis is available in CNSC regulatory document, REGDOC-3.5.3 *Regulatory Fundamentals*.

The licensing basis, established by the Commission at the time the licence is issued, sets the boundary conditions for a regulated activity, and establishes the basis for the CNSC's compliance program for that regulated activity.

Part (i) of licence condition G.1 includes, but is not limited to, the following:

- *Nuclear Safety and Control Act,* and associated Regulations
- *General Nuclear Safety and Control Regulations*
- *Radiation Protection Regulations*
- *Nuclear Substances and Radiation Devices Regulations*

The safety and control measures mentioned under Parts (ii) and (iii) of licence condition G.1 include aspects of analysis, design, operation, etc. that, if altered, have the potential to impact the health and safety of people, the environment, security or international obligations to which Canada agrees. These measures may be found in high-level programmatic documents but might also be found in lower-level supporting documentation. Safety and control measures can also be found in licensing basis publications such as CNSC REGDOCs, CSA Group standards or licensee documentation submitted in support of a licence.

GENERAL

The CNSC licence authorizes Saskatchewan Research Council (SRC) to conduct the following undertakings at the Gunnar Legacy Uranium Mine Site, for which the CNSC provides regulatory oversight:

- to possess, manage, and store, subject to the conditions of this licence, the nuclear substances, except Category I, II and III nuclear material as defined in section 1 of the *Nuclear Security Regulations*, that are associated with remediation of historic uranium mine wastes in the licensed area.

LC G.1 requires the licensee to implement all the safety and control measures. Note, however, that not all details in referenced documents are necessarily considered to be safety and control measures, such as:

- details that are not directly relevant to safety and control measures for facilities or activities authorized by the licence are excluded from the licensing basis
- details that are relevant to a different safety and control area (i.e., not the one associated with the main document), are only part of the licensing basis to the extent they are consistent with the main requirements for both safety and control areas.

Compliance Verification Criteria

Licensing Basis Documents

Licensing basis documents are listed in appendix B and C in addition to tables under the most relevant LC. All "shall" or normative statements in licensing basis publications are considered CVC unless stated otherwise. If any "should" or informative statements in licensing basis publications are also considered CVC, this is provided under the most relevant LC.

In the event of any inconsistency between two elements of the licensing basis, the licensee shall consult CNSC staff to determine the approach to resolve the issue.

For operational activities that are not in accordance with the licensing basis, the licensee shall take action as soon as practicable to return to a state that is compliant with the licensing basis, taking into account the risk significance of the situation.

Changes to documentation or activities that result in operational activities not being in accordance with the licensing basis must be approved by the Commission prior to implementation. Further information on this topic is provided under LC G.2.

Guidance

When the licensee becomes aware that a proposed change or activity might not be in accordance with the licensing basis, it should first seek direction from CNSC staff regarding the potential acceptability of this change or activity. The licensee should take into account that certain types of proposed changes might require significant lead times before CNSC staff can make recommendations and/or the Commission can properly consider them. Guidance for notifications to CNSC related to licensee changes is discussed under LC G.2.

GENERAL

G.2 Notification of Changes

The licensee shall give written notification of changes to the facility or its operation, including deviation from design, operating conditions, policies, programs and methods referred to in the licensing basis.

Preamble

During the course of licensed activities, it is expected that the licensee may make changes to implement improvements or to address changes in operational needs. While making these changes, it is imperative the licensee remains within the bounds of the licensing basis.

Appendix B provides a list of licensee documents that require notification of change.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Changes to the design, operating conditions, policies, programs and methods that have the potential to be outside of the licensing basis require prior written notification to the CNSC. CNSC staff will confirm the change remains within the licensing basis and notify the licensee prior to implementation of the change by the licensee. The licensee shall allow sufficient time for the CNSC to review the change, proportionate to its complexity and the importance of the safety and control measures being affected. Regular communication between the CNSC and the licensee should ensure review timelines are established prior to submission of a notification of change. It remains the responsibility of the licensee to ensure that the Gunnar Legacy Mine Site continues to operate within the bounds of the licencing basis.

Prior written notification shall include:

- a summary description of the change
- the rationale for the change
- expected duration (if not a permanent change)
- a summary explanation from the licensee supporting the conclusion that the change remains in accordance with the licensing basis.

Ongoing regular communication shall be maintained between the CNSC and licensee.

This LC is not intended to unduly inhibit the ongoing management and operation of the facility or the licensee's ability to adapt to changing circumstances and continuously improve, in accordance with its management system.

Guidance

A list of criteria to determine if a change would be in accordance with the licensing basis is provided in appendix A of CNSC process document *Overview of: Assessing licensee changes to documents or operations* (e-Doc 4055483).

GENERAL

G.3 Financial Guarantee

The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.

Preamble

The licensee is responsible for all costs of managing the site as described in their maintenance plan and providing an appropriate financial guarantee for decommissioning that is acceptable to the Commission.

All costs associated with the management of the Gunnar Legacy Mine Site are the responsibility of the Federal Government of Canada.

Compliance Verification Criteria

The financial guarantee for the Gunnar Legacy Mine Site shall be reviewed and revised by the licensee every 5 years, or upon request of the Commission.

Licensing Basis Publications

Source	Document Title	Document Number
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374

Guidance

Source	Document Title	Document Number
CNSC	*Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*	REGDOC-3.3.1

1 MANAGEMENT SYSTEM

Licence Condition 1.1

The licensee shall implement and maintain a management system.

Preamble

The "management system" safety and control area covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives and fosters a healthy safety culture.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CSA Group	*Management system requirements for nuclear facilities (Section 4 and applicable items from Section 9)*	N286-12

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
SRC	Gunnar	7	Yes

Guidance

There is no guidance provided for this licence condition.

2 OPERATING PERFORMANCE

Licence Condition 2.1

The licensee shall implement and maintain a program for reporting to the Commission or a person authorized by the Commission.

Preamble

The "operating performance" safety and control area includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

SRC is required to report on its activities at the location under their NSL licence, specifically the Gunnar Legacy Uranium Mine Site. This requirement provides information to the CNSC on the results of the licensee's monitoring programs, and a summary of any reports made to the CNSC pursuant to sections 29 and 30 of the *General Nuclear Safety and Control Regulations*.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374	Yes

SRC must submit a written annual report within 90 days of the end of each calendar year. The report should include the following:

2.1.1 The principal licensed activities completed.

2.1.2 The results of the monitoring programs described in the documents listed in this document and any approved modifications pursuant to the LCH.

Guidance

Guidance Publications

Source	Document Title	Document Number
CNSC	*Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices*	REGDOC-3.1.3

3 PHYSICAL DESIGN

Licence Condition 3.1

The licensee shall implement and maintain a physical design program.

Preamble

The "physical design" safety and control area relates to activities that impact the ability of structures, systems and components to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.

The design basis is the range of conditions and events taken into account in the design of structures, systems and components of a facility according to established criteria, such that the facility can withstand them without exceeding authorized limits for the planned operation of safety systems.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CSA Group	*Management System Requirements for Nuclear Facilities (Section 4 and relevant items of Section 9)*	N286-12

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374	Yes

Guidance

Guidance Publications

Source	Document Title	Document Number
Canadian Dam Association	*Canadian Dam Association, Canadian Dam Safety Guidelines*	N/A

4 FITNESS FOR SERVICE

Licence Condition 4.1

The licensee shall implement and maintain a fitness for service program.

Preamble

The "fitness for service" safety and control area covers activities that impact the physical condition of structures, systems and components to ensure that they remain effective over time. This area includes programs that ensure equipment is available to perform its intended design function when called upon to do so.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374	Yes

The fitness for service program will be assessed against the following principles:

4.1.1 Preventative and corrective maintenance processes and systems have been implemented and are maintained.

4.1.2 Regular inspection and testing of critical infrastructure is carried out at a minimum of every 3 years by a geotechnical specialist.

4.1.3 A process has been implemented to identify, plan and schedule maintenance activities.

Guidance

Source	Document Title	Document Number
Canadian Dam Association	*Canadian Dam Association, Canadian Dam Safety Guidelines*	N/A

5 RADIATION PROTECTION

Licence Condition 5.1

The licensee shall implement and maintain a radiation protection program.

Preamble

The "radiation protection" safety and control area covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination and radiation doses received are monitored, controlled and kept as low as reasonably achievable (ALARA), with social and economic factors being taken into account.

During the remediation work, the radiation hazards at the Gunnar Legacy Uranium Mine Site will increase due to the disturbance of radioactive waste in the form of tailings and sediments. During this time there will be a number of individuals designated as Nuclear Energy Workers and dosimetry will be used regularly. When remediation is complete, the radiological hazards are low such that persons accessing the site, whether to conduct work authorized under this licence or for other reasons, are not required to be designated as Nuclear Energy Workers, and therefore dosimetry is not routinely used.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374	Yes

The radiation protection (RP) program will be assessed against the following principles:

5.1.1 Effective contamination control measures are implemented to control and minimize the contamination of areas, equipment and personnel.

5.1.2 Radiological conditions are monitored, and sources of internal and external radiation exposures are controlled. Access and work in radiological areas are controlled so that collective and individual radiation exposures are kept as low as reasonably achievable in accordance with the ALARA principle.

Guidance

Guidance Publications

Source	Document Title	Document Number
CNSC	*Radiation Protection*	REGDOC-2.7.1

6 CONVENTIONAL HEALTH AND SAFETY

Licence Condition 6.1

The licensee shall implement and maintain a conventional health and safety program.

Preamble

The "conventional health and safety" safety and control area covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

The regulation of non-radiological health and safety at uranium mines and mills is governed by the *Canada Labour Code Part II*, which is administered by Employment and Social Development Canada (ESDC).

The CNSC also has regulatory responsibilities for the oversight of the protection of the health and safety of workers.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374	Yes

The conventional health and safety program will be assessed against the following principles:

6.1.1 Housekeeping standards have been identified and are enforced to ensure that work areas are kept clean and organized.

6.1.2 Facilities, processes and procedures have been implemented to ensure the safe management of hazardous materials.

6.1.3 Employees and contractors actively participate in the management of conventional health and safety.

6.1.4 Management verifies that employees and contractors actively participate in the management of health and safety in their workplace.

6.1.5 A process has been established and maintained to monitor, measure and record conventional health and safety performance and the effectiveness of the occupational health and safety program on a regular basis.

6.1.6 Routine inspections are performed by workers, supervisors, senior staff and/or safety professionals to identify any potential safety issues.

6.1.7 Processes and procedures are established and maintained to investigate accidents and incidents, to identify root causes, to implement corrective actions and to verify that corrective actions have been completed and will effectively prevent recurrence.

6.1.8 Procedures have been implemented and maintained for reporting work-related injuries, illnesses, fatalities and conventional health and safety incidents including near misses.

6.1.9 The causes of injuries are investigated, corrective actions implemented, and the effectiveness of corrective actions verified.

6.1.10 A preventative and corrective action procedure has been established and maintained to address non-conformances and inadequately controlled risks.

Guidance

Guidance Publications

Source	Document Title	Document Number
CNSC	*Conventional Health and Safety*	REGDOC-2.8.1

7 ENVIRONMENTAL PROTECTION

Licence Condition 7.1

The licensee shall implement and maintain an environmental monitoring program.

Preamble

The "environmental protection" safety and control area covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	*Environmental Protection: Environmental Principles, Assessments and Protection Measures*	REGDOC-2.9.1

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374	Yes

The environmental monitoring program will be assessed against the following principles:

7.1.1 The licensee's environmental monitoring program shall conform to the applicable legislative requirements.

7.1.2 Planned surface water sampling at monitoring stations sampled regularly at a minimum monthly during field season.

Guidance

There is no guidance provided for this licence condition.

8 EMERGENCY MANAGEMENT AND FIRE PROTECTION

Licence Condition 8.1

The licensee shall implement and maintain an emergency management and fire protection program.

Preamble

The "emergency management and fire protection" SCA covers emergency plans and emergency preparedness programs that exist for emergencies and for non-routine conditions. This area also includes any results of participation in exercises.

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374	Yes

Guidance

N/A

9 WASTE MANAGEMENT

Licence Condition 9.1

The licensee shall implement and maintain a waste management program.

Preamble

The "waste management" safety and control area covers internal waste-related programs that form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	*Waste Management, Volume I: Management of Radioactive Waste*	REGDOC 2.11.1
CNSC	*Waste Management, Volume II: Management of Uranium Mine Waste Rock and Mill Tailings*	REGDOC 2.11.1

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374	Yes

The waste management program will be assessed against the following principles:

7.1.1 Waste is stored or disposed of in the appropriate manner (i.e. segregated, packaged appropriately, monitored, etc.).

7.1.2 Routine inspections are performed to identify any potential waste management issues and to verify the condition of containment structures and waste management.

7.1.4 Records are kept of the quantities and types of waste generated and the method of disposal or management.

7.1.5 Wastes are managed to control the present and future releases of contaminants to the environment.

Guidance

WASTE MANAGEMENT

Guidance Publications

Source	Document Title	Document Number
Canadian Dam Association	*Canadian Dam Association, Canadian Dam Safety Guidelines*	N/A

APPENDIX A CHANGE CONTROL PROCESS

A.1 Change Control Process

A change control process is applied to the LCH to ensure that:

- preparation and use of the LCH are properly controlled
- all referenced documents are correctly identified and maintained
- procedures for modifying the LCH are followed.

A request to change this LCH can be initiated by either CNSC staff or the licensee. The licensee will be consulted on any changes to the LCH that are proposed by CNSC staff.

CNSC staff will take the following steps to update the LCH:

1. the CNSC receives or initiates written notification of proposed change
2. initiate a change request using the Change Request Form
3. complete a technical review of the proposed change, if required
4. consult the licensee and in case of disagreement on the proposed change, the dispute resolution process outlined in section A.3 will apply
5. obtain consent and signature from a Delegated Officer
6. update the LCH in accordance with the Change Request Form and send the updated document to the parties identified on the distribution list (section A.5).

Change Request Form

1. GENERAL INFORMATION			
File Plan #		**e-Doc #(s) for Change Request Form**	
Licensee	**Licence Number**	**LCH #, Rev/Version**	**Request Date**
Licensing Officer			

2. CHANGE(S) TO THE LCH			
#	**Description and Purpose**	**Proposed Change**	**References**
1	<initiator, nature, reason for change, e.g. administrative, change to a licensee doc, etc.>	<identify modifications, such as by track changes, highlighting, etc.>	<LC, page, section #, etc.>
2			

3. ASSESSMENT (text and/or e-Doc #s)			
#	**Division/Org**	**Comment**	**Disposition**
1	<division>		
	<division>		
	<licensee>		
	<division>		
2	etc.		

4. CONSENT TO MODIFY		
#	**Agreed**	**Comment**
1		
2		

Name	**Title**	**Signature**	**Date**

5. LCH DOCUMENTATION AND DISTRIBUTION		
New LCH Number	**LCH Effective Date**	**e-Doc #** (include version number)

CNSC Outgoing Notification	**e-Doc #**	**Date Sent**

APPENDIX A

A.2 Review Criteria for Proposed Changes to Licensing Basis Documents

The licensee must provide the CNSC with written notification of a proposed significant change to key licensee documents before the licensee implements the change. The notification must be accompanied by sufficient information to demonstrate that the change is within the intent of the licensing basis. Written notification of minor or administrative changes may be made in batches after the changes have been implemented.

The following criteria will be used by CNSC staff to determine if the proposed change is acceptable:

1. The submission includes the appropriate level and quality of information with regards to:
   a) The description of the proposed change including:
      - a summary of the change, including the purpose or need for the change
      - a preliminary finding of whether this proposal or notification is required under the NSCA, a regulation made under the Act or the licence, or has implications under the CEAA, or whether a licence amendment or other licensing action would likely be required
      - where applicable, the alternatives evaluated and the reasons for selection of the chosen option
      - any changes to the inventories of nuclear substances onsite related to the proposed change
      - the construction, commissioning and operating schedule for the proposed change including hold points or progress reports for regulatory review and approval (as appropriate)
      - expected impacts, if any, on the proposed decommissioning or closure plans
      - results of any risk analysis or HAZOPs studies performed, and a summary of the identified hazards and the mitigation measures identified to control potential hazards
   b) The description of the design control, operating specifications and criteria including:
      - the design basis and criteria, and performance specifications
      - the design drawings such as the general arrangement, process and instrumentation diagrams, and process flow sheets
      - the quality management program for the various key stages of the change (e.g., design, construction, commissioning, etc.)

c) The assessment of both the short and long term impacts with the mitigation measures in place on:
   - worker's health and safety, including potential radiological and non-radiological exposures
   - the environment
   - security
   - Canada's international obligations

d) The planned administrative controls including:
   - changes to the organization, roles and responsibilities
   - changes to applicable programs and procedures
   - a description of the proposed monitoring, inspection and test plans, including locations and frequency proposed to evaluate both positive and negative results

e) Changes to contingency plans including "full-stop measures"

f) Evidence that the licensee's internal reviews and approvals have been completed, including meeting the requirements of the licensee's change management procedure and consultation with the onsite occupational health and environmental committees, where applicable

g) Identification of the documents and training programs that may require revision when the proposed change is implemented

2. The effects of the proposed change or action remain within the licensing basis.
3. Following the implementation of the change the licensee will remain in compliance with the requirements set out in the applicable acts, regulations, and LCs.

A.3 Dispute Resolution

In case of a dispute between the licensee and CNSC staff regarding changes to the LCH, both parties will meet to discuss the dispute and reach a decision on the path forward. The decision, including its rationale will be documented. If any party is not satisfied with the decision, the resolution process will proceed up to the Director, Director General or Executive Vice-President and Chief Regulatory Operations Officer level. If any party is still not satisfied with the decision, the issue will be brought to the attention of the Commission at a Commission meeting. The decision made by the Commission will be final.

A.4 Records Management

In order to track changes to the LCH, the document change request and accompanying documentation will be archived in records and referenced in the revision history of the LCH. Electronic communication related to the change, such as comments from reviewers will be stored in the CNSC information management system.

APPENDIX A

A.5 Distribution

A copy of the updated version of the LCH will be distributed to the following parties:

- Uranium Mines and Mills Division, CNSC

Saskatchewan Research Council

A.6 Reporting to the Commission

CNSC staff will report on the changes made to the LCH as part of the applicable Regulatory Oversight Report to the Commission.

APPENDIX A

APPENDIX B LICENSEE DOCUMENTS THAT REQUIRE NOTIFICATION OF CHANGE

Licensing Basis Publications

Source	Document Title	Document Number
SRC	RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site	7197374

APPENDIX C LIST OF DOCUMENTS USED AS GUIDANCE OR COMPLIANCE VERIFICATION CRITERIA

Document	Document Title	Document Number
Canadian Dam Association	Canadian Dam Association, Canadian Dam Safety Guidelines	N/A
CSA Group Standard	Management system requirements for nuclear facilities	N286-12
CNSC	Radiation Protection	REGDOC-2.7.1
CNSC	Conventional Health and Safety	REGDOC-2.8.1
CNSC	Environmental Protection: Environmental Principles, Assessments and Protection Measures	REGDOC-2.9.1
CNSC	Waste Management, Volume I: Management of Radioactive Waste	REGDOC 2.11.1
CNSC	Waste Management, Volume II: Assessing the Long Term Safety of Radioactive Waste Management	REGDOC-2.11.1
CNSC	Waste Management, Volume III: Safety Case for Long-Term Radioactive Waste Management, V.2.	REGDOC-2.11.1
CNSC	Regulatory Fundamentals	REGDOC-3.5.3
CNSC	Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices.	REGDOC-3.1.3
CNSC	Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities	REGDOC-3.3.1

Reference Package for CMD 24-H108

Saskatchewan Research Council

Request for 18-month Licence Renewal for Gunnar Remediation Project

Table of Contents

1 Letter to C. Salmon (CNSC) from D. Sanscartier (SRC) *RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site*, July 4, 2024 (e-Doc 7319100) (Public version).

SASKATCHEWAN RESEARCH COUNCIL
Bay 2D, 820 51st Street East, Saskatoon, SK Canada S7K 0X8
122-6 Research Drive, Regina, SK Canada S4S 7J7
T: 306-933-5400
E: info@src.sk.ca
www.src.sk.ca

July 4, 2024, 12194-442-41A24

Candace Salmon
Commission Registrar
Commission Registry
Canadian Nuclear Safety Commission
280 Slater Street, P.O. Box 1046, Station B
Ottawa, ON K1P 5S9

RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site

Dear Commission Registrar,

The Saskatchewan Research Council (SRC) is applying for renewal of the Canadian Nuclear Safety Commission (CNSC) licence WNSL-W5-3151.00/2024 for the Gunnar Legacy Uranium Mine, which expires on November 30, 2024. This is a revised application from our application dated October 20, 2023. With the current application, we are requesting a renewal of the licence for an 18-month period.

Remediation of Gunnar Legacy Uranium Mine (Phase 2) is anticipated to be completed by November 2025. An 18-month renewal would bring us past the completion of Phase 2 and would allow time to apply for the next licence renewal which would be an application to transfer to a Phase 3 licence (post-remediation monitoring).

The information required for this application is presented in our application dated October 20, 2023. We are not requesting any additional authorizations with the current request, only for continuation of current activities at the site.

We trust this letter meets your current requirements. Please do not hesitate to contact us with questions.

Sincerely,

David Sanscartier
Senior Engineer, Environmental Remediation, SRC
david.sanscartier@src.sk.ca
306-716-8109

CC: George Bihun, Environmental Project Officer, Ministry of Environment
Dana Pandolfi, Senior Project Officer, CNSC
Skye Muirhead (SRC), Gunnar Records (SRC)

Original Application

dated October 20, 2023

2 Letter to D. Pandolfi (CNSC) from D. Sanscartier (SRC) *RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site*, October 20, 2023 (e-Doc 7197374) (Public version in eDoc 7361624).

SASKATCHEWAN RESEARCH COUNCIL
Bay 2D, 820 51st Street East, Saskatoon, SK Canada S7K 0X8
122-6 Research Drive, Regina, SK Canada S4S 7J7
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www.src.sk.ca

October 20 , 2023, 12194-442-32A23

Ms. Dana Pandolfi
Senior Project Officer, Regulatory Operations Branch
Canadian Nuclear Safety Commission/ Government of Canada

via email dana.pandolfi@cnsc-ccsn.gc.ca

RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site

Dear Ms. Pandolfi,

The Saskatchewan Research Council (SRC) is applying for renewal of the Canadian Nuclear Safety Commission (CNSC) licence WNSL-W5-3151.00/2024 for the Gunnar Legacy Uranium Mine for a 10-year period. This license expires on November 30, 2024.

We suggest that a hold point be included to the licence for transition to Phase 3 (post-remediation monitoring) approximately 18 months after issuing the renewed licence. This will provide SRC sufficient time to complete and submit the Gunnar post-remediation monitoring to CNSC.

The information required for this application for renewal is enclosed.

We trust this letter meets your current requirements. Please do not hesitate to contact us with questions.

Sincerely,

David Sanscartier
Senior Engineer, Environmental Remediation, Environment and Biotech Division
david.sanscartier@src.sk.ca
306-716-8109

CC: George Bihun, Environmental Project Officer, Ministry of Environment
Jesse Merilees (SRC), Skye Muirhead (SRC), Gunnar Records (SRC)

Enclosure 1: Waste Nuclear Substance Licence Renewal Requirements

Enclosure 1 - Waste Nuclear Substance License Renewal Requirements

Contents

List of Attachments:

Attachment A: Boundary Map
Attachment B: Project Organizational Chart
Attachment C: SRC Programs and Plans:

- Communication Program
- Environmental Protection Program
- Occupational Health and Safety Program
- Quality and Training Program
- Discovery Response Plan
- Discharge Response Plan
- Environmental Management Plan
- Environmental Monitoring Plan (Gunnar)
- Emergency Response Plan (Gunnar)
- Emergency Medical Plan (Gunnar)
- Hazardous Materials Management Plan
- Legacy Waste Management Plan
- Occupational Health and Safety Plan
- Radiation Protection Plan (Gunnar)
- Site Security Plan (Gunnar)
- Waste Management Plan
- Wildfire Prevention and Protection Plan

Attachment D: Prime Contractor (QM Points) plans:

- Emergency Spill Response Plan
- Environmental Management Plan
- Health and Safety Management Plan
- Radiation Protection Plan

Attachment E: Financial Assurance Letter
Attachment F: Community Engagement Table

1 Name and Address

Regulatory requirements: GN 3(1)(a) the applicant's name and business address.

SRC Response

The Saskatchewan Research Council (SRC) is managing the Gunnar Legacy Uranium Mine project on behalf of the Saskatchewan Ministry of Energy and Resources.

Saskatchewan Research Council (SRC). Bay 2D, 820 51st Street East, Saskatoon, SK S7K 0X8.

Please note that SRC address has changed and is different from the address in the current Licence Condition Handbook.

2 Activities and Purpose

Regulatory requirements: GN 3(1) (b) the activity to be licensed and its purpose.

A) possess, manage, and store nuclear substances that are required for, associated with or arise from Phase 2 activities associated with the remediation of the Gunnar Legacy Uranium Mine Site, described fully in Appendix A to licence WNSL-W5-3151.00/2024.

B) possess, transfer, manage and store the nuclear substances except Category I, II and III nuclear-material as defined in section 1 of the Nuclear Security Regulations, that are required for, associated with or arise from Phases 2 and 3 of the Gunnar Remediation Project – Gunnar Legacy Uranium Mine Site (hereinafter Gunnar Site), described fully in Appendix A to this license.

SRC Response

2.1 Phase 2 - Remediation

The Gunnar Remediation Project consists of the remediation of an abandoned uranium mine and mill in northern Saskatchewan. It was operated from 1955 to 1963 and closed in 1964 with minimal decommissioning. Uranium ore originating from the open pit and underground mines was generated. This resulted in approximately 2.5 million m^3 of waste rock and over 5 million tonnes of unconfined tailings that were directed to nearby valleys, depressions, and lakes, covering a total of over 70 ha of land.

The licenced area shown in the current licence has been updated with the actual haul roads. The Beaver Pond Tailings Area has also been expanded slightly based on the cover constructed. The revised map is found in Attachment A

The purpose of the Gunnar Site Remediation Project is to reduce the risks the Gunnar Mine and Mill (the "Site") poses to the health and safety of the public and environment. The remediation objectives are:

- Containment and stabilization of the unconfined tailings and waste rock piles to minimize human health risks posed by gamma dose rates.
- Minimization of contaminants releases from the tailings and waste rock to Lake Athabasca.

- Permanent disposal of demolition wastes and hazardous materials in a manner that is environmentally sound and meets regulatory requirements.
- Remediation and contouring of the landscape in a manner that is compatible with the natural surroundings and future use of the site; and
- Taking measures to ensure conventional health and safety.

Remediation activities (Phase 2) at the Gunnar project have been separated into two sub-projects: the Tailings project and the Other Site Aspects (OSA) project. Phase 2 activities to achieve these objectives and to meet the regulatory requirements of the "Activities and Purpose" has been on-going since 2016, and have included:

Tailings project:

- Completion of engineered covers over the Gunnar Main Tailings (GMT) area and the Beaver Pond Tailings (BPT) area.
- Partial completion of the engineered cover over the Gunnar Central Tailings (GCT) area. Approximately 90% of the cover is completed. All tailings are covered. What remains is the construction of the GCT channel, and installation of soil borrow cover.
- Seeding of completed covers.

Other Site Aspects Project:

- Reshaping of the waste rock piles
- Covering of elevated gamma areas. Elevated gamma areas are defined as areas with gamma radiation dose rates above the radiological objectives, which are as follows:
    - Objective 1: The dose rates from gamma radiation exposure averaged over a hectare of the covered area not to exceed 1 µSv/h above local background (i.e., 1.14 µSv/h), and
    - Objective 2: The dose rates from gamma radiation exposure at any point of the covered area shall not exceed 2 µSv/h above local background (i.e., 2.64 µSv/h).
- Seeding of completed covers.
- Demolition of buildings and structures including abatement of asbestos-containing materials (ACM).
- Legacy waste sweep throughout the Site.
- Disposal of hazardous and non-hazardous wastes in on-site engineered landfills or off-site as appropriate (see Section 7).
- Construction of the historical drainage channel through the waste rock piles.

This work has been reported in the following documents submitted to CNSC:

- Tailings as-built reports:
    - Gunnar Main Tailings As-built Report,
    - Catchment 3 As-built Report and
    - Beaver Pond As-built Report.
- SRC's Gunnar Mine and Mill Site Remediation Annual Reports from 2016 to 2022.

As-built reports for the OSA project will be submitted upon completion of the project (anticipated to be completed in summer 2023 with subsequent delivery of reports), and as-built reports for the remaining Tailings scope (GCT and LBT) will be submitted upon completion.

Remaining Phase 2 Scope

The main Phase 2 activities remaining at the Site is the construction of an engineered cover over the Langley Bay Tailings (LBT) area and completion of the GCT cover. The construction of the LBT was stopped in 2020 due to high lake water level that submerged the tailings. The water has since then receded, and construction of the LBT cover should resume this field season. Minor activities remaining include covering minor elevated gamma areas, reclamation of borrow areas and haul roads, construction of the Gunnar Pit Outlet, decommissioning of the camp, and closure of Landfill A (non-hazardous waste landfill).

For the remaining activities, the nuclear substances found on site that have not been addressed by remediation to date (LBT area tailings and waste rock with elevated gamma radiation) will be covered. Some nuclear substances may be removed from one location at the site and consolidated into another location at the site (e.g., LBT) prior to being covered. For example, elevated gamma material will be removed from the GCT area and placed onto the LBT area as per design. This approach will be used because all tailings in the GCT area have been covered by an engineered cover or waste rock (to be covered with borrow material as per design once LBT cover construction is completed).

Nuclear substances have not and will not be removed from the Site.

2.2 Phase 3 – Long-term Monitoring and Surveillance

SRC is currently developing a post-remediation monitoring and maintenance plan to meet its commitments made in the Gunnar Project Environmental Impact Statement (EIS) and the monitoring and maintenance requirements for the engineered features on site. We anticipate submitting a plan to CNSC for review in winter 2024. As mentioned in the cover letter, we suggest that a hold point be included for transition to the licence approximately 18 months after issuing the renewed licence. This will provide SRC sufficient time to complete and submit the Gunnar post-remediation monitoring to CNSC.

3 Management System

Regulatory requirements: **GN 3 (1)(k)** the applicant's organizational management structure insofar as it may bear on the applicant's compliance with the Act and the regulations made under the Act, including the internal allocation of functions, responsibilities, and authority.

SRC Response:

3.1 Project Organizational Chart and Roles and Responsibilities

A team of SRC specialists manages the Gunnar Mine and Mill Remediation Project to ensure project objectives are met. The project organization chart is presented in Attachment B.

Roles and responsibilities for the project team, as well as consultants, contractors and visitors to the Site, are described in the Environmental Remediation Business Unit's management system (ERMS) that was developed to provide guidance for all work activities. Each Program or Plan within the ERMS includes specific requirements for managers, SRC supervisors, SRC employees, contractors, consultants

and visitors if applicable. SRC ensures that the requirements of the ERMS are communicated to all workers as appropriate through orientation training and review cycle updates.

At the Site, SRC employees, contractors, consultants, and visitors operate within the Prime Contractors management system which SRC reviews prior to work starting to make sure it meets or exceeds the requirements in the ERMS.

3.2 Management System

SRC maintains Policies and Procedures that provide consistent guidance and direction to employees in relation to health and safety, quality, and the environment. Documents are regularly reviewed to ensure continuous improvement and client satisfaction.

SRC's Environmental Remediation Business Unit manages the Gunnar Mine and Mill Remediation Project and operates under the umbrella of SRCs Policies and Procedures. The business unit developed the ERMS for all Project CLEANS sites, which provides guidance while conducting work at the Site, and is utilized for planning all activities during Phase 2 and 3 of the Gunnar Mine and Mill Remediation Project.

The ERMS is comprised of the following programs:

- Occupational Health and Safety (OHS) Program,
- Environmental Protection Program,
- Communication Program, and
- Quality and Training Program,

Each program includes associated plans, standard operating procedures, safe work procedures, and supporting documents. The programs and select plans are attached to this application. The Occupational Health and Safety (OH&S) Program provides guidance in support of SRC's corporate OH&S policy and objectives. SRC is committed to protecting and maintaining the health and safety of all its employees, contractors and visitors. The purpose of the Environmental Protection Program is to ensure the protection of the environment during all Environmental Remediation Business Unit's remediation project activities. The Communication Program outlines how Environmental Remediation Business Unit communicates internally and with interested third parties. The program includes a commitment to and protocol for ongoing timely communication regarding activities related to projects. The Quality and Training Program outlines the process that governs how SRC ensures quality work for its remediation projects and aligns with SRCs corporate Quality Management System.

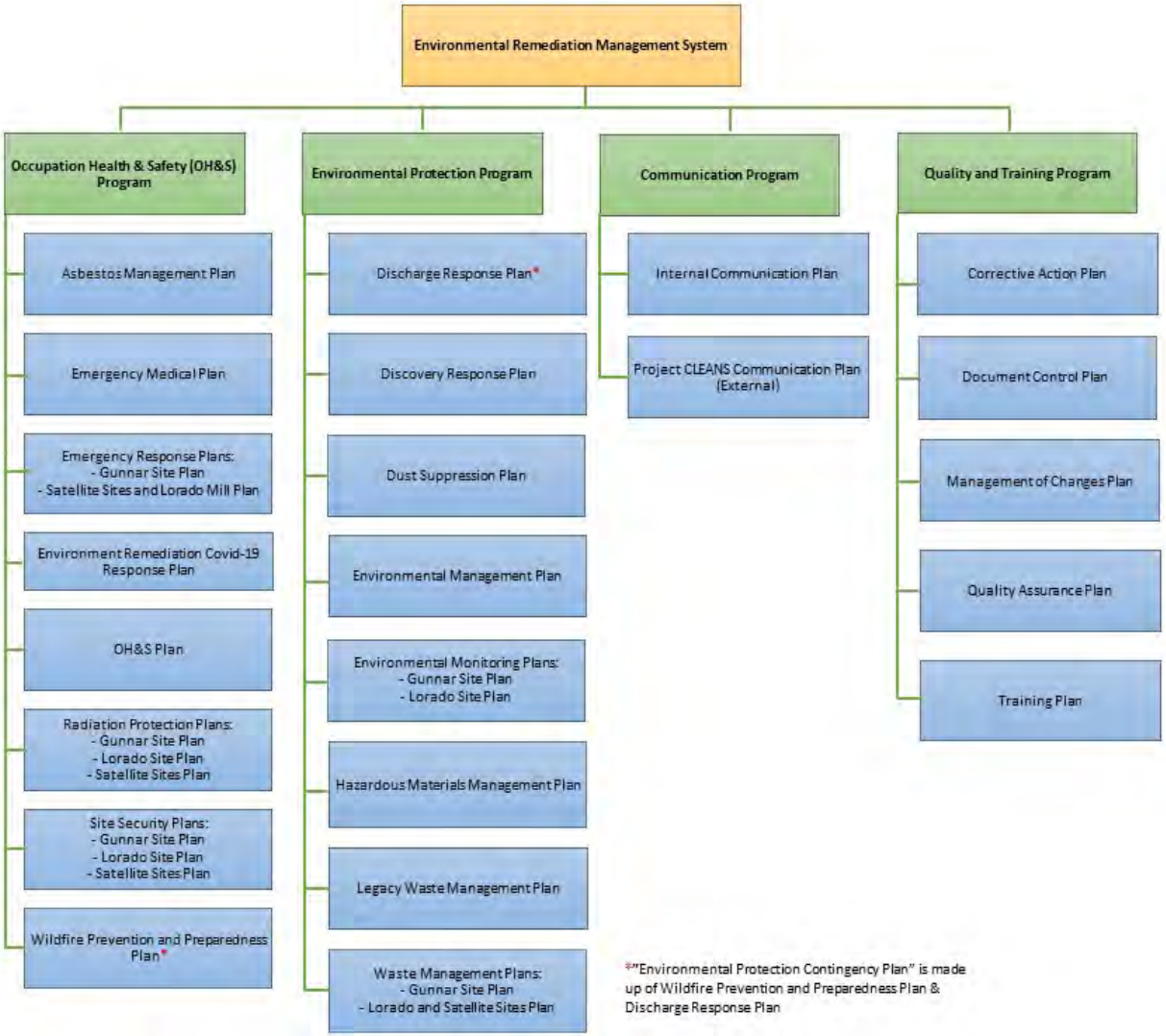
Emergency Management is covered under the OHS and Environmental Protection Programs – the plans that cover this safety control area are presented in Figure 1.

The Plans are guiding documents used to coordinate work done on the Site and undergo minor revisions (i.e., Plans do not require version control as part of the LCH). Each Plan is a stand-alone document and may have supporting documents such as forms or templates that can become the records for a section.

The ERMS documents have undergone changes over the years as Environmental Remediation Business Unit and the project requirements changed. Initially, the Gunnar management system began as a project-specific management system designed to meet the requirements of the Gunnar CNSC Licence. These documents were expanded to create and meet requirements on other Project CLEANS sites and create an Environmental Remediation Business Unit-level management system that would bring

together all common practices and procedures. Gunnar Mine and Mill specific documents were retained but edited to contain only project relevant information.

The ERMS, and all updates to the Gunnar-specific management system documents, were reviewed and updated in the fall of 2022 and 2023. Figure 1 shows the structure of the ERMS. SRC will continue to conduct reviews in the frequency outlined within each management system document, based on regulatory compliance for the Gunnar Mine and Mill remediation project. Select plans are presented in Attachment C and all plans are available upon request.



EnRem Safe Work Procedures:

- Air Travel
- Collecting Small Amounts of Asbestos Containing Material
- Dustfall Jar Sampling
- Explosives
- Field Work
- Movement of Asbestos Containing Material
- Operation of 12 Volt Fuel Pump
- Operation of Powered Ice Auger
- Safe use of Snowmobiles
- Transportation of Dangerous Goods
- Unknown Material Discovery
- Use of ATV/UTV
- Use of Throw Bag
- Winter Field Work
- Working Around Heavy Equipment
- Working Around Underground Openings
- Working in Canoes
- Working on Ice

EnRem Standard Operating Procedures:

- Downloading Gunnar Weather Station
- Environmental Monitoring Quality Assurance and Quality Control
- Field Check-in
- Gamma Surveys
- Groundwater Sampling
- Gunnar Food Waste Dehydrator
- Kingfisher Power Boat
- Lock Out/Tag Out
- Operation and Calibration of the YSI
- Operation of the Drone (Mavic)
- Radioactive Waste Scanning and Identification
- Replacing Radtrak Radon Detectors
- Response Escalation
- Soil Contamination Sampling
- Surface Water Sampling
- Waste Rock Sampling
- Work Hours

Figure 1. Environmental Remediation Business Unit Management System diagram.

3.3 Contractor Management System

SRC designated a prime contractor to oversee and coordinate the health and safety activities at the Site. QM Points Contracting LP, a limited partnership between QM Environmental and Points is the prime contractor at the Site. QM Points has a Prime Contractor Management Plan to govern safety at the Site that meets regulatory requirements, approvals, and licences as well as the ERMS. The plan consists of the following documents listed in alphabetical order:

- Asbestos Control Plan
- Community Engagement Plan
- COVID19 Site Response Plan
- Emergency Spill Response Plan
- Environmental Management Plan
- Hazardous Material Management Plan
- Health and Safety Management Plan
- Legacy Waste Management Plan
- Mobilization and Site Setup Plan
- Prime Contractor Management Plan
- Remediation Execution Plan
- Radiation Protection Plan
- Wildfire Prevention and Preparedness Plan.

Select plans are presented in Attachment D and all plans are available upon request. Emergency response is covered in the following plans: Emergency Spill Response, Environmental Management, and Health and Safety Management.

4 Operating Performance

Regulatory requirements: **NSRD 3 (1)** An application for a licence in respect of a nuclear substance or a radiation device, other than a licence to service a radiation device, shall contain the following information in addition to the information required by section 3 of the *General Nuclear Safety and Control Regulations*:

(a) the methods, procedures and equipment that will be used to carry on the activity to be licensed.

SRC Response:

The methods, procedures and equipment that have been used and will continue to be used to carry on the activity to be licensed are presented below for the required aspects.

4.1 Conduct of Licensed Activity

To ensure that licensed activities are carried out adequately, SRC is carrying out the following:

- Implementation of the Radiation Protection Plan – covered in Section 6.
- Implementation of Environmental Remediation Business Unit quality and training program.
- Implementation of Gunnar site security plan as part of the occupational health and safety program. Access to site is controlled by the prime contractor. Members of the public are not authorized on site. During the off season, monthly site visits are completed.

- Hiring of qualified contractors and consultants through competitive procurement processes where vendors are evaluated for their qualification, expertise, experience, safety performance, and other criteria.
- A representative of the engineer of records is present at the Site during work and performs QA/QC activities to ensure specifications are met.
- A radiation safety officer, part of the prime contractor's team, is present on-site during work.
- The SRC Environmental Remediation team employs a radiation subject matter expert who advises the prime contractor on radiation matters and reviews all the contractor's deliverables related to this topic.
- All radioactive material at the site remains on site. Management of this material is presented in Section 7. Prior to leaving the site, equipment is cleaned and scanned.

4.2 Keeping Records (Required to Carry on Activity)

SRC follows all reporting and record keeping requirements as per the General Nuclear Safety and Control Regulations (SOR/2000-202) and the Radiation Protection Regulations (SOR/2000-203) as well as any other document as referenced within the ERMS. This is described in SRC's Quality and Training Program and applicable Plans.

For example, records required to carry out activities include radiation exposure reports, gamma radiation survey data, scanning records and a wide range of reports (reports from consultants and contractors such as QA/QC engineer daily reports, environmental daily reports, prime contractor daily reports, annual reports, etc.).

4.3 Procedures on Protecting the Environment.

The environmental protection program (attached) presents the procedures for protecting the environment. The program includes the following activities:

- Environmental sampling program described in Section 8.
- Operational monitoring to ensure environmental compliance during Phase 2 activities. It is performed by an environmental monitor (qualified person), hired by SRC. An environmental monitor is always present on-site during remediation activities to provide operational environmental monitoring to ensure compliance with regulatory requirements and SRC commitments included in the Gunnar EIS. In addition, the environmental monitor's responsibilities include providing suggestions and advice to the remediation contractors on adjusting construction approaches to address environmental concerns, and identifying changes required during project activities to maintain environmental objectives throughout construction. More specifically, the environmental monitor roles and responsibilities include:
    - providing daily communication with contractor(s) and client representatives,
    - monitoring adherence to all environmental conditions and permits issued for construction,
    - advising client representatives in the event of non-compliance or non-conformance,
    - completing pre-construction vegetation surveys for listed plant species, where applicable,
    - conducting pre-construction nest searches where applicable, establish appropriate avoidance buffers if required, and monitor nest avoidance if necessary.
    - documenting wildlife encounters and observations and provide suggestions to limit or avoid wildlife conflicts,

    - documenting caribou encounters and observations,
    - documenting that equipment is clean (e.g., free of debris and in good working condition),
    - completing camp inspections,
    - providing recommendations to SRC representatives to prevent spread of weeds on-site and monitor documented noxious and nuisance weed occurrences on-site for avoidance and signs of spreading,
    - confirming proper waste (hazardous and non-hazardous) storage method and location are implemented and followed,
    - monitoring, recording, and reporting discharges of hazardous materials and tracking the proper management of the discharges,
    - providing input into suitable erosion and sediment control measures around disturbed areas (e.g., silt fence, straw wattles, rock check-dams) to limit sedimentation of surrounding waterbodies,
    - monitoring water diversion construction for compliance with applicable permits and approvals,
    - monitoring topsoil stripping to minimize admixing, loss due to erosion, and proper slope and cover,
    - monitoring discharges and repour, and
    - reporting on the activities above (daily and summary in annual report).
- For Phase 3 maintenance activities, operational monitoring will be performed by SRC or designate. The need to hire an environmental monitor will be based on the scope of the maintenance work.
- Implementation of erosion and sediment control measures to protect water bodies such as the installation of silt fences, turbidity curtains, stopping work during high rain fall, etc.
- Postponing work in areas where active nests are found.
- Abiding to timing windows (e.g., fish spawning).
- Dust suppression.
- Discharge response plan and managing spills during remediation activities, and
- Waste management for hazardous waste (see Section 7).

4.4 Procedures for Conducting Internal Compliance, Monitoring, Enforcement, and Verification of all Licensed Activities.

In addition to the programs, plans and procedures described above and in other sections, the following procedures are carried out:

- Daily inspection of work by and regular testing by QA/QC site engineer (e.g., particle size distribution [PSD], depth of soil layers placed, compaction).
- Daily inspection and oversight of the contractor by SRC site representative.
- Frequent inspections (approx. monthly) by a hazardous waste specialist (hired by SRC) of all hazardous waste disposal and storage facilities,
- Regular site visit by SRC safety officer (approx. once a month during active work), and
- If out of compliance, SRC informs contractors of deficiencies and may issue non-conformance reports if needed.

5 Fitness for Service

Regulatory requirements: **NSRD 3(1) (h)** the proposed inspection program for the equipment and systems that will be used to carry on the activity to be licensed.

SRC response

Fitness for Service at the Gunnar Project is based on and secured by the ERMS described in Section 3, and as-built reports for the completed tailings covers submitted to CNSC (GMT, Beaver Pond and Catchment 3).

The inspection program for the equipment and systems includes the following components.

- Equipment inspection and maintenance logs – details below
- Engineer-of-record supervision of the work and inspections – details below
- Oversight by SRC site representative (one SRC representative is always on site during remediation activities)
- Daily inspections during construction by contractor, consultants and SRC
- Geotechnical monitoring
- Post-remediation gamma surveys (described in Section 8)
- Calibration of radiation measuring devices, and
- Regular review of SRC and Prime Contractor management systems and revisions as needed.

Equipment Inspection and Maintenance Logs

Inspection and maintenance of equipment is the responsibility of equipment owners (prime contractor, consultants or SRC). All contractors working on Gunnar are required to keep equipment maintenance logs associated with the heavy equipment (e.g., excavator) and small equipment (e.g., gamma survey) utilized on this project to ensure quality and uninterrupted work.

Supervision of Work and Inspections by Engineer-of-record

Independent supervision of the contractors' work quality is provided by dedicated engineering consultants for the Tailings (O'Kane Consultants) and OSA (SRK). Both companies provide ongoing supervision and regular inspections.

As part of the monitoring and maintenance of the Gunnar site, O'Kane conducts semi-annual inspections. During these inspections, the consultant collects pertinent data and information that are key indicators of the condition of the constructed landforms. The inspections give a better understanding of monitoring and maintenance requirements of each landform and assist with assessment of risks and mitigation for the current climate and landform conditions. O'Kane will use findings from the site inspections to assist SRC in developing a monitoring and maintenance program for Transitional Monitoring Phase. O'Kane oversees the Tailings work, provides engineering field guidance, and performs QA/QC inspection and testing (e.g., PSD). Visual inspections are documented with photos in daily field reports.

SRK monitors all work on the waste rock piles including grading and gamma cover placement, nuclear densometer testing, PSD tests, and Proctor density tests. SRK provides field guidance to ensure the slopes are within the design criteria, positive drainage is achieved on all crests, and regrading is adequate. As part of SRK's daily activities, visual inspections are performed to ensure that all

remediation objectives are met as the design is being implemented. Visual inspections are documented with photos in daily field reports.

Ongoing geotechnical performance (e.g., former tailings dam, engineered covers) is monitored by consultants and reported annually. Upon completion of the active remediation phase, the final geotechnical performance will be inspected as part of Phase 3 monitoring (plan under development).

6 Radiation Protection

Regulatory requirements: **GN 3(1) (e)** the proposed measures to ensure compliance with the *Radiation Protection Regulations*, the *Nuclear Security Regulations* and the *Packaging and Transport of Nuclear Substances Regulations, 2015*

SRC Response:

Radiation safety at the Gunnar Remediation Project during Phase 2 is secured under the Radiation Protection Plan (RPP) that has been developed and implemented by the Prime Contractor in conjunction with SRC and is a part of Prime Contractor's (QM Points) management system. Phase 3 activities will be carried out under SRC's RPP.

In line with the current CNSC Licence requirements, the purpose of the Gunnar RPP is to keep the amount of exposure to radon progeny and the effective dose and equivalent dose received by and committed to persons as low as reasonably achievable (ALARA), social and economic factors being considered, through the implementation of:

- Management control over work practices,
- Personnel qualification and training,
- Control of occupational and public exposure to radiation, and
- Calibration of instruments
- Planning for unusual situations.

The RPP is to assist in establishing a safe work environment for all on-site workers, and to provide guidance to operations personnel with respect to anticipating, recognizing, evaluating, and controlling radiation exposures in their work environments while performing remediation activities at the Site.

The RPP includes detailed roles and responsibilities of management, hazard, and risk assessment, sets action and administration levels for radiation dose loads obtained due to remediation activities, sets the corresponding rules for ascertaining and recording radiation doses, and outlines control measures and precautions including education and training regarding radiation safety.

To ensure proper implementation of the RPP, the Prime Contractor in conjunction with SRC subject matter expert regularly review the RPP content and implementation. The review includes an evaluation of equipment, procedures, dosimetry records, inspection findings, and incidents. A summary of the results of each annual review, including a description of actions proposed and taken is documented and discussed with management.

SRC follows all reporting and record keeping requirements as per the General Nuclear Safety and Control Regulations (SOR/2000-202) and the Radiation Protection Regulations (SOR/2000-203) as well as any other document as referenced within the RPP.

A Radiation Protection Implementation Report is completed annually. It addresses in detail the effectiveness of the Radiation Protection Program. This report is provided to CNSC as a part of SRC annual reporting.

Gamma radiation monitoring devices such as Ludlum dose rate meters and probes (components of the gamma survey equipment) and CT007 (field hand-held radiation detectors) are calibrated on an annual basis by qualified facilities (e.g., Stuart Hunt & Associates [Canada], Environmental Restoration Group [USA]) and calibration certificates obtained. SRC performs pad calibration of Ludlum gamma survey equipment annually to determine detector sensitivity and establish conversion factors from counts per second (survey equipment output) to microSieverts per hour (µSv/h) This is done by using a specifically designed set of doped concrete pads with known radionuclide concentrations of potassium, thorium, and uranium as well as a blank pad to estimate natural background.

In compliance with the RPP, warning signs are mounted at key site locations to make the workers and public aware of potential radiological hazards at the Site. Currently, the signs are posted at five locations: marina breakwater, ice road entrance on beach, barge landing by former fish plant location, GCT haul road by ramp to GCT, and LBT (facing Langley Bay). The signs bear the radiation warning symbol and the words “RAYONNEMENT — DANGER — RADIATION”.

7 Waste Management

Regulatory requirements: **GN 3(1) (j)** the name, quantity, form, origin and volume of any radioactive waste or hazardous waste that may result from the activity to be licensed, including waste that may be stored, managed, processed, or disposed of at the site of the activity to be licensed, and the proposed method for managing and disposing of that waste.

SRC Response:

Waste management at the Gunnar Project is carried out in accordance with the plans listed below and approved remediation designs for the tailings covers, gamma shield covers, and landfills.

- Asbestos Management Plan
- Discharge Response Plan
- Discovery Response Plan
- Hazardous Materials Management Plan
- Legacy Waste Management Plan
- Waste Management Plan (Gunnar).

Two landfills are being constructed as part of the OSA project. Landfill A is the on-site engineered landfill designated to contain all non-hazardous, non-contaminated legacy waste and demolition debris. Landfill B is a non-pervious containment cell for the on-site disposal of Low-Level Radioactive Waste (LLRW), legacy petroleum hydrocarbon (PHC)-impacted soil, LLRW PHC-impacted spilled material created during remediation, and legacy pH-impacted material (treated with lime prior to placement in landfill). The construction of Landfill B is complete while the construction of Landfill A is yet to be completed.

Low-Level Radioactive Waste

The inventory of radioactive waste includes waste rock, tailings and assorted LLRW. Approximately 2.5 million m^3 of waste rock (some of it radioactive) was produced during operation of the mine and mill and stockpiled at the site. To date during Phase 2 activities, the waste rock was used in the construction of the tailings covers. The remaining waste rock deposits have been regraded and covered with 0.5m-thick gamma shield covers whenever there is/was a gamma radiation objectives exceedance (see Section 2.1). Approximately 5 million tonnes of unconfined tailings was produced during operation of the mine and mill and released to the environment resulting in four tailings areas (GMT, BPT, GCT and LBT) which are being covered with engineered cover systems. The engineered covers at GMT and BPT are completed, and most of the tailings at GCT has been covered and will be completed along with the LBT cover. The construction of LBT cover has not started yet.

Approximately 198 m^3 of LLRW has been placed within Landfill B from 2020-2022. This waste includes the following items:

- PHC-impacted Solids (spilled on Waste Rock and Tailings)
- PHC-impacted liquids collected during PHC spills cleanup
- Sulphur-impacted material
- Assorted debris (wood, rubber, etc.)
- Radiation protection equipment (PPE, tarps, etc.)
- Laboratory samples.

The origins of this waste include both legacy and remediation waste. More details, such as, origins, amounts and scanning results have been included in previous SRC annual reports.

Hazardous Waste

The approach to disposing of hazardous waste, both legacy and produced during remediation, is as follows:

- Legacy PHC-impacted soil was disposed of in Landfill B.
- Approximately 7,430 m^3 of pH-impacted material (treated with lime) has been disposed of in Landfill B.
- PHC-impacted soil created during remediation is disposed of off-site, except when also radioactive. In the latter case, it was disposed of in Landfill B.
- Approximately 15,650 m^3 of asbestos-containing material (ACM) has been disposed of in Landfill A. The ACM includes friable, non-friable, mixed materials and wood mixed ACM. The ACM was covered with non-hazardous waste and other materials as per design.
- All other hazardous waste is disposed of off-site in accredited facilities. Hazardous waste includes both legacy and remediation waste listed in Table 1. This waste is stored on site in facilities approved by the Saskatchewan Ministry of Environment and is shipped off site annually. This is reported in SRC annual reports.

Table 1. List of Hazardous Waste Materials to Potentially be Stored at the SRC Gunnar Hazardous Material Area

Waste Material[1]	**Anticipated Amount[2]**	**TDG Class[3]**
Alkaline and Lithium Batteries	10 kg	8
Hydrocarbon Contaminated Materials (e.g., absorbent pads, oil filters)	10 m^3	NA
Hydrocarbon Contaminated Soil	10 m^3	4.1
Hydrocarbon Contaminated Water	1 m^3	3
Incinerator Ash	20 m^3	n/a
Mercury-Containing Materials (fluorescent bulbs/lamps, thermometers, thermostats)	50 units	8 (6.1)
Miscellaneous Non-Hazardous Materials	100 kg	n/a
NiCd Batteries	10 kg	8
Paint Associated Wastes	10 m^3	3 or 8[3]
Petroleum Substances (e.g., diesel, oil, gasoline)	3 m^3	3
Used Aerosol Cans	50 kg	2.1 or 2.2[3]
Used Oil	10 m^3	2.3 (2.1)
Waste Antifreeze	10 m^3	3

Notes:

1) The list includes types of materials which have been previously stored at site, materials currently stored at the site, and materials anticipated to be stored at the site.
2) The maximum projected amount which can be accumulated at the Hazardous Material Area.
3) TDG class depends on waste content.

8 Environmental Protection

Regulatory requirements: **GN 3(1) (i)** a description and the results of any test, analysis or calculation performed to substantiate the information included in the application.

SRC Response:

Environmental protection at the Gunnar Project includes environmental sampling and environmental compliance program. It is based on and secured by the Environmental Protection Program (Section 3). This section presents the environmental sampling while measures taken for environmental compliance is described in Section 4.3.

The Gunnar Environmental Monitoring Plan is based on the SRC commitments made in the Gunnar EIS and includes extended environmental sampling as follows:

- Climate (weather station)
    - Continuous monitoring of weather parameters (air temperature, relative humidity, wind speed and direction, and pressure) at one-hour intervals.
- Water quality
    - Surface
        - 16 sampling stations.
        - Sampled monthly during the active remediation season.
        - Analyses: trace metals, radium-226, and general chemistry.
    - Groundwater
        - 10 sampling stations.
        - Sampled twice during the active remediation season.
        - Analyses: trace metals, radium-226, and general chemistry.
- Water quantity (surface hydrology)
    - Monitored at four stations.
- Radon
    - Concentrations measured in ambient air.
    - 10 sampling stations.
    - Collected twice annually (detectors changed in spring and fall).
- Dustfall
    - 13 sampling stations.
    - Sampled monthly during the active remediation season.
    - Analyses: dust mass, volatile dust mass, trace metals, and radionuclides (radium-226, thorium-230, lead-210, and polonium-210).
- Gamma surveys
    - Pre-remediation surveys.
    - Remediation surveys.
    - Post-remediation surveys.
    - Gamma surveys results collected to date have been submitted as part of SRC Annual Reports.

All the environmental sampling is performed by trained SRC staff or dedicated consultants. The samples are analyzed at SRC Environmental Analytical Lab, a laboratory accredited with the Canadian Association

for Laboratory Accreditation. All analytical results and other collected data are reviewed by a qualified subject matter specialists and then reported as part of the SRC Annual Reports.

The purposes of the gamma surveys are to (i) comply with the requirements of health and safety procedures (including the RPP), (ii) identify a need for remediation and mitigation measures, and (iii) confirm the adherence of the completed remediation work (e.g., covers) to the Project-specific radiological objectives (described in Section 2.1). Gamma data collection and processing is performed in line with the SRC Gamma Radiation Survey Approach. The procedure and technical details including QA/QC documents are available upon request.

Upon completion of the Active Remediation Phase of the Gunnar project, both the EIS-based monitoring and Operational monitoring will be replaced with a Phase 3 Monitoring Program (under development).

9 Financial Guarantee

Regulatory requirements: **GN 3(1) (l**) a description of any proposed financial guarantee relating to the activity to be licensed.

SRC Response

The Ministry of Energy and Resources has been assigned the responsibility for the management of all activities on the Site on behalf of the Government of Saskatchewan. SRC has been contracted by the Ministry of Energy and Resources to act as project manager for the Gunnar project. The Government of Saskatchewan is the legal landholder and retains all legal and financial responsibilities for reclamation, decommissioning, monitoring and maintenance activities that are required under a CNSC licence. It is the Ministry of Energy and Resource's intent to remediate the Site to an acceptable condition to where the Site qualifies for a CNSC licence exemption and may enter Saskatchewan's Institutional Control Program (ICP). A financial assurance letter was provided by the Ministry of Energy and Resources, and is found in Attachment E.

10 Communication Program

Requirement: The licensee shall implement and maintain a Communication Program for the facility, including a public disclosure protocol, for each Phase of activities at the Gunnar Site.

SRC Response

Presented below are the stakeholders identified by SRC, communication tools being used in the Gunnar project and SRC's overall community engagement approach. Outreach efforts performed over the licensing term are presented in Attachment F

Stakeholders

SRC identified the stakeholders listed below for Project CLEANS sites. We keep them engaged as needed.

- Minister responsible for SRC.
- The Government of Saskatchewan represented by the Ministry of Energy and Resources.
- Other government stakeholders.
- Regulators:
    - Canadian Nuclear Safety Commission (CNSC).

    - Saskatchewan Ministry of Environment (MOE), particularly the Environmental Assessment Branch and the Environmental Protection Branch.
    - Saskatchewan Labour Relations and Workplace safety.
    - Other.
- Municipal and Indigenous government representatives from Northern Settlement of Uranium City, Northern Hamlet of Stony Rapids, Northern Settlement of Camsell Portage, Black Lake Denesuline First Nation, Fond du Lac Denesuline First Nation, Hatchet Lake Denesuline First Nation, and Northern Settlement of Wollaston Lake. In Alberta the target audiences are Athabasca Chipewyan First Nation and the Mikisew Cree First Nation.
- Métis Nation – Saskatchewan.
- Prince Albert Grand Council (PAGC).
- Athabasca Basin region residents.
- Athabasca Basin region business owners.
- Saskatchewan citizens.
- Ya'thi Néné Land and Resource Office.
- Elected representatives (MLAs and Saskatchewan MPs).
- Media.
- Contractors and consultants interested in working on Project CLEANS or currently involved in the project.
- Interest groups.
- Mining and remediation industries.
- Economic development and training organizations.
- Potential SRC clients.
- Potential employees of SRC and potential employees of contractors.

Communication Tools

Some of the communication tools that are used to inform the targeted audience include:

- Online, for example:
    - Project CLEANS section of the SRC corporate website (Project CLEANS | Saskatchewan Research Council (src.sk.ca)), which contains project information and updates.
    - Social media (e.g., Facebook, Twitter, LinkedIn and YouTube) which are used for project updates, annual videos on project progress (e.g., Project CLEANS Update (Summer 2022) - English - YouTube), etc.
- Media relations activities – media pitches, news releases, interviews, events, for example:
    - Radio: Missinipi Broadcasting (MBC), CBC, CKOM.
    - Print: Opportunities North, Saskatchewan Sage, Eagle Feather News, Prairies North, and web-based media.
- Advertising, for example:
    - Radio: MBC.
    - Print: Opportunities North, Saskatchewan Sage, Eagle Feather News, Prairies North, Up Here Business, and other industry publications.
    - Social Media: promoted tweets (Twitter) and Facebook ads/post promotion.

- Print Material – fact sheets, posters, public announcements, invitations, signage.
- Public Meetings – annually in each of the Athabasca Basin Region communities.
- Workshops – periodically throughout the year as needed.
- Workshops, conferences, tradeshows, and open houses – as appropriate opportunities arise.
- Newsletter – project updates, notices, and images; sent to a subscriber list; issues are also posted on SRC's website and social media.
- Site visits by local leadership – annually.
- Ad hoc conversations and responses to questions from residents by project staff working in the Uranium City area.

Local Community Consultation and Engagement

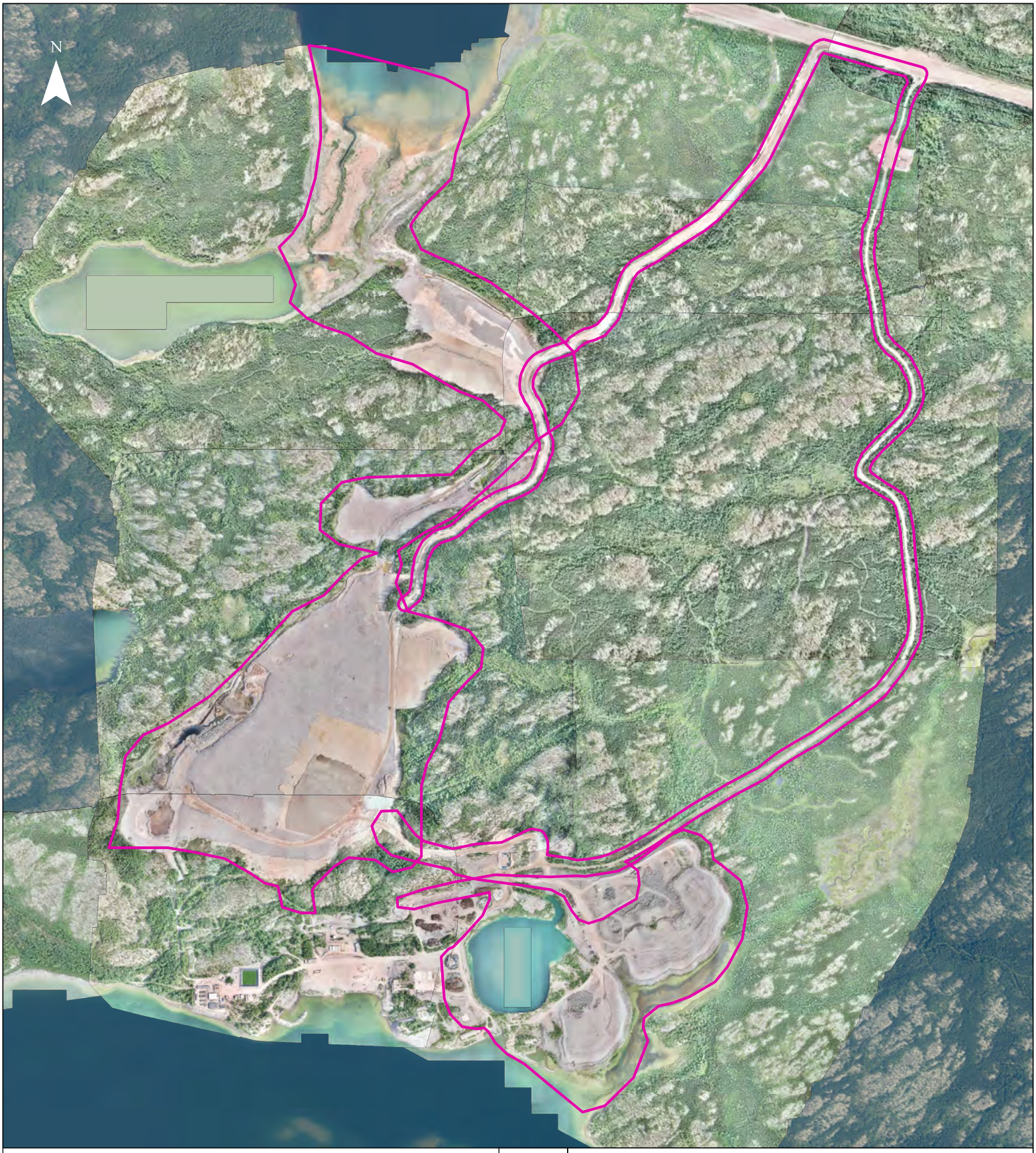
SRC employs an Indigenous Senior Advisor who leads communication with Chiefs and Councils and different leadership in the Athabasca Basin Region (e.g., PAGC, Northern Labour Market Committee). This includes weekly discussion on Project CLEANS with both community members and community contractors as SRC strives for open and transparent communication allowing the project to flourish under the guidance from Athabasca leaders.

SRC is working with Ya'thi Néné Land and Resource Office (YNLR), an organization created by the Athabasca Basin Region to oversee resource development in the region (created after Gunnar Remediation Activities began). YNLR is a conduit for SRC to utilize traditional knowledge and keep lines of communication open for Project CLEANS and beyond (e.g., assessment of the abandoned uranium exploration site Homer Yellowknife, revegetation of cutlines within the Athabasca region for Caribou land development).

All large-value contracts (e.g., Gunnar contractors) include Athabasca Basin Regional content inclusion metrics that vendors must meet as part of their contractual obligations. Typical metrics include Indigenous labor content, local equipment utilization and overall project spend in the region. These contractual obligations encourage companies to diversify their workforce, have resulted in capacity building and direct engagement from local communities and have supported both SRC and its contractors with the Project social license. SRC also invites all companies involved with Project CLEANS to attend the Project community meetings to discuss with community members and leadership.

Attachment A:

Boundary Map



Gunnar Mine

CNSC License

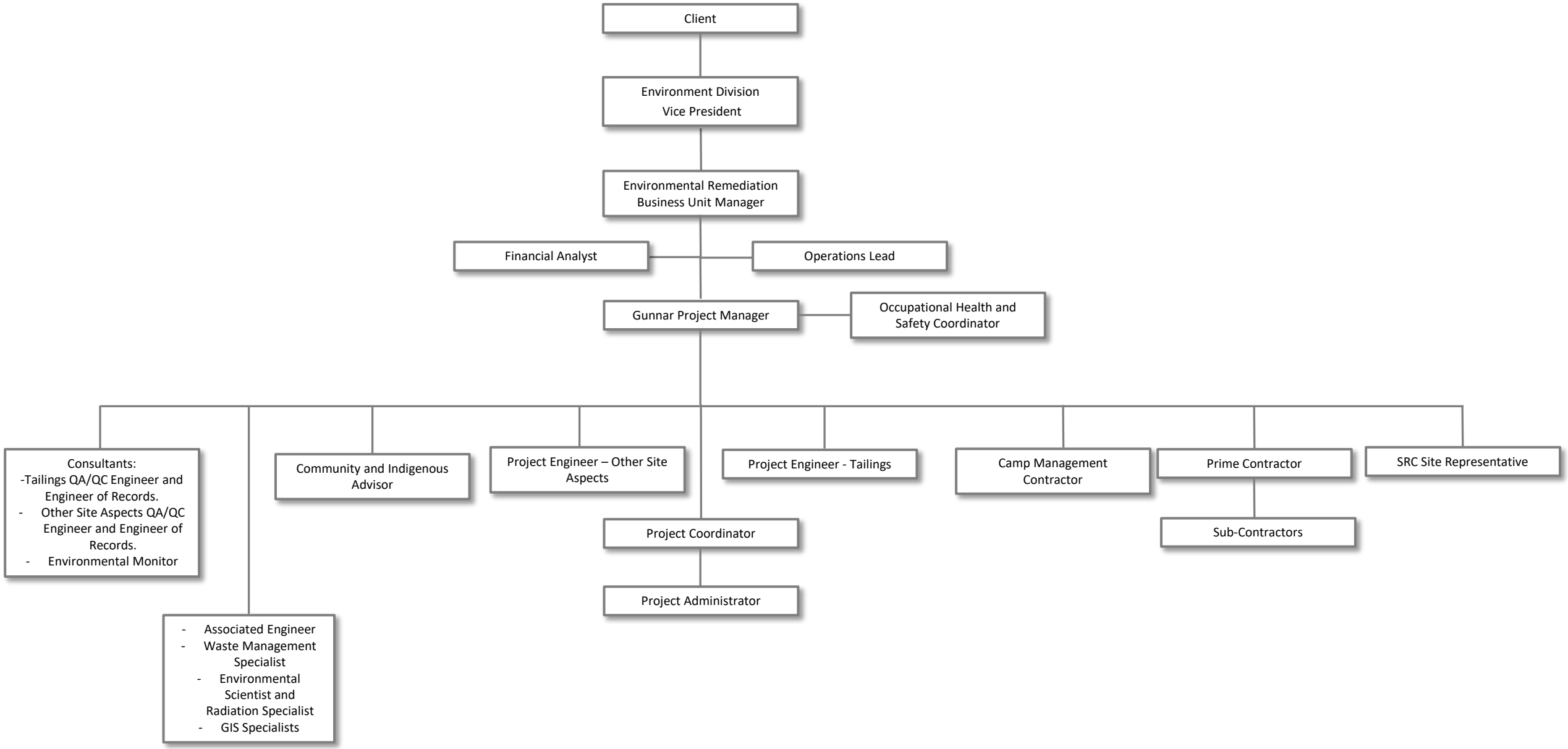
PROJECT	CLEANS - GMP Remediation (SRC)		
TITLE	Updated Gunnar Mine CNSC License Areas		
PROJECT #	12194-455	REFERENCE:	
DESIGN	CS	Coordinate System: NAD 1983 CSRS UTM Zone 12N Datum: North American 1983 CSRS	
CHECK	DS	NOTES:	
FIGURE	01	1. Aerial image provided by SGIC 2. UAV image provided by SRC (2019)	
DATE	2023-09-12		
SCALE	1:15,000	0 150 300 450 600 Metres	

SRC
SASKATCHEWAN RESEARCH COUNCIL

Attachment B:

Project Organizational Chart

Gunnar Legacy Uranium Mine Organization Chart



SRC has submitted a Request for Confidentiality for Attachments C, D, E, and F.

The Request for Confidentiality including a summary of the attachments, is available on the CNSC website or upon request.

3 CMD 15-H10. *Submission from CNSC Staff on Gunnar Mine Site (Removal of Phase II Hold Point),* One-Day Public Hearing, September 30, 2015. Submitted by CNSC staff (e-Doc 4827817).

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

UNPROTECTED/NON PROTÉGÉ

ORIGINAL/ORIGINAL

CMD: 15-H10

Date signed/Signé le : 3 SEPTEMBER 2015

Required Approvals

Saskatchewan Research Council

Gunnar Remediation Project

Commission Public Hearing

Scheduled for:

30 September 2015

Submitted by:

CNSC Staff

Des approbations requises

Saskatchewan Research Council

Projet de remise en état du site Gunnar

Audience publique de la Commission

Prévue pour :

Le 30 septembre 2015

Soumise par :

Le personnel de la CCSN

e-Doc 4795408 (WORD)
e-Doc 4827817 (PDF)

Canada

Summary

This Commission member document (CMD) pertains to a request for a decision regarding approval for the Saskatchewan Research Council (SRC) to proceed with Phase 2 remediation activities of the tailings area at the legacy Gunnar mine site. The CMD provides CNSC staff's evaluation of SRC's remediation plan for the tailings area at the Gunnar site. Based on their review, staff conclude that the remediation plan meets the objectives of the Gunnar Remediation Project environmental assessment and complies with CNSC regulatory requirements. Accordingly, CNSC staff recommend that the Commission approve SRC's request to proceed with Phase 2 remediation activities of the tailings area at the Gunnar site.

The following actions are requested of the Commission:

- Release of the Gunnar Remediation Project Phase 2 hold point for remediation of the tailings area at the Gunnar site

The following items are attached:

- CNSC licence and licence conditions handbook

Résumé

Le présent CMD concerne une demande de décision visant à autoriser le Saskatchewan Research Council à procéder à la phase 2 du projet de remise en état du site Gunnar. Le CMD est axé sur l'évaluation effectuée par le personnel de la CCSN du plan du SRC pour la remise en état des zones de résidus miniers sur le site Gunnar. En se basant sur cette analyse, le personnel de la CCSN conclut que le plan pour la remise en état des résidus est conforme aux exigences de l'évaluation environnementale du site Gunnar et aux exigences de la CCSN. Par conséquent, le personnel de la CCSN recommande à la Commission d'approuver la demande du SRC en vue de procéder à la phase 2 du projet de remise en état des zones de résidus du site Gunnar.

La Commission pourrait considérer prendre les mesures suivantes :

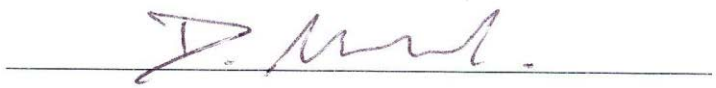
- Lever le point d'arrêt de la phase 2 du projet pour la remise en état des zones de résidus du site Gunnar.

Les pièces suivantes sont jointes :

- Permis et Manuel des conditions de permis en vigueur

Signed/signé le

September 3, 2015



Director General (Acting)
Directorate of Nuclear Cycle and Facilities Regulation
Dr. D. B. Newland

Directeur général (Intérimaire) de la
Direction de la réglementation du cycle et des installations nucléaires
Dr. D. B. Newland

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Gunnar uranium mine and mill site is the location of an abandoned uranium mine and mill in northern Saskatchewan that is being remediated by the Saskatchewan Research Council (SRC). The Commission granted SRC a 10-year licence for the Gunnar Remediation Project following a public hearing in November 2014 on the environmental assessment report (EA Report) for the proposed Gunnar Remediation Project. The Commission found that the EA was complete and concluded that SRC was qualified to carry on the activities authorized in the licence.

The remediation project is to be carried out in three phases. Phase 1 consists of maintenance and monitoring activities as well as site characterization. Phase 2 consists of carrying out remediation activities of the numerous components of the Gunnar site. The main components include: the tailings area, the waste rock pile, the open pit and the mine shaft. Phase 3 consists of post-closure care and maintenance. The licence includes a regulatory hold point for phase 2 of the project. The Commission requested that SRC develop plans for remediation of the different site components and present those plans at a public hearing with written interventions in order to remove the hold point.

SRC is requesting the Commission's approval to allow for remediation of the tailings area at the Gunnar site which is included in Phase 2 activities. The tailings area covers over 70 hectares of land and can pose an eventual risk to the environment if it continues to be exposed. To that end, SRC has submitted the remediation design plans and supporting information for the tailings area of the Gunnar site.

SRC has completed the Phase 1 work of site characterization and monitoring that was needed to support moving to Phase 2. The remediation strategy consists of placing a soil cover over the tailings to control infiltration, reduce radiation exposure, control dust, and promote vegetation. CNSC staff conclude, based on their review, that the remediation plan for the Gunnar site tailings area is straightforward and achievable, meets the objectives of the EA and complies with CNSC regulatory requirements. The remediation plan is also consistent with best practices for similar sites internationally. Accordingly, CNSC staff recommend that the Commission accept SRC's request to remove the hold point for remediation activities of the tailings area. CNSC staff also support moving forward with remediation of the tailings area because an eventual risk to the health and safety of persons and the environment. CNSC staff conclude that SRC's consultation activities with Aboriginal groups and the public about the remediation project are adequate and feedback from these communities forms part of the remediation plan.

For the remaining Phase 2 remediation activities for the waste rock pile, the open pit and the mine shaft, CNSC staff recommend that the hold point remain in place. These plans can be approved by the Commission at a later date or by a person authorized by the Commission. SRC has submitted preliminary plans for these areas, and CNSC has conducted a conformity review that identified no significant gaps. The technical review is still underway at the time of writing this CMD.

1 OVERVIEW

1.1 Introduction

The Gunnar uranium mine and mill site (hereinafter the "Gunnar site") is the location of a former uranium mine and mill that is being remediated by the Saskatchewan Research Council (SRC) under waste nuclear substance licence WNSLW5-3151.00/2024 (Reference 1). The remediation work is taking place in three main phases. Phase 1 consists of characterizing and monitoring the onsite waste (tailings, waste rock) and developing design remediation plans. Phase 2 consists of implementing the remediation plans. Phase 3 consists of long-term monitoring and maintenance.

A regulatory hold point requires the SRC to receive approval from the Commission before proceeding with Phase 2 of the project. The tailings area covers over 70 hectares of land and could pose a risk to the environment if it continues to be exposed. One of the main causes of concern is the wind-blown dust from the tailings piles containing residual amount of contaminants. SRC has completed the Phase 1 work, and submitted a document entitled "*Gunnar Site Remediation Project – Tailings Remediation Plan*" (Reference 2) to the CNSC that outlines SRC's plan for Phase 2 work on the tailings area including the plan to stabilize and cover the tailings using locally available rock and soil (borrow material). CNSC staff have reviewed the remediation plan for the tailings area together with SRC's request to release the hold point for the Phase 2 tailings area remediation activities.

This Commission member document describes CNSC staff's evaluation and conclusions of the acceptability of SRC's plan for the remediation of the tailings to confirm that the plan is in accordance with CNSC regulatory requirements and the objectives outlined in the environmental assessment for the Gunnar site that was presented to the Commission in November 2014 (Reference 3).

1.2 Background

The Gunnar site is located approximately 600 km north of Saskatoon on the north shore of Lake Athabasca in northwest Saskatchewan (Figure 1). The Gunnar mine and mill was operated by the former Gunnar Mining Limited from 1955 to 1963 and was decommissioned in 1964. The Gunnar site consisted of open and underground mine pits, mining infrastructure, three mine tailings deposits covering over 70 hectares of land, and waste rock piles (Figure 1.1). At decommissioning, the open pit and underground workings were flooded, and the mine shaft and openings were plugged with concrete. The buildings at the site were demolished in 2010. The tailings, waste rock, and other mine waste were left behind and remain to this day.

In 2006, The Government of Saskatchewan and the Government of Canada signed a Memorandum of Agreement to address the current environmental conditions of the legacy uranium mine and mill sites in northern Saskatchewan, which includes remediation of the Gunnar mine site. SRC, a Treasury Board Crown Corporation in the Province of Saskatchewan, was assigned the responsibility to ensure that the project is carried out on behalf of the two governments. This responsibility includes preparing the environmental assessment and obtaining the required approvals to carry out the remediation work.

Figure 1.0: Gunnar site location

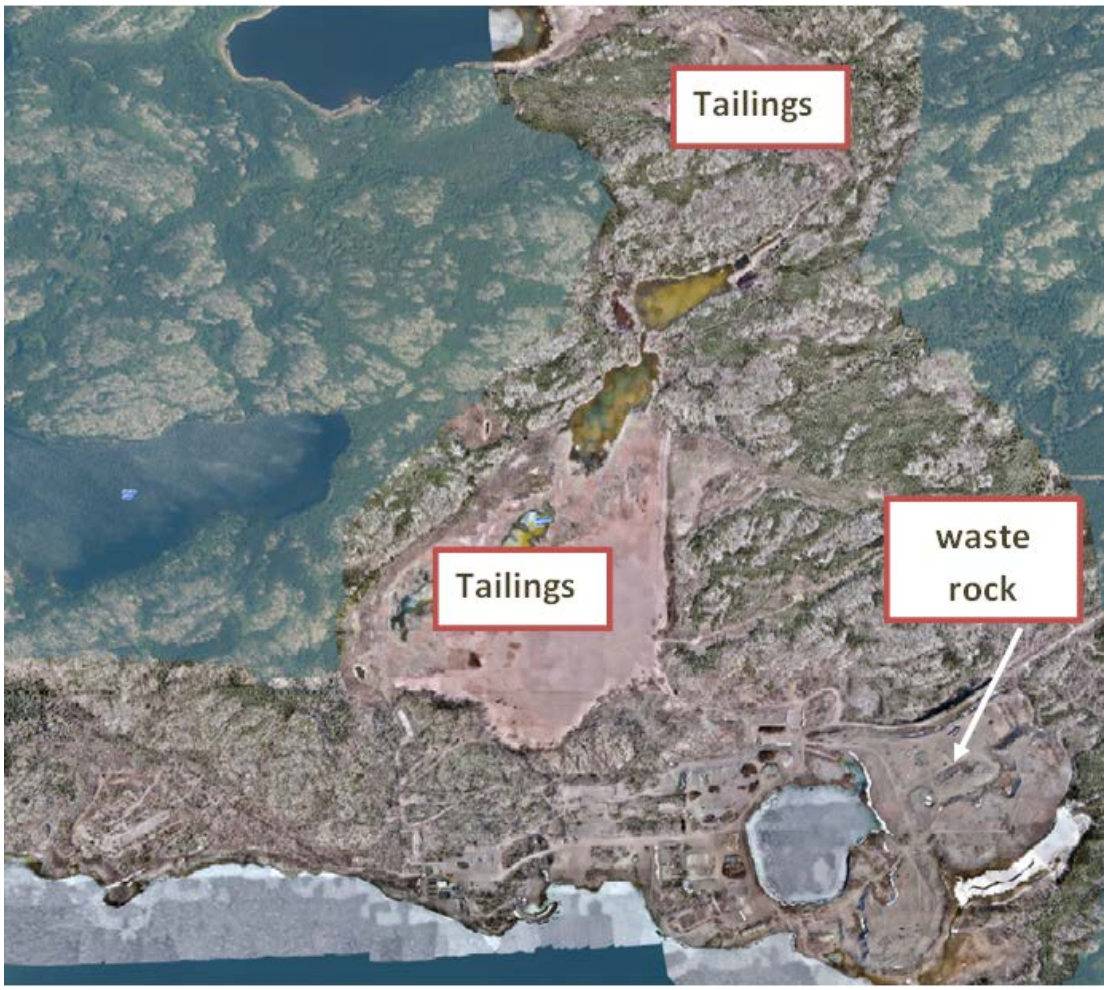


Figure 1.1: Satellite view of Gunnar site

Environmental assessment and CNSC licence

SRC conducted an environmental assessment (EA) and in 2014, applied for a CNSC licence to remediate the Gunnar mine site. The Commission was the sole responsible authority (RA) for the EA. Other government departments provided expert assistance to CNSC staff during the EA, in their role as federal authorities. The proposed project was also designated under the Saskatchewan Environmental Assessment Act (SEAA) with the EA Report reviewed and approved by the Saskatchewan Ministry of the Environment (SME).

The EA and associated risk assessment concluded that although the current site has measurable impacts on both the aquatic and terrestrial environment, effects are localized and are not evident in the higher levels of the food chain. Radiation doses to members of the public were below the regulatory dose limit. Therefore future remedial efforts at the site were to focus on stabilizing the tailings and waste rock areas and isolating them from the environment. The EA presented preliminary options for remediation of site components, however additional characterization work was needed to enable SRC to decide on a specific remediation path forward and develop design plans.

A public hearing took place in November of 2014 and the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act* (NSCA), issued SRC a waste nuclear substance licence (WNSL-W5-3151.00/2024) for the Gunnar Remediation Project (Reference 4 and 5). The licence is valid from January 14, 2015 to November 30, 2024. The Commission concluded that the proposed project is not likely to cause significant adverse environmental effects, taking into account mitigation measures identified in the EA Report. In making its decision, the Commission considered information and submissions from SRC, written and oral interventions, as well as CNSC staff recommendations. The Commission concluded that SRC is qualified to carry out the licence's authorized activity and that it will make adequate provision for the protection of the environment the health and safety of persons, and the maintenance of national security measures required to implement international obligations to which Canada has agreed.

SRC has spent the last year completing Phase 1 characterization and monitoring work and developing design plans for the waste components at the site. SRC submitted remediation plans for Phase 2 remediation activities of the tailings area to CNSC staff on July 7, 2015. CNSC staff requested additional information and responded to SRC on August 21, 2015 that the document satisfied all CNSC regulatory requirements and that staff would follow-up on detailed construction plans and oversight processes once a contractor is selected for the remediation work.

SRC submitted Phase 2 plans for the other waste components at the site, including the waste rock, the open pit, and the mine shaft on August 15, 2015. CNSC staff and SME completed a preliminary review of the plans for the other waste areas and have not identified any significant concerns. It is anticipated that the bulk of the remediation work for Phase 2 will take place between 2016 and 2020; this would entail moving construction equipment using the ice road in the winter of 2015-16.

To ensure compliance with all safety and control areas, the November 2014 hearing also focused on CNSC staff's review and acceptance of all programs SRC submitted for all applicable CNSC safety and control areas. Since then, CNSC staff have continued to review all of SRC's programs, including any updates, to ensure that all activities are undertaken safely and in accordance with the NSCA and associated regulations.

CNSC, SME and SRC have been actively communicating with residents of the Athabasca region since 2004. Communication with Aboriginal groups and the public has included public meetings, CNSC staff presentations, SRC-led Athabasca community tours, letters, e-mails and phone calls at key points in the process. Opportunities for public participation, including the availability of the Participant Funding Program (PFP), were provided during the EA and the current licensing process.

1.3 Highlights

Following a public hearing in November 2014, the Commission issued SRC a licence for the Gunnar Remediation Project in January 2015 for a period of 10 years. There are two key items related to the Phase 2 remediation of the tailings area from the record of decision for the Gunnar licence:

- The Commission stated that it was satisfied with the remediation approach for the project, and that the final remediation plan is bound by conclusions drawn from the EA. However the Commission was also of the view that members of the public, Aboriginal groups and other stakeholders should have an opportunity to comment on the detailed engineering and remediation plans prior to approval of Phase 2 of the project.

- The Commission requested that "the detailed engineering and remediation design be completed by fall of 2015 and requested more information about the approximate timeline for the project. The Commission also asked whether SRC anticipated being able to begin remediation before 2016. SRC responded that the detailed engineering design would be performed in 2015 and that SRC intended to obtain approval for Phase 2 of the project in the fall of 2015."

To that end, CNSC staff have carried out the following activities since this record of decision on the Gunnar Remediation Project was released:

- developed a protocol that established timelines for submitting and reviewing all documents needed to support Phase 2 remediation activities.

- reviewed SRC's tailings remediation plan and provided the conclusions in the current CMD.

- made available participant funding for review of the remediation plans.

- continued to verify compliance with the licence by reviewing the results of programs referenced the licence conditions handbook (Reference 6) and by conducting annual inspections of the site.

- along with other federal authorities including Environment Canada, reviewed and accepted EA follow-up items.

- coordinated with SME on provincial requirements for the project and technical evaluation of remediation plans.

1.4 Overall conclusions

CNSC staff have completed their review of the remediation plan for the tailings area at the Gunnar site and SRC's request to remove the regulatory Phase 2 hold point to allow SRC to carry out remediation activities of the tailings area. CNSC staff conclude, based on their review, that the remediation plan for the tailings area complies with CNSC regulatory requirements and meets the objectives of the environmental assessment for the Gunnar Remediation Project. CNSC staff conclude that SRC has carried out an effective Aboriginal and public consultation program and that input from local communities has been considered in the remediation plan.

In summary, CNSC staff conclude that SRC has satisfied the Commission's requirements for removal of the hold point for Phase 2 remediation activities on the tailings area.

1.5 Overall recommendations

CNSC staff recommend that the Commission consider SRC's request to remove the hold point in order to proceed with Phase 2 remediation activities of the tailings area at the Gunnar site. The hold point for remediation of the other site areas including waste rock, the open pit and the mine shaft should remain in place and be considered at a later date.

2 MATTERS FOR CONSIDERATION

This CMD pertains to a request for a decision regarding approval for SRC to proceed with Phase 2 remediation activities of the tailings area at the Gunnar site. This section presents relevant information concerning the tailings area remediation, which is under Phase 2 activities for the licence:

- CNSC staff's technical evaluation of the remediation plan
- Aboriginal consultation for the remediation plan
- SRC's compliance with the NSCA and associated regulations and performance in 2013-2014
- status of plans for other waste areas of the Gunnar site that include the waste rock piles, open pit and mine shaft.

2.1 Technical evaluation of tailings remediation plan

The following sections provide the results of CNSC staff's evaluation of SRC's remediation plan for the tailings area at the Gunnar mine site. The remediation plan for the tailings areas involves the placement of a cover to create a barrier between the environment and the tailings. This plan was designed to meet the objectives of the EA (2014) to reduce dust emissions from the tailings, reduce radiation exposure, minimize contaminant loading to the environment and promote vegetative growth.

CNSC staff's evaluation focused on geotechnical engineering and geology, surface water hydrology and contaminant transport, radiation exposure and long-term stability. Staff evaluated the remediation plan against the objectives outlined in the EA, and for compliance with CNSC standards and regulations as well as international best practices for similar legacy mine sites. A list of all standards, regulations and international documents is in appendix A.

SME has also carried out a technical review of the remediation plans for the Gunnar mine tailings area. SME found the plans acceptable and will grant the necessary provincial approvals for the remediation work. CNSC staff correspond regularly with SME on these provincial level approvals as well as on technical evaluations of the remediation work. Based on their independent assessment of the proposed plans, CNSC staff concur with SME's conclusions. CNSC and SME also work on establishing maintenance and monitoring objectives for the Gunnar site to ensure that the site will remain safe in the long-term.

General description of plan

The tailings remediation plan consists of the construction of an engineered soil cover on the tailings area at the Gunnar site, which total about 70 hectares. The placement of soil cover on mine tailings is a standard practice used in industry to control infiltration, manage gas migration, reduce disruption to tailings from birds and rodents, prevent erosion and facilitate post-closure activities. A layer of waste rock (generated during commercial operation of the Gunnar mine and currently on-site) will be placed on the tailings to create a stable base where needed. Then, locally available soil and/or rock (known as 'borrow material') will be placed on top of the stabilized surface and contoured into the local natural landscape.

Geotechnical engineering and geology

CNSC staff reviewed SRC's tailings remediation plan to determine whether the geotechnical and geological aspects of the plan were in accordance with the requirements of engineering best practices for similar sites, as well as with CNSC guidance document G-320, *Assessing the Long-term Safety of Radioactive Waste Management.* Items reviewed included descriptions and laboratory testing of borrow material (soil, rock, and/or sand dug up at another location for use as landfill at the Gunnar site), borrow material gradation and suitability, landscape and cover design, and long-term geotechnical stability. The review was supported by a site visit by CNSC geotechnical staff and discussion with consultants hired by SRC.

During its review, CNSC staff verified that:

- appropriate tests are carried out on the borrow material by the licensee to assure that the suitable material is identified
- laboratory testing is conducted in accordance with ASTM International (formerly known as the American Society for Testing and Materials) standards and by trained and qualified staff

- the objective of the project and the remediation design objectives and criteria are defined in the plan to guide the landscape and cover design
- the proposed landscape, cover thickness and cover designs are in accordance with engineering best practices
- the potential failure modes of the preferred remediation design for the Gunnar tailings deposits are identified and are being assessed to support the final landform and cover design
- the proposed landscape slope will be stable geotechnically provided that the proposed surface erosion measures are in place, and follow-up monitoring and maintenance is carefully followed

CNSC staff will verify compliance by reviewing the final detailed design specifications and the construction plan, as well as reviewing as-built records to ensure the long-term integrity of the landscape and cover system.

Based on the above observations, CNSC staff conclude that the geotechnical engineering and geology component of the remediation plan for the tailings areas are in accordance with engineering best practice and satisfy the requirements of the EA and CNSC regulations.

Hydrology

CNSC staff reviewed SRC's tailings remediation plan to determine whether its hydrological aspects of the remediation plan were in accordance with the requirements of engineering best practices as well as with CNSC guidance document G-320, *Assessing the Long-term Safety of Radioactive Waste Management*. Items reviewed included:

- selection of the design basis storm for surface water management
- regional and local hydrology, including characterization of surface water and groundwater quantities and qualities
- a soil cover follow-up monitoring program and maintenance program

CNSC staff conclude that:

- the selection of the 200-year design storm is acceptable to meet the design objectives for surface water management, provided that follow-up monitoring and maintenance programs are implemented
- the description and characterization of the surface water and groundwater hydrology are acceptable
- the follow-up monitoring and maintenance programs are sufficient to ensure long-term performance

CNSC staff will verify compliance by reviewing the design specifications of the surface drainage system, the detailed follow-up monitoring program, as well as the detailed soil cover maintenance program to ensure the long-term stability of the cover system.

Overall, CNSC staff are satisfied with the hydrological component of the remediation plan for the tailings areas and find that it is in accordance with engineering best practices and satisfies the requirements of the EA.

Radiation exposure

Radiological impact from the tailings can arise from wind-blown radioactive dust, inhalation of radon-222 and gamma radiation exposure. CNSC staff reviewed the inventory of the tailings that was presented in the EA, including updated gamma surveys from the Phase 1 work, along with the proposed cover design to ensure that the cover is capable of controlling all sources of radiation exposure. The cover was evaluated against best engineering practices and internationally accepted methods for decommissioning tailings sites. Such practices are well-documented in the IAEA safety standards and technical series (e.g. *Management of Radioactive Waste from the Mining and Milling of Ores*).

During their review, CNSC staff noted the following:

- SRC provided measurements of gamma radiation measured on the tailings at the site. At the Gunnar Main tailings deposit, the mean gamma radiation was 4 microsieverts/hour (μSv/h) with a maximum spot measurement of 12 microsieverts/hour (μSv/h). The proposed soil and thickness of cover are sufficient to reduce the gamma radiation below the remediation criteria of 1.0 microsieverts/hour (μSv/h) above background (averaged over one hectare surface area) and maximum spot dose of 2.5 microsieverts/hour (μSv/h) above background. Taking into account radiation from all sources at the site, the exposure due to the tailings following remediation will meet the regulatory public dose limit of 1 millisievert per year.

- With a minimum thickness of 0.6 m over the tailings surface, the proposed soil cover is expected to reduce radon gas exhalation to background levels at the ground surface.

- Covering the tailings will reduce wind-blown radioactive dust. Additional aspects to the cover design such as erosion protection will help minimize future releases of dust.

- SRC has a verification program in place to confirm protection from gamma radiation as well as radon gas and radioactive dust emissions.

- SRC must implement a quality assurance and control program for construction to ensure that the cover is constructed as per design specifications (density, thickness, and compaction).

CNSC staff reported in the 2014 Commission hearing on the Gunnar EA that project activities, especially during Phase 2, may result in increased air contaminant emissions including radon and some radioactive dust. CNSC staff stated, based on previous experience, that the impact of these emissions is very low and will not result in an adverse impact to the health and safety of persons and the environment. Monitoring of dust and radon emissions will be monitored by SRC and reported to the CNSC during remediation activities for evaluation. CNSC staff will take the necessary regulatory actions if required.

CNSC staff conclude that the thickness and composition of soil cover is sufficient to control radiation impacts including gamma radiation, radon exhalation and releases of radioactive dust. The cover is consistent with best practices for uranium mine tailings at similar sites.

2.2 Aboriginal consultation

The common law duty to consult with Aboriginal groups applies when the Crown contemplates actions that may adversely affect established or potential Aboriginal and/or treaty rights. The CNSC, as an agent of the Crown and as Canada's nuclear regulator, recognizes and understands the importance of building relationships with Canada's Aboriginal peoples. The CNSC ensures that licensing decisions under the NSCA meet these responsibilities through Aboriginal consultation activities.

For the Gunnar Remediation Project, Aboriginal consultation activities were integrated to the extent possible within the licensing review process (including the EA) and coordinated with other federal departments/agencies (Canadian Environmental Assessment Agency (CEAA), Transport Canada, Department of Fisheries and Oceans, Health Canada, Environment Canada, and Natural Resources Canada and provincial departments such as Saskatchewan Ministry of Environment. While project proponents do not bear the Crown's legal obligation to consult with Aboriginal peoples, their engagement activities with Aboriginal groups can help determine potential rights impacts and can inform the CNSC's Aboriginal consultation activities.

Since receiving a project description in 2007, CEAA, SME, and CNSC staff have conducted consultation activities with identified Aboriginal groups and organizations through various proactive activities. The following Aboriginal groups and organizations participated in the hearing process for the Gunnar EA: Fond du Lac Denesuline First Nation, Black Lake Denesuline First Nation, Uranium City Métis Local #50, and Prince Albert Grand Council. All four groups received participant funding to participate. As part of the hearing process the groups submitted written interventions and conducted oral interventions before the Commission outlining their concerns and/or interests in the project.

Since the November 6, 2014 Commission hearing, CNSC staff have continued to provide all identified Aboriginal groups with project updates and participated in consultation activities. As part of this work, staff:

- provided a copy of the Commission's Record of Proceeding, including Reasons for Decision regarding the EA and licence application decision

- participated in SRC's annual tour of Athabasca communities from March 10 to 13, 2015

- sent a letter for information regarding the Gunnar Remediation Project Phase 2 hold point release hearing and the availability of participant funding for the review of SRC's technical remediation option plans.

Furthermore, SRC has coordinated a Gunnar Remediation Project Working Group with representatives from each of the identified communities, including the Athabasca Chipewyan and Mikisew Cree First Nations who did not actively participate in the Commission hearing but continue to express an interest in the project and have asked to participate in the review of the SRC's remediation option plans.

The first working group meeting was held at the Gunnar site from June 3 to 5, 2015 and included a site familiarization tour and a workshop. As part of the workshop, SRC's chosen contractor to design the tailings cover presented their draft tailings cover plan to the community representatives, answered questions and received feedback. Community representatives also provided their input on the other site aspects including the waste rock pile, the former mine pit and shaft, as well as the onsite debris and scrap metal. As a follow-up to the June meeting, CNSC and SRC jointly organized a Gunnar Remediation Options Workshop on July 28, 2015 in Saskatoon, Saskatchewan. The goal of the workshop was to bring the community representatives together to discuss SRC's proposed remediation plans for the tailings area and other Gunnar site aspects and solicit feedback from the community representatives. The community had reviewed the plans for the tailings area and had many questions and comments about the design, the process for consultation and on the history and the role of the Gunnar site in northern communities.

The workshop was successful in meeting its intended goals. Community representatives provided valuable feedback on the tailings remediation plan directly to SRC and their engineering consultants. A number of follow-up items were identified such as the need for more information on the vegetation plan for the cover, providing meeting materials in Dene and providing more details on the cover design. SRC responded to the requests by supplying additional information and translating the presentations into Dene.

All of the identified Aboriginal groups have been awarded funding through the CNSC's Participant Funding Program (PFP) to help facilitate their participation in the workshop, as well as to review all of SRC's remediation technical option plans and submit comments to the Commission or to a designated officer of the Commission as deemed appropriate by the Commission.

Conclusion on Aboriginal consultation

Aboriginal groups with potential interest in the project were identified early in the review process; provided information about the project; given an opportunity to comment on key documents throughout Phase 1 of the Gunnar Remediation project process, including all of SRC's remediation technical option plans; and encouraged to submit comments as part of the Commission's public hearing process and to inform the Commission of any outstanding issues or related interests regarding the project.

Throughout all phases of the project, SRC and the federal and provincial governments have met with Aboriginal groups and organizations to provide information on the project, discuss the potential environmental effects, encourage participation in the regulatory review process, seek input on remedial options and request information as to how the project, as proposed, could cause adverse impacts to potential or established Aboriginal and/or treaty rights. Furthermore, participant funding was made available throughout the project review including for the Commission's public hearing on the Phase 2 hold point for remediation of the tailings area.

Should the Commission approve the tailings technical remediation option plan and release the Phase 2 licence hold point, the identified Aboriginal groups will continue to have an opportunity to submit comments to the CNSC on the technical remediation plans for the other site aspects, including the waste rock pile and the mine pit/shaft. Furthermore, during Phase 2 and 3, CNSC staff will continue to inform and engage the identified Aboriginal groups and organizations about the project activities, including the remediation activities and EA follow-up program.

Based on the information received to date, CNSC staff are not aware of any adverse impacts that the project may have on potential or established Aboriginal and/or treaty rights. No specific information has been provided by Aboriginal groups and organizations on how the project could potentially impact any potential or established Aboriginal and/or treaty rights.

CNSC staff conclude that the Aboriginal consultation activities conducted to date have been adequate and are committed to ongoing consultation with the identified Aboriginal groups.

2.3 Other consultation

As per its normal public information process, CNSC staff informed the public via the CNSC website, and other methods, that a public hearing will be held for SRC's application to remove the Gunnar Remediation Project phase 2 hold point. The tailings remediation plan was posted by SRC in July 2015 on their website for public review.

Discussion

CNSC made available up to $20,000 through its PFP to assist members of the public, Aboriginal groups, and other stakeholders in reviewing SRC's detailed remediation option plans and submitting comments to the Commission. The deadline for applications was June 19, 2015.

A Funding Review Committee (FRC), independent from and external to the CNSC, reviewed the funding applications received, and made recommendations on the allocation of funding to eligible applicants. The FRC was provided the flexibility to award funding beyond the $20,000 offered based on the quality and relevance of the applications.

Based on recommendations from the FRC, the CNSC awarded a total of $47,790.32 in participant funding to the following recipients, who are required to submit a written intervention to the Commission:

- Athabasca Chipewyan First Nation and Mikisew Cree First Nation
- Prince Albert Grand Council (representing Black Lake Denesuline First Nation, Fond-du-Lac Denesuline First Nation and Hatchet Lake Denesuline First Nation)
- Saskatchewan Environmental Society
- Métis Nation-Saskatchewan Northern Region 1 (representing Uranium City Métis Local #50, Stony Rapids Métis Local #80, and Camsell Portage Métis Local #79)

Conclusion

Based on the above information, CNSC staff have encouraged the public to participate in the Commission's public hearing. The CNSC provided assistance to interested members of the public, Aboriginal Groups, and other stakeholders, through the PFP, to prepare for and participate in the Commission's public hearing by written intervention.

2.4 CNSC oversight

CNSC staff's review of the tailings plan and all documentation to support the remediation activities for the tailings area has demonstrated that SRC will be able to remediate the Gunnar site to the applicable requirements. The tailings area remediation plan meets the objectives of the Gunnar site EA and is consistent with CNSC requirements. Regulatory oversight will be conducted through the CNSC licensing and compliance program to ensure that the remediation activities are carried out safely and effectively in accordance with CNSC regulatory requirements and that mitigation measures remain in place. Accordingly, the licensing basis documents required to carry out remediation of the tailings area have been updated in the licence conditions handbook (Attachment 3) to ensure clarity with respect to regulatory requirements imposed on SRC.

The follow-up monitoring program and quarterly reporting of the program results will be used to evaluate performance objectives. A major focus will be on measuring contaminant concentrations in bodies of water surrounding the site; an immediate reduction in contaminant loadings is expected once the tailings cover is placed.

At a minimum, the compliance activity consists of site inspection on an annual basis by CNSC staff with the most recent taking place from July 8 to 10, 2014. The site was visually assessed for controlled access, signage, overall conditions and housekeeping. CNSC staff did not identify any issues or concerns.

An inspection is scheduled for September 3, 2015, with a focus on site conditions such as the location of borrow pits that will be used for cover protection. The site will also be inspected for compliance with radiation protection, environmental protection and overall health and safety requirements. CNSC staff will update the commission on their findings in their presentation at the upcoming public hearing. The frequency of inspections will increase over the period where remediation activities take place.

CNSC staff will provide annual reporting to the Commission on the performance of the Gunnar Remediation Project as part of the Regulatory Oversight Report for Radioactive Waste in Canada.

3 OVERALL CONCLUSIONS AND RECOMMENDATIONS

3.1 Overall conclusions

CNSC staff have completed their review of the remediation plan for the tailings area at the Gunnar site and SRC's request to remove the regulatory Phase 2 hold point to allow SRC to carry out remediation activities of the tailings area. CNSC staff conclude, based on their review, that the remediation plan for the tailings area complies with CNSC regulatory requirements and meets the objectives of the environmental assessment for the Gunnar Remediation Project. CNSC staff further conclude that SRC has carried out an effective Aboriginal and public consultation program and that input from local communities is considered in the remediation plan.

In summary, CNSC staff conclude that SRC has satisfied the Commission's requirements for removal of the hold point for Phase 2 remediation activities on the tailings area.

3.2 Overall recommendations

CNSC staff recommend that the Commission consider removing the hold point in order to proceed with Phase 2 remediation activities of the tailings area at the Gunnar site. The hold point for remediation of the other site areas including waste rock, the open pit and the mine shaft should remain in place and be considered at a later date.

REFERENCES

1. Current Licence E-doc 4496683

2. *Gunnar Site Remediation Project – Tailings Remediation Plan* http://blog.src.sk.ca/download-gunnar-report/

3. Environmental Assessment E-doc 4497595 http://www.ceaa.gc.ca/050/details-eng.cfm?evaluation=30100

4. Record of Proceedings – Saskatchewan Research Council – Request for an Environmental Assessment and Licensing Decision for the Gunnar Remediation Project (Decision) http://www.nuclearsafety.gc.ca/eng/the-commission/pdf/2014-11-06-Decision-Gunnar-e-Edocs4619086.pdf

5. Erratum - Record of Proceedings – Saskatchewan Research Council – Request for an Environmental Assessment and Licensing Decision for the Gunnar Remediation Project (Decision) http://www.nuclearsafety.gc.ca/eng/the-commission/pdf/2014-11-06-Erratum-SRC-GunnarRemediationProject-e-edocs4633536.pdf

6. Licence Conditions Handbook E-doc 4668585

A. BASIS FOR THE RECOMMENDATION(S)

A.1 REGULATORY BASIS

The regulatory foundation for the recommendations presented in this CMD are based on the objectives of the Gunnar Remediation Project environmental assessment (EA) and the requirements under the *Nuclear Safety Control Act* and its associated regulations, and compliance objectives and expectations associated with the relevant SCAs.

Overall Recommendations

The regulatory foundation for the recommendation(s) associated with Staff's review of SRC's proposed licence and proposed LCH includes the following:

- *Nuclear Safety Control Act (S.C. 1997, C.9).*
- *CNSC RD/GD-370 Management of Uranium Mine Waste and Rock and Mill Tailings*
- *Canadian Environmental Assessment Act, 2012*

A.2 TECHNICAL BASIS

The technical basis for the recommendations associated with CNSC staff's review of SRC's Phase 2 remediation plan for the tailings area includes the following:

- IAEA safety standards and technical series on remediation of uranium mine waste (i.e. *Management of Radioactive Waste from the Mining and Milling of Ores, Safety Standards Series No. WS-G-1.2, 2002*).
- *IAEA Technical report series 474: Measurement and Calculation of Radon Releases from NORM residues (2013)*
- *CNSC Regulatory Guide G320: Assessing the Long Term Safety of Radioactive Waste Management (2006)*
- *Environment Canada: Guidelines for the Assessment of Alternatives for Mine Waste Disposal, (2003)*
- Engineering best practices in managing uranium mine waste. Best practices in this context include the documentation and implementation of those practices and principles that are most effective in improving the environmental performance of an operation.

4 CMD 16-H6. *Gunnar Remediation Project Hold Point*, One-Day Public Hearing, September 22, 2016. Submitted by CNSC staff (e-Doc 5043962).

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

UNPROTECTED/NON PROTÉGÉ

ORIGINAL/ORIGINAL

CMD: 16-H6

Date signed/Signé le : 20 JULY 2016

Required Approvals

Saskatchewan Research Council

Gunnar Remediation Project Hold Point

Commission Public Hearing

Scheduled for:

22 September 2016

Submitted by:

CNSC Staff

Des approbations requises

Saskatchewan Research Council

Projet de remise en état du site Gunnar

Audience publique de la Commission

Prévue pour :

Le 22 septembre 2016

Soumise par :

Le personnel de la CCSN

e-Doc 5011958 (WORD)
e-Doc 5043962(PDF)

Canada

Summary

This Commission member document (CMD) pertains to a request by Saskatchewan Research Council (SRC) to remove the regulatory hold point for Phase 2 of the Gunnar Remediation Project. Phase 2 consists of carrying out remediation activities at the Gunnar uranium mine site. In November 2015, the Commission approved the partial removal of the Phase 2 hold point allowing SRC to implement the remediation plans for the tailings area only. This CMD provides CNSC staff's evaluation of SRC's remediation plans for the remaining Gunnar site components, which are the waste rock piles, open pit, mine shaft and demolition debris.

CNSC staff's review concludes that the remediation plans for the remaining Gunnar site components are complete, meet the objectives of the Gunnar Remediation Project environmental assessment, and comply with CNSC regulatory requirements. Accordingly, CNSC staff recommend that the Commission approve SRC's request to remove the Phase 2 hold point.

The following action is requested of the Commission:

- Removal of the Gunnar Remediation Project Phase 2 hold point.

The following items are attached:

- CNSC licence and licence conditions handbook,

Résumé

Le présent Document aux commissaires (CMD) concerne une demande du Saskatchewan Research Council (SRC) concernant la levée du point d'arrêt visant la phase 2 du projet de remise en état du site Gunnar. La phase 2 consiste à exécuter des activités de remise en état au site de la mine d'uranium Gunnar. En novembre 2015, la Commission a approuvé la levée partielle du point d'arrêt visant la phase 2 du projet, permettant au SRC de mettre en œuvre les plans de remise en état uniquement pour l'aire de résidus miniers. Le CMD présente l'évaluation effectuée par le personnel de la CCSN des plans du SRC pour la remise en état du reste des composantes du site Gunnar, comprenant les amas de stériles, la fosse à ciel ouvert, le puits de mine et les débris de démolition.

Dans son évaluation, le personnel de la CCSN conclut que les plans de remise en état du reste des composantes du site Gunnar sont complets, qu'ils respectent les objectifs de l'évaluation environnementale du projet de remise en état du site Gunnar et qu'ils sont conformes aux exigences réglementaires de la CCSN. En conséquence, le personnel de la CCSN recommande à la Commission d'approuver la demande du SRC de supprimer le point d'arrêt visant la phase 2 du projet.

La Commission pourrait considérer prendre la mesure suivante :

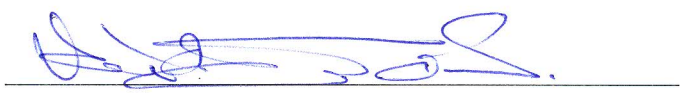
- Lever le point d'arrêt de la phase 2 du projet de remise en état du site Gunnar.

Les pièces suivantes sont jointes :

- Permis et Manuel des conditions de permis en vigueur de la CCSN,

Signed/signé le

July 20, 2016



Haidy Tadros

Director General
Directorate of Nuclear Cycle and Facilities Regulation

Directrice général
Direction de la réglementation du cycle et des installations nucléaires

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Gunnar uranium mine and mill site, located in northern Saskatchewan, is being remediated by the Saskatchewan Research Council (SRC) under a CNSC Waste Nuclear Substance Licence (WNSL). Following a public hearing held in November 6, 2014, the Commission accepted the environmental assessment report (EA Report) for SRC's Gunnar Remediation Project. The Commission concluded that the project is not likely to cause significant adverse environmental effects, taking into account mitigation measures identified in the EA Report. The CNSC issued a 10-year WNSL to SRC, valid from January 14, 2015 to November 30, 2024.

The remediation project is being implemented in three phases. Phase 1, which consisted of waste characterization activities and the development of remediation plans, was completed at the end of 2015. Phase 2 comprises the remediation of the Gunnar site's different components, which include the tailings area, waste rock piles, mine shaft, open pit and demolition debris. Phase 3 consists of post-closure care and maintenance.

The current licence includes a regulatory hold point for Phase 2 of the project. The Commission requested SRC to develop plans for remediation of the different site components and to present those plans at a public hearing with written interventions. Following a public hearing on September 30, 2015, the Commission approved the partial removal of the Phase 2 hold point allowing SRC to implement the remediation plans for the tailings area only at the Gunnar site.

SRC has applied to CNSC for removal of the remainder of the hold point. The focus is on the remediation of other site components, which include the waste rock piles, open pit, mine shaft and demolition waste. To satisfy the conditions for removal of the hold point, SRC submitted remediation plans and supporting information for all site components in August 2015. The remediation plans were updated in February 2016, in response to comments from CNSC staff, Saskatchewan Ministry of Environment and local Aboriginal communities. CNSC staff inspect the site on an annual basis. Two site visits were conducted in 2013 and 2014 respectively. An inspection is scheduled for August 16, 2016 following a site visit that took place on July 12-13, 2016.

The remediation plans include the following activities:

- For the waste rock piles: reducing the volume of waste rock by using it for the tailings cover and then grading the remaining waste rock piles to reduce the height and side slopes. The surface of the waste rock piles will be covered with locally available soil and vegetated with native plant species;
- For the open pit: reducing contaminated water flowing into the pit, and ensuring the continued pit's isolation from Lake Athabasca by maintaining the rock barrier between the pit and the lake;
- For the mine shaft: constructing an engineered cap over the vent raise, mine shaft and back raise;
- For the demolition debris: recycling of wood and metal to the extent possible and managing demolition waste in an onsite engineered landfill.

CNSC staff assessed and evaluated SRC's information submitted in support of their remediation plan. Staff conclude that the remediation plans for the remaining Gunnar site components are well supported, meet the EA's objectives and comply with CNSC regulatory requirements. Accordingly, CNSC staff recommend that the Commission accept SRC's request to remove the hold point for all Phase 2 remediation activities. CNSC staff especially support moving forward with remediation of the waste rock piles and mine shaft in particular, as they pose an eventual risk to the physical health and safety of the public. CNSC staff conclude that SRC's consultation activities with Aboriginal groups and the public about the remediation project are adequate, and that feedback from these communities form part of the remediation plans.

1 OVERVIEW

1.1 Introduction

The Gunnar Legacy Uranium Mine site (Gunnar site) is the location of a former uranium mine and mill being remediated by the Saskatchewan Research Council (SRC), under waste nuclear substance licence WNSL-W5-3151.00/2024 (Reference 1). The remediation project consists of the clean-up of mine tailings, waste rock piles, an open pit, mine shaft and demolition debris. The remediation work is being carried out in three phases: Phase 1 (now complete) involved characterizing and monitoring the onsite waste and developing remediation plans; Phase 2 consists of implementing the remediation plans; and Phase 3 consists of long-term monitoring and maintenance to ensure the site remains stable and safe.

The licence included a regulatory hold point for Phase 2 of the project. The Commission requested SRC to develop plans for remediation of the different site components and to present those plans at a public hearing with written interventions.

Following a public hearing on September 30, 2015, the *Commission in its Record of Proceedings, Including Reasons for Decision* (Reference 2) removed the Gunnar Remediation Project Phase 2 hold point specific to the remediation of the tailings area at the Gunnar site. The Commission however also concluded that *the hold point for remediation of the other site components, including waste rock, the open pit and the mine shaft, remains in place and will be considered by the Commission at a later date, where the public will be invited to participate.* (Reference 2 Record of Proceedings, Including Reasons for Decision paragraph 89).

To satisfy the conditions for the removal of the hold point SRC submitted remediation plans and supporting information for the remaining site components in August 2015 (Reference 3). The plans were updated in February 2016, in response to requests from CNSC staff, Saskatchewan Ministry of Environment and local Aboriginal communities.

CNSC staff assessed and evaluated SRC's Gunnar site remediation plans for the remaining site components to determine if the plans meet CNSC regulatory requirements and the objectives outlined in the Gunnar site environmental assessment. This Commission member document describes CNSC staff's evaluation of SRC's remediation plans and presents staff's conclusions.

1.2 Background

The Gunnar site is located approximately 600 km north of Saskatoon on the north shore of Lake Athabasca in northwest Saskatchewan (Photo 1).

Photo 1: Map showing location of Gunnar site

The Gunnar mine and mill was operated by the former Gunnar Mining Limited from 1955 to 1963 and was decommissioned in 1964. The Gunnar site consisted of open pit and underground mine workings, mining infrastructure, three mine tailings deposits covering over 70 hectares of land, and waste rock piles (Photo 2). At decommissioning, the open pit and underground workings were flooded, and the mine shaft and associated openings were plugged with concrete. The buildings at the site were demolished in 2010. The tailings, waste rock piles, and demolition debris were left behind on surface and remain to this day.

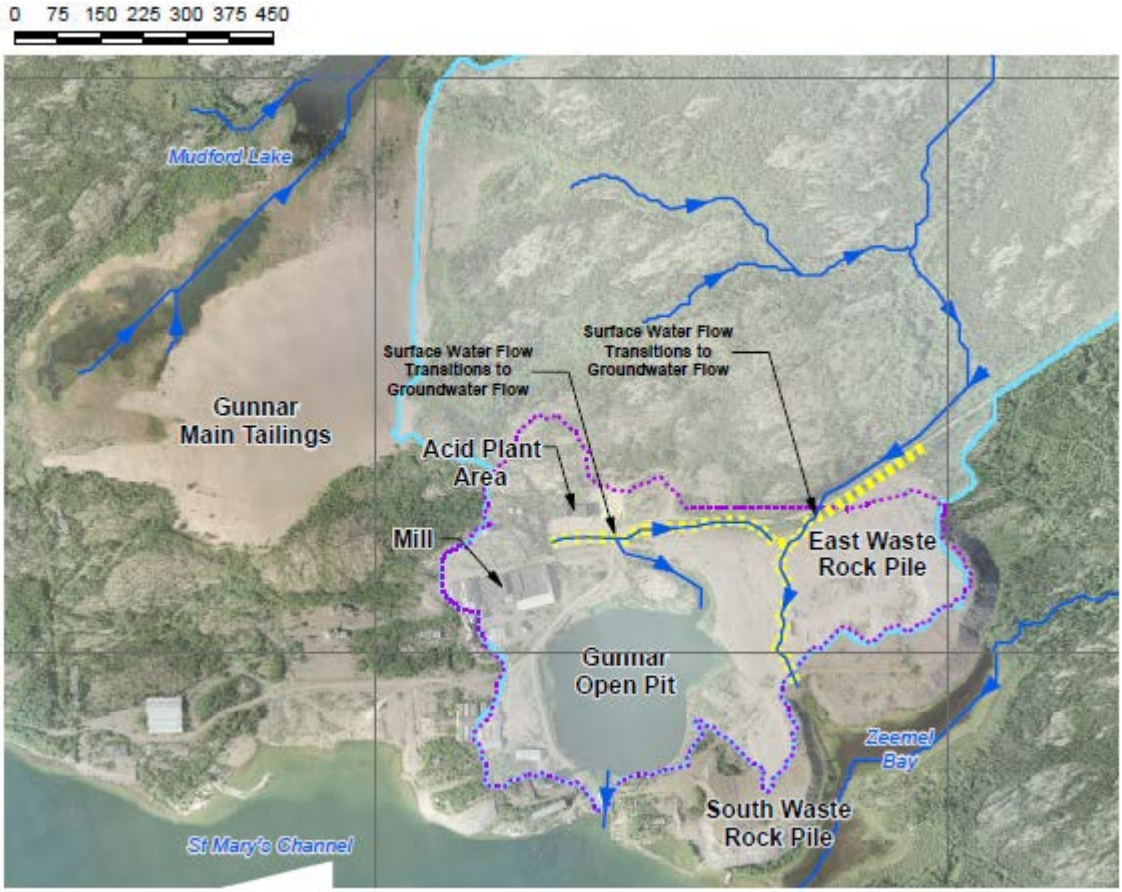


Photo 2: Overview of Gunnar site. The blue and purple lines delineate water catchment areas and the yellow line shows a buried channel.

In 2006, the Government of Saskatchewan and the Government of Canada signed a Memorandum of Agreement to address the current environmental conditions of the legacy uranium mine and mill sites in northern Saskatchewan, which includes remediation of the Gunnar mine site. A Treasury Board Crown Corporation in the Province of Saskatchewan (SRC) was assigned the responsibility to ensure that the project is carried out on behalf of the two governments. This responsibility includes preparing the environmental assessment and obtaining the required approvals to carry out the remediation work.

Environmental assessment and CNSC licence

SRC conducted an environmental assessment (EA) and in 2014 (Reference 4), applied for a CNSC licence to remediate the Gunnar mine site. The Commission was the sole responsible authority (RA) for the EA. Other government departments provided expert assistance to CNSC staff during the EA in their role as federal authorities. The proposed project was also designated under the Saskatchewan Environmental Assessment Act (SEAA) with the EA Report reviewed and approved by Saskatchewan Ministry of the Environment (SME).

The EA and associated risk assessment concluded that although the current site has measurable impacts on both the aquatic and terrestrial environment, effects are localized and are not evident in the higher levels of the food chain. Based on current site use, radiation doses to members of the public are below the regulatory dose limit. Therefore future remedial efforts at the site focus on stabilizing the tailings and waste rock piles and isolating them from the environment and general cleanup of the demolition debris onsite. The EA presented preliminary options for remediation of site components, however additional characterization work was needed to enable SRC to decide on a specific remediation path forward and develop design plans.

A CNSC public hearing was held in November, 2014 on the EA Report and SRC's licence application. The Commission concluded that the proposed project is not likely to cause significant adverse environmental effects, taking into account mitigation measures identified in the EA Report (Reference 5, 6). In making its decision, the Commission considered information and submissions from SRC, written and oral interventions, as well as CNSC staff recommendations. The Commission issued SRC a Waste Nuclear Substance Licence (WNSL-W5-3151.00/2024) for the Gunnar Remediation Project (Reference 1). The licence is valid from January 14, 2015 to November 30, 2024. To ensure compliance with CNSC safety and control areas (SCAs), the November 2014 hearing also focused on CNSC staff's review and acceptance of all programs SRC submitted applicable to CNSC SCAs.

Licence hold point

The licence includes a regulatory hold point for Phase 2 of the project. The Commission requested that SRC present plans for remediation of the site (the tailings area, the waste rock, the open pit and the mine shaft) at a public hearing and that Aboriginal communities and the public have the opportunity to review and comment on those plans.

In November 2015, the Commission approved the partial removal of the Phase 2 hold point allowing SRC to implement the remediation plans for the tailings. SRC has submitted plans for the remaining Gunnar site remediation activities, which include remediation of the waste rock piles, open pit, mine shaft and demolition debris (Reference 3) and this is the focus of the current CMD.

Current status of Gunnar Remediation Project

The remediation work is being carried out in three phases:

- Phase 1 (now complete) involved characterizing and monitoring the onsite waste and developing remediation plans;
- Phase 2 consists of implementing the remediation plans which include the remediation of the tailings, waste rock, open pit, mine shaft and demolition debris; and,
- Phase 3 consists of long-term monitoring and maintenance to ensure the site remains stable and safe.

SRC submitted remediation plans for the waste rock piles, open pit, mine shaft and demolition debris to CNSC staff on August 15, 2015. CNSC staff requested additional information and responded to SRC on February 15, 2016 that the preliminary plans for the site met CNSC regulatory requirements and that staff will review the detailed engineering plans prior to construction work to ensure that all requirements continue to be met. CNSC staff had several detailed comments related to erosion of cover materials and construction practices that SRC indicated would be addressed once a contractor is selected for the remediation work; this was acceptable to CNSC staff.

CNSC staff have continued to review all program updates for each safety and control area to ensure that SRC has the proper procedures and programs in place to carry out Phase 2 activities and that they are undertaken safely in accordance with the *Nuclear Safety and Control Act* (NSCA) and associated regulations.

CNSC, SME and SRC have been actively communicating with residents of the Athabasca region concerning the remediation plans for the Gunnar site. Communication with Aboriginal groups and the public consisted of public meetings, CNSC staff presentations, SRC-led Athabasca community tours, letters, e-mails and phone calls at key points in the process. CNSC also provided the opportunity for interested stakeholders to apply for participant funding for the review of SRC's Phase 2 remediation plans. A total of $47,790.32 in participant funding was awarded in 2015. Sections 2.2 and 2.3 of the CMD provide more information on the sufficiency of consultation and the participant funding for this project.

1.3 Highlights

The Commission issued SRC a licence for the Gunnar Remediation Project in January 2015 for a period of 10 years. The licence includes a regulatory hold point that requires SRC to receive approval from the Commission before proceeding with Phase 2 of the project. After a hearing held in September 2015, the Commission removed the hold point pertaining to the remediation of the tailings at the Gunnar site.

In the *2014 Record of Proceedings, Including Reasons for Decision* (References 5,6) the Commission requested that member of the public, Aboriginal groups and other stakeholders have an opportunity to comment on the remediation plans prior to approval for implementation of the plans.

In the *2015 Record of Proceedings, Including Reasons for Decision* (Reference 2) the Commission however also concluded that *the hold point for remediation of the other site components, including waste rock, the open pit and the mine shaft, remains in place and will be considered by the Commission at a later date, where the public will be invited to participate*.

SRC has applied to the CNSC for removal of the remainder of the hold point pertaining to the remediation of other site components, which include the waste rock piles, the open pit, the mine shaft and demolition waste. To that end, CNSC staff have carried out the following activities since the 2015 Record of Proceedings including Reason for Decision (Reference 2) on the Gunnar Remediation Project was released:

- reviewed SRC's remediation plans for the site and provided the conclusions in the current CMD;
- awarded participant funding for review of the remediation plans;
- continued to verify compliance with the licence by reviewing the results of programs referenced in the licence conditions handbook (Reference 7) and by conducting site inspections;
- reviewed and accepted EA follow-up items, along with other federal authorities including Environment and Climate Change Canada;
- communicated with SME on provincial requirements for the project and technical evaluation of remediation plans;
- provided an opportunity for interested Aboriginal groups to review SRC's detailed engineering and remediation design plans;
- completed a conformity review of SRC's engineering plans for the tailings cover and submitted comments to SRC.

CNSC staff have completed their review of SRC's remediation plans for the Gunnar site in support of the removal of the Phase 2 hold point. CNSC staff conclude, based on their review, that the remediation plans for the site comply with CNSC regulatory requirements and meet the objectives of the environmental assessment for the Gunnar Remediation Project.

2 MATTERS FOR CONSIDERATION

This Commission member document pertains to a request by SRC to remove the regulatory hold point for Phase 2 of the Gunnar Remediation Project. This section presents:

- CNSC staff's technical evaluation of the remediation plans;
- Aboriginal and public consultation for the remediation plans;
- SRC's compliance with the NSCA and associated regulations and performance in 2013-2016.

2.1 Technical evaluation of remediation plan for Gunnar site

The following sections provide the results of CNSC staff's evaluation of SRC's remediation plans for the waste rock piles, the open pit, mine shaft and demolition debris at the Gunnar site.

The Commission approved SRC to carry out remediation of the tailings area in November 2015 and therefore the tailings area is not included in this evaluation (Reference 2). Briefly, the tailings remediation plan consists of the construction of an engineered soil cover on the tailings area at the Gunnar site, which totals about 70 hectares. A layer of waste rock (generated during commercial operation of the Gunnar mine and currently on-site) will be placed on the tailings to create a stable surface. Then, locally available soil and/or rock (known as 'borrow material') will be placed on top of the stabilized surface and contoured into the local natural landscape. SRC has completed the bidding process for selection of the contractor to remediate the tailings area at the site.

General description of objectives and clean-up plan

The purpose of the Gunnar Project is to remediate the Gunnar site to a safe and stable state and, to the extent practicable, restore the environment including land, water, air, fish and wildlife. The EA defines the following specific objectives for the clean-up of the Gunnar site:

- eliminate conventional hazards for public safety;
- mitigate contaminant source areas to Lake Athabasca;
- reduce radiation exposure to the public to below regulatory dose limits and as low as reasonable achievable;
- contain and stabilize mine waste;
- landscape to conform with natural surroundings and future use of site;
- provide long-term protection of the public and environment.

The remediation plan for the waste rock piles consists of reducing the volume of waste rock by using it as tailings cover, grading the remaining waste rock piles to reduce the height and steep slopes and then placing a 0.5 m soil cover that will be vegetated with native plant species. The remediation plan for the open pit consists of reducing contaminated water flowing into the pit and ensuring the continued isolation of the pit from Lake Athabasca by maintaining the rock barrier between the pit and the lake. The remediation plan for the mine shaft is to construct an engineered cap over the vent raise, mine shaft and back raise. The plans were designed to address the EA objectives while also incorporating input from local communities regarding public expectations for the site. The long term plan for the site is to transfer control to the Province of Saskatchewan and have the site managed through the established provincial institutional controls program.

The Gunnar site also has demolition debris such as wood, old pipes and equipment scattered around the site. Although the Commission has not requested the plans for demolition debris to be part of a public hearing, management of the debris is included in this CMD as clean up of the debris will have a positive impact on improving safety of the site along with general aesthetics. CNSC staff have reviewed all plans for management of the demolition debris along with SME and have found the plans to be acceptable. Part of the debris will be recycled and shipped offsite, and the rest will be consolidated and placed into an onsite landfill that meets provincial requirements.

CNSC staff's evaluation focused on geotechnical engineering and geology, surface water hydrology, contaminant transport and geochemistry, and radiation exposure. Staff evaluated the remediation plans for the site against the objectives outlined in the EA, and for compliance with CNSC standards and regulations as well as good engineering practices for similar legacy mine sites. All technical reviews considered the importance of long-term performance which is described in CNSC guidance document G-320, *Assessing the Long-term Safety of Radioactive Waste Management*. A list of standards, regulations and international documents used as the basis for CNSC staff review can be found in Appendix A.

SME has also carried out a technical review of the remediation plans for the Gunnar site. SME found the plans acceptable and will grant the necessary provincial approvals for the remediation work. CNSC staff correspond regularly with SME on these provincial level approvals as well as on technical evaluations of the remediation work. CNSC and SME also work on establishing maintenance and monitoring objectives for the Gunnar site to ensure that the site will remain safe in the long-term.

Geotechnical engineering and geology

CNSC staff reviewed SRC's remediation plans to determine whether the geotechnical aspects of the plan were in accordance with the requirements of good engineering practices for similar sites, as well as with CNSC guidance document G-320, *Assessing the Long-term Safety of Radioactive Waste Management.* Items reviewed included cover design for waste rock piles and long-term geotechnical stability. In support of the review, a CNSC geotechnical engineer from the Environmental Risk Assessment Division travelled to the site and held discussions with SRC's consultants.

CNSC staff verified that:

- appropriate tests are carried out on the locally available soils intended to be used as cover material by SRC to assure that the suitable material is identified;
- the proposed landscape and cover design are in accordance with good engineering practices and satisfy regulatory requirements;
- the proposed engineered caps for the vent raise, mine shaft and back raise are in accordance with good engineering practices and would be robust enough to secure the openings;
- the proposed landscape slope for the waste rock piles will be geotechnically stable; and,
- the open pit rock walls will remain stable and the overburden materials along the perimeter of the open pit will be monitored during remediation activities to ensure their stability.

CNSC staff will continue to verify compliance by reviewing the final detailed design specifications and the construction plans as well as reviewing as-built records and conducting inspections to ensure the long-term integrity of the covers and mine opening seals.

Based on the above, CNSC staff conclude that the geotechnical engineering and geology component of the remediation plans are in accordance with good engineering practices and satisfy the requirements of the EA and CNSC regulations.

Hydrology

CNSC staff reviewed SRC's remediation plans to determine whether its hydrological aspects were in accordance with the requirements of good engineering practices as well as with CNSC guidance document G-320, *Assessing the Long-term Safety of Radioactive Waste Management*. In support of the review, a CNSC hydrologist from the Environmental Risk Assessment Division travelled to the site and held discussions with SRC's consultants. CNSC staff verified the following items:

- selection of the design basis storm for surface water management;
- regional and local hydrology, including characterization of surface water and groundwater quantities and qualities; and,
- a soil cover monitoring program and maintenance program.

CNSC staff concluded that:

- the selection of the 200-year design storm is acceptable to meet the design objectives for surface water management, provided that monitoring and maintenance programs are implemented;
- the description and characterization of the surface water and groundwater hydrology are acceptable; and
- the monitoring and maintenance programs are sufficient to ensure long-term performance.

CNSC staff will continue to verify compliance by reviewing the design specifications of the surface drainage system, the detailed monitoring program, as well as the detailed soil cover maintenance program to ensure the long-term stability of the cover system. In addition, CNSC staff will verify that surface water drainage is functioning according to design during CNSC staff onsite inspections.

Overall, CNSC staff are satisfied with the hydrological component of the remediation plans and find that it is in accordance with good engineering practice and satisfies the requirements of the EA.

Contaminant transport and geochemistry

CNSC staff reviewed SRC's contaminant transport and geochemical calculations to verify that contaminant loadings to Lake Athabasca and the open pit will be reduced by covering and isolating waste rock and by controlling surface water flow paths. Items reviewed included source term concentrations and geochemistry and contaminant transport calculations. In support of the review, a CNSC engineer from the Wastes and Decommissioning Division travelled to the site and held discussions with SRC's consultants.

CNSC staff verified that:

- the waste rock source term and contaminant migration paths are adequately described to support modelling predictions;
- ground-water and surface water interactions with nearby streams and lakes have been incorporated into contaminant transport predictions;
- the selected values of geochemical parameters used in the contaminant transport calculations are justified and the method for predicting future contaminant concentrations in the environment uses a conservative bounding approach;
- the landfill to contain demolition waste has engineered barriers to limit contaminant migration and meets provincial requirements;
- the principles of reduce, re-use, and recycle for the management of demolition waste are being followed and will reduce potential contamination from this waste (e.g. lead in painted wood is being managed in accordance with provincial requirements)
- the diversion of surface waters will result in a reduced contaminant loading into the open pit and over time the water quality is expected to improve; and
- the mitigation of source terms will result in a reduction of contaminant loadings to Lake Athabasca.

CNSC staff will continue to verify compliance by reviewing environmental monitoring data over time and the results of the waste rock verification program. CNSC will continue to communicate with SME regarding provincial approvals for the onsite landfill. During inspections, CNSC staff will verify the locations and methods for water quality monitoring. CNSC staff will take water samples onsite to verify the licensee's measurements as per CNSC routine compliance inspections.

Based on the above, CNSC staff conclude that SRC has demonstrated the geochemistry and contaminant transport calculations are conservative, use direct field measurement results and demonstrate that the remediation plans will results in surface water concentrations being reduced at the site to below EA objectives.

Radiation exposure

Radiation exposure from the waste rock piles is governed by gamma radiation and radon gas. The remediation performance criteria for gamma radiation was established as part of the EA and is 1.14 microsieverts per hour (μSv/h) (1 μSv/h above background, where background is 0.14 μSv/h). The EA objective for radon gas was to ensure that radon gas measurements were within the range of background values for the site and surrounding area. CNSC staff reviewed the waste rock characterization results and gamma surveys from the Phase 1 work, along with the proposed design to ensure that the cover is capable of controlling all sources of radiological exposure. The cover was evaluated against internationally accepted methods for decommissioning mine sites. Such practices are well-documented in the IAEA safety standards and technical series (e.g. *Management of Radioactive Waste from the Mining and Milling of Ores*). In support of the review, a CNSC engineer from the Wastes and Decommissioning Division travelled to the site and held discussions with SRC's consultants.

CNSC staff noted the following:

- The average gamma measurements of 1.29 and 1.83 microsieverts per hour (μSv/h) for the south and east waste rock piles respectively are above the remediation objective of 1.14 μSv/h;
- As a remediation measure, the proposed soil and thickness of 0.5 m for the waste rock cover soil is sufficient to reduce gamma and radon exhalation to meet the remediation criteria of 1.14 μSv/h;
- Doses to the public are currently below regulatory limits and will be further reduced following remediation;
- SRC has identified some additional areas at the site with elevated radiological measurements such as the mill yard (average of 2.47 μSv/h) and will cover those areas with at least 0.5 m of cover soil material; and
- Independent modelling by CNSC staff confirmed that radon flux will be reduced to levels at or below background.

CNSC staff will continue to verify the reduction in radiological exposure by taking independent measurements of radiological conditions during site inspections and by reviewing updated gamma and radon measurements after the work is complete.

CNSC staff conclude that the thickness and composition of soil cover is sufficient to control radiological impacts including gamma radiation and radon exhalation from the waste rock piles and other identified contaminated areas on the site.

2.2 Aboriginal consultation

Aboriginal consultation activities were integrated to the extent possible within the licensing review process (including the environmental assessment) and coordinated with other federal departments/agencies (Canadian Environmental Assessment Agency (CEAA), Transport Canada, Department of Fisheries and Oceans, Health Canada, Environment Canada, and Natural Resources Canada) and provincial ministries such as SME. While project proponents do not bear the Crown's legal obligation to consult with Aboriginal peoples, their engagement activities with Aboriginal groups can help determine potential rights impacts and can inform the CNSC's Aboriginal consultation activities.

Since receiving a project description in 2007, CEAA, SME, and CNSC staff have conducted consultation activities with identified Aboriginal groups and organizations through various proactive activities. The following Aboriginal groups and organizations submitted comments to the Commission as part of the public hearing held on September 30, 2015 for the Gunnar Phase 2 hold point as it pertained to the remediation of the tailings area at the Gunnar site: Fond du Lac Denesuline First Nation, Prince Albert Grand Council (representing Black Lake, Fond du Lac and Hatchet Lake Denesuline First Nations), Athabasca Chipewyan First Nation and the Metis Nation-Saskatchewan Northern Region #1.

Since the September 30, 2015 Commission hearing, CNSC staff have continued to provide all identified Aboriginal groups with project updates and participated in consultation activities. As part of this work, staff:

- provided a copy of the Commission's Record of Proceeding, including Reasons for Decision regarding the Phase 2 licence hold point decision for the tailings area remediation plan;
- participated in SRC's annual tour of northern Saskatchewan communities from November 30 to December 4, 2015; and,
- organized and presented at a CNSC and SRC joint workshop for Aboriginal community representatives and interested stakeholders held in Saskatoon, Saskatchewan on April 26, 2016.

The workshop held on April 26, 2016 in Saskatoon, Saskatchewan was a follow-up to the previous Gunnar Remediation Workshops held in June and July 2015. The goal of this particular workshop was to bring the Aboriginal community representatives together to discuss SRC's proposed remediation plans for the remaining site components and solicit feedback. CNSC staff, SRC, and a representative from SME provided presentations and updates regarding the Gunnar site.

The Aboriginal community representatives asked a number of questions to SRC, their engineering consultants, CNSC and the province of Saskatchewan. Comments from workshop participants included:

- the need for local communities to be trained on environmental monitoring and be involved in monitoring and maintenance of the Gunnar site in the future, after remediation activities are complete;
- the desire to see the site returned to a more natural state, including moving the waste rock and other materials into the former mine pit to reduce the amount of unnatural land forms on the surface;
- the need for SRC and CNSC to consider traditional knowledge and feedback from Elders;
- the level of radium and uranium found in waterways and bays on and around the Gunnar site;
- the desire for the mine pit water to be drained, treated and dealt with appropriately; and,
- the need for long term funding to be in place for communities to conduct regional environmental monitoring.

In response, SRC has committed to addressing a number of the concerns raised including the establishment of community environmental monitors, to contour the waste rock piles and revegetate the landscape into a more natural state, to continue to seek and include traditional knowledge and feedback from Elders to inform remediation activities and monitoring, and to ensure that interested communities are involved in the long term monitoring of the Gunnar site and the local region.

The workshop was successful in meeting its intended goals. Community representatives provided valuable feedback on the Gunnar remediation plans directly to SRC and their engineering consultants. SRC and CNSC were able to answer questions regarding the remediation plans and discuss next steps in the regulatory review process.

CNSC's Participant Funding Program (PFP) was used to facilitate the workshop and this funding was in addition to the funding that was previously awarded to the identified Aboriginal groups to review SRC's remediation plans.

Conclusion on Aboriginal consultation

Aboriginal groups with potential interest in the project were identified early in the review process; provided information about the project; given an opportunity to comment on key documents throughout Phase 1 and 2 of the Gunnar Remediation project process, including all of SRC's remediation technical option plans; and encouraged to submit comments as part of the Commission's public hearing process and to inform the Commission of any outstanding issues or related interests regarding the project.

Throughout all phases of the project, SRC and the federal and provincial governments have met with Aboriginal groups and organizations to provide information on the project, discuss the potential environmental effects, encourage participation in the regulatory review process, seek input on remedial options and request information as to how the project could cause adverse impacts to potential or established Aboriginal and/or treaty rights. Furthermore, participant funding was made available throughout

the project review including for the Commission's public hearings in September 2015, on the Phase 2 hold point.

In conclusion, the objective of the project is to remediate the Gunnar site and improve the environment to ensure the protection of local communities and traditional land use in the vicinity of the site. Based on the information received to date, CNSC staff are not aware of any adverse impacts that the project may have on potential or established Aboriginal and/or treaty rights. Furthermore, the Aboriginal consultation activities conducted to date have been adequate and CNSC staff and the SRC are committed to ongoing consultation with the identified Aboriginal groups throughout Phases 2 and 3 of the project, including on-going environmental monitoring activities and regular community updates.

CNSC staff conclude that the Aboriginal consultation activities conducted to date have been adequate and are committed to ongoing consultation with the identified Aboriginal groups.

2.3 Other consultation

As per CNSC's normal public information process, CNSC staff informed the public via the CNSC website, and other methods, that a public hearing will be held for SRC's application to remove the Gunnar Remediation Project Phase 2 hold point. The remediation plans for the remaining site components was posted by SRC in August 2015 on their website for public review and the plans were updated in February 2016 incorporating comments from CNSC staff, SME and public input.

Discussion

CNSC made available up to $20,000 through its PFP to assist members of the public, Aboriginal groups, and other stakeholders in reviewing all of SRC's remediation plans and participation in all aspects of SRC's request to proceed with remediation activities thereby removing the Phase 2 licence hold point. The deadline for applications was June 19, 2015.

A Funding Review Committee (FRC), independent from and external to the CNSC, reviewed the funding applications received, and made recommendations on the allocation of funding to eligible applicants. The FRC was provided the flexibility to award funding beyond the $20,000 offered based on the quality and relevance of the applications.

Based on recommendations from the FRC, CNSC awarded a total of $47,790.32 for review of all Phase 2 remediation plans in participant funding to the following recipients, who are required to submit a written intervention to the Commission:

- Athabasca Chipewyan First Nation;
- Prince Albert Grand Council (representing Black Lake Denesuline First Nation, Fond du Lac Denesuline First Nation and Hatchet Lake Denesuline First Nation);

- Saskatchewan Environmental Society; and
- Métis Nation-Saskatchewan Northern Region 1 (representing Uranium City Métis Local #50, Stony Rapids Métis Local #80, and Camsell Portage Métis Local #79).

Conclusion

Based on the above information, CNSC staff have encouraged the public to participate in the Commission's public hearing. CNSC provided assistance to interested members of the public, Aboriginal Groups, and other stakeholders, through the PFP, to prepare for and participate in the Commission's public hearing by written intervention.

2.4 CNSC oversight

CNSC staff's assessment and evaluation of the documentation to support the remediation activities conclude that SRC will be able to remediate the Gunnar site to the applicable requirements and meet the objectives of the Gunnar site EA. Regulatory oversight will continue through the CNSC licensing and compliance programs to ensure that the remediation activities are carried out safely and effectively and are in accordance with CNSC regulatory requirements.

Accordingly, the licensing basis documents required for all Phase 2 activities have been updated in the licence conditions handbook (Reference 7) to ensure clarity with respect to regulatory requirements imposed on SRC.

The EA follow-up monitoring program and quarterly reporting of the program results will be used to evaluate performance objectives. A major focus will be on measuring contaminant concentrations in bodies of water surrounding the site; an immediate reduction in contaminant loadings is expected once soil covers are placed on the tailings and waste rock piles.

CNSC staff inspect the site on an annual basis. Two site visits were conducted in 2013 and 2014 respectively. In 2015, CNSC staff were unable to travel to the Gunnar site for inspection due to weather limitations, however SME shared their 2015 inspection reports with CNSC staff. An inspection is scheduled for August 16, 2016 following a site visit that took place on July 12-13, 2016. The August 16, 2016 inspection will have a specific focus on surface water management, fire protection and emergency preparedness. CNSC staff will update the Commission on their inspection findings in their presentation at the September public hearing. The frequency of inspections will increase over the period where remediation activities take place.

CNSC staff will provide annual reporting to the Commission on the performance of the Gunnar Remediation Project as part of the Regulatory Oversight Report for Uranium Mine, Mill, Historic and Decommissioned Sites.

3 OVERALL CONCLUSIONS AND RECOMMENDATIONS

3.1 Overall conclusions

CNSC staff have completed their review of SRC's remediation plans for the remaining components at the Gunnar site in support of SRC's request to remove the Phase 2 regulatory hold point. Based on CNSC staff review, staff have concluded that the remediation plans for the remaining Gunnar site components is complete, meets the objectives of the Gunnar Remediation Project environmental assessment, and complies with CNSC regulatory requirements. CNSC staff further conclude that SRC has carried out an effective Aboriginal and public consultation program and that input from local communities is considered in the remediation plan. In summary, CNSC staff conclude that SRC has satisfied the Commission's requirements for removal of the hold point for Phase 2 remediation activities.

3.2 Overall recommendations

CNSC staff recommend that the Commission approve SRC's request to remove the Phase 2 hold point and allow SRC to proceed with the remaining remediation activities at the Gunnar site.

REFERENCES

[1] Current Licence, dated January 2015 E-doc 4496683

[2] CNSC Record of Proceedings – Saskatchewan Research Council – Request for Partial Removal of a Hold Point for the Gunnar Remediation Project (Decision), dated November 2015 E-doc 4890573

[3] SRC Gunnar Site Remediation Project Other site aspects preliminary design submission, dated August 2015, E-doc 4819866

[4] Environmental Assessment Report for the Proposed Gunnar Remediation Project in Northern Saskatchewan, Saskatchewan Research Council, dated August 2014 E-doc 4497595 http://www.ceaa.gc.ca/050/details-eng.cfm?evaluation=30100

[5] CNSC Record of Proceedings – Saskatchewan Research Council – Request for an Environmental Assessment and Licensing Decision for the Gunnar Remediation Project (Decision), dated January 14, 2015, E-doc 4619086.

[6] CNSC Erratum - Record of Proceedings – Saskatchewan Research Council – Request for an Environmental Assessment and Licensing Decision for the Gunnar Remediation Project (Decision),dated February 2, 2015, E-doc 4633563

[7] CNSC Licence Conditions Handbook, dated January 2016 E-doc 4832476

A. BASIS FOR THE RECOMMENDATION(S)

A.1 REGULATORY BASIS

The regulatory foundation for the recommendations presented in this CMD are based on the objectives of the Gunnar Remediation Project environmental assessment (EA) and the requirements under the *Nuclear Safety Control Act* and its associated regulations, and compliance objectives and expectations associated with the relevant SCAs.

Overall Recommendations

The regulatory foundation for the recommendation(s) associated with Staff's review of SRC's proposed licence and proposed LCH includes the following:

- *Nuclear Safety Control Act (S.C. 1997, C.9);*
- *CNSC RD/GD-370 Management of Uranium Mine Waste and Rock and Mill Tailings;*
- *Canadian Environmental Assessment Act, 2012.*

A.2 TECHNICAL BASIS

The technical basis for the recommendations associated with CNSC staff's review of SRC's Phase 2 remediation plan for the tailings area includes the following:

- IAEA safety standards and technical series on remediation of uranium mine waste (i.e. *Management of Radioactive Waste from the Mining and Milling of Ores, Safety Standards Series No. WS-G-1.2, 2002*);
- *IAEA Technical report series 474: Measurement and Calculation of Radon Releases from NORM residues (2013);*
- *CNSC Regulatory Guide G320: Assessing the Long Term Safety of Radioactive Waste Management (2006);*
- *Environment Canada: Guidelines for the Assessment of Alternatives for Mine Waste Disposal, (2003);*
- Adequate and/or good engineering practice: In addition to following engineering codes and standards, some tools elemental to adequate and/or good engineering practices are the establishment of an environmental baseline, the characterization of tailings and waste rock, the use of dam safety manuals and audits, as well as applying planning for closure from the outset.

5 CNSC Memorandum (Internal) *Saskatchewan Research Council's Request for Approval of the Detailed Plans for Part of the Tailings Remediation Activities*, July 7, 2017 (e-Doc 5287909).

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

MEMORANDUM NOTE DE SERVICE

To	Haidy Tadros, Director General DNCFR	Security Classification – Classification de sécurité: Unclassified	
A	Karine Glenn, Director WDD	e-Doc number / ccm number: 5287909	
From **De**	Matthew Herod, Project Officer, WDD MH	Your File – Votre référence	
		Date: July 7, 2017	Tel. No. – N° de tél.: 613-995-7541

Subject **Objet** **Saskatchewan Research Council's request for approval of the detailed plans for part of the tailings remediation activities**

ISSUE/QUESTION

Request for approval by SRC of the detailed design plans for part of the remediation activities for the Gunnar site tailings area

PURPOSE/OBJECTIF

Approval of the detailed plans allowing SRC to proceed with grading of the Gunnar site Main Tailings area as delegated by the Commission under Commission Record of Proceedings Request for the Partial Removal of a Hold Point for the Gunnar Remediation Project (Section 2-10) [1].

1.0 INTRODUCTION

The Commission issued SRC a Waste Nuclear Substance Licence (WNSL) for the Project, which is located at the Gunnar Legacy Uranium Mine Site (Gunnar site) in Northern Saskatchewan in January 2015 [2]. The current operating licence, WNSL-W5-3151.00/2024, expires on November 30, 2024. Following a hearing held in September 2016, the Commission granted approval to SRC to implement the remediation plans for the tailings area at the Gunnar site [2]. The Commission required that SRC submit and obtain approval for the detailed design plans for the tailings area prior to carrying out the remediation activities and delegated this approval to the Director General of the Directorate of Nuclear Cycle and Facilities Regulation (DG DNCFR) or the Executive Vice-President and Chief Regulatory Operations Officer.

SRC has submitted a request for approval of the detailed plans to grade the Gunnar main tailings and manage associated water. SRC has submitted the detailed design documents to support the request and CNSC staff's review of this documentation is outlined below [3, 4]. Other activities within the tailings remediation plan remain on-hold pending SRC's response to CNSC's comments on the detailed design plans for the rest of the remediation of the tailings area and will be the subject of a future CNSC approval.

2.0 REVIEW OF APPLICATION TO BEGIN GUNNAR TAILINGS REMEDIATION ACTIVITES

2.1 Description of the Request

SRC has requested approval of the detailed plans to grade the Gunnar Main Tailings area as required under the Commission Record of Proceedings Request for the Partial Removal of a Hold Point for the Gunnar Remediation Project (Section 2-10) [1]. The purpose of the grading is to create a water-shedding landform to eliminate standing bodies of water on the Gunnar Main Tailings area. This work entails:

- clearing and grubbing of vegetation that currently cover the tailings area;
- grading the Gunnar Main Tailings area to create a water-shedding landform with positive surface drainage to eliminate standing bodies of water on the landform; and
- using the northern outlet for drainage which is consistent with the environmental assessment.

SRC has submitted the supported detailed design information related to these activities. SRC has received the required permits from the Saskatchewan Ministry of Environment for the approval of this work, including the water management, and has workers and equipment on site ready to proceed with the above activities pending CNSC's approval.

2.2 CNSC Staff Assessment of the Application

CNSC staff have completed a review and assessment of the request by SRC. CNSC staff confirm that the proposed work is consistent with the remediation plans approved by the Commission, and the detailed design plans meet the CNSC criteria outlined in related sections of the LCH as well as engineering best practice [5]. CNSC staff further confirm that the work poses very low risk to workers and the environment and all necessary procedures and plans to carry out the work safely are in place. Based on their review, CNSC staff conclude that there is also very low potential for workers to receive a radiation dose while conducting this work, however, a robust RP program that has been reviewed by CNSC staff remains in place to ensure ALARA and that doses are monitored.

CNSC staff are of the opinion that SRC is qualified to carry on the various licensed activities, and that SRC has made adequate provision for the protection of the environment, the health and safety of persons.

3.0 CONCLUSIONS

CNSC staff have concluded that:

- The detailed plans are consistent with the remediation plans approved by the Commission;
- SRC is qualified to carry out the activities of grading the Gunnar Main Tailings area and manage associated water which are authorized by the waste nuclear substance licence WNSL-W5-3151.00/2024; and
- SRC will, in carrying out those activities, make adequate provision for the protection of the health and safety of persons, the environment and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

4.0 RECOMMENDATION

CNSC staff recommend that the DG DNCFR, as delegated by the Commission:

a) accept CNSC staff conclusions; and

b) approve the detailed plan to grade the Gunnar Main Tailings and manage associated water.

References:

[1] Commission Record of Proceedings Request for the Partial Removal of a Hold Point for the Gunnar Remediation Project (September 30, 2015) e-Doc 4890573

[2] Waste Nuclear Substance Licence Saskatchewan Research Council Gunnar Legacy Uranium Mine Site, WNSL-W5-3151.00/2024, e-Doc 4496683

[3] Gunnar Tailings Remediation Detailed Design Report-Final, e-Doc 5167802

[4] Gunnar Main Tailings Grading Summary, e-Doc 5284214

[5] ERAD review of Gunnar tailings remediation detailed design (March 30, 2017) e-Doc 5190207

6 CNSC Memorandum (Internal) *Saskatchewan Research Council's Request for Approval of the Detailed Plans for the Other Site Aspects Remediation Activities*, March 13, 2020 (e-Doc 6041290).

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MEMORANDUM **NOTE DE SERVICE**

To	Haidy Tadros, Director General DNCFR	Security Classification – Classification de sécurité: Unclassified	
A	Peter Fundarek, Director, UMMD	e-Doc number: 6041290	
From **De**	Dana Pandolfi, Project Officer, UMMD	Your File – Votre référence: 2.05	
		Date: March 13, 2020	Tel. No. – N° de tél.: 613-996-7310

Subject **Objet** **Saskatchewan Research Council's request for approval of the detailed plans for the other site aspects remediation activities**

ISSUE

Request by Saskatchewan Research Council (SRC) for approval of the detailed design plans for the other aspects remediation activities at the Gunnar site.

PURPOSE

Approval of the detailed remediation plans, allowing SRC to proceed with work on the Gunnar site other site aspects work as delegated by the Commission under Commission Record of Proceedings Request for the Removal of a Hold Point for Phase 2 of the Gunnar Remediation Project (Section 2-9) [1,2].

1.0 INTRODUCTION

The Commission issued to SRC a Waste Nuclear Substance Licence (WNSL) for the project, which is located at the Gunnar Legacy Uranium Mine Site (Gunnar site) in Northern Saskatchewan in January 2015 [1]. The current operating licence, WNSL-W5-3151.00/2024, expires on November 30, 2024 [3]. Following a hearing held in September 2016, the Commission removed the hold point for Phase 2 allowing SRC to submit the detailed remediation plan for the other site aspects [1,2]. The Commission required that SRC submit and obtain approval for the detailed design plans for the other site aspects, prior to carrying out the remediation activities. The Commission delegated this approval to the Director General of the Directorate of Nuclear Cycle and Facilities Regulation (DG DNCFR) or the Executive Vice-President and Chief Regulatory Operations Officer (EVP CROO).

SRC has submitted a request for approval of the detailed plans for remediation of the Gunnar other site aspects. SRC has submitted the detailed design documents to support the request and CNSC staff's review of this documentation is outlined below [4, 6, 8, 10, 11, and 12].

2.0 REVIEW OF APPLICATION TO BEGIN GUNNAR TAILINGS REMEDIATION ACTIVITES

2.1 Description of the Request

SRC has requested approval of the detailed remediation plans for the Gunnar other site aspects as required under the *Commission Record of Proceedings Request for the Removal of a Hold Point for Phase 2 of the Gunnar Remediation Projec*t (Section 2-9) [2]. The work completed during the Phase 1 for the *Preliminary Remediation Design for the Other Site Aspects*, included the following:

- For the waste rock piles: the volume was reduced as the waste rock was used for tailings cover and the remainder as grading thereby reducing the waste rock piles height and side slopes. The surface of the waste rock piles was covered with locally available soil and vegetated with native plant species;
- For the open pit: reduced the volume of contaminated water flowing into the pit, and ensured the continued isolation of the pit from Lake Athabasca, by maintaining the rock barrier between the pit and the lake;
- For the mine shaft: constructed an engineered cap over the vent raise, mine shaft and back raise;
- For the demolition debris: recycled wood and metal to the extent possible and managed demolition waste in an onsite engineered landfill.

In addition to the work described above and upon review of the preliminary plan, an Updated Preliminary Remediation Design was produced to disposition CNSC staff review comments on the preliminary design, as well as comments from other stakeholders. In addition, more detailed fieldwork and studies were completed in relation to these comments.

The work completed as part of the Detailed Remediation Design entails:

- Completion of a Failure Modes and Effects Analysis (FMEA);
- Completion of supporting studies (technical memorandums);
- Advancement of the remediation designs for each of the Other Site Aspects to a detailed engineering level;
- Completion of construction Technical Specifications; and
- Preparation of Issued for Review (IFR) construction drawings.

In addition, the establishment of landfills A and B where landfill A will consist of material such as non-hazardous demolition debris, asbestos containing material (ACM), and wood debris, the latter being chipped/mulched and used to support the cover. Landfill B will consist of waste such as pH impacted waste rock and concrete and soil from the former acid plant area. In addition, landfill B will also contain non-tailings low-level radioactive waste and petroleum hydrocarbon impacted soils. Both will be constructed in accordance with the regulatory guidelines of the CNSC and both the Saskatchewan and Alberta Landfill Regulations (EMPA 2010 and EPEA 2010) as well as the already approved design criteria.

As for waste rock, the historic drainage channel will be re-established, there will be a re-grading of both the East and South Waste Rock Piles as well as the waste rock slopes along the shoreline of the former fuel farm, former school/community center and the former Gunnar West town site area. A minimum of 0.5-meter-thick cover for gamma reduction will be constructed for areas that have elevated gamma signatures (this includes the general mine site area but excludes both the tailings and catchment 3 areas, which have their own specific cover design criteria).

Finally, for the remainder of the general site, an engineered cap will be constructed to cover the vent raise, mineshaft and backfill raise, adhering to both the engineering and regulatory requirements as stated above [4].

SRC has submitted the detailed design information related to each of these activities as well as future work proposed for 2020 and subsequent years. SRC has workers and equipment on site ready to proceed with the above activities pending CNSC's approval.

2.2 CNSC Staff Assessment of the Application

CNSC staff have completed reviews and assessments of the plans submitted by SRC [5,7,9,13]. CNSC staff confirm that the proposed work is consistent with the remediation plans approved by the Commission, and the detailed design plans meet the CNSC criteria outlined in related sections of the LCH, in accordance with engineering best practice. CNSC staff have requested additional information pertaining to the landfill B design to determine if construction of a baseliner is necessary or whether the bedrock at the site chosen would be sufficient. SRC agreed to conduct a structure mapping of the Landfill B area after the foundation and sidewalls of landfill B are exposed. Once the structure mapping is completed, SRC will provide the additional information for CNSC specialist review. If CNSC staff determine that the information provided answers to CNSC staff's concerns, an additional delegated authority submission will be provided [8].

Aside from the questions related to landfill B, CNSC staff confirm that the work poses low risk to workers and the environment and all necessary procedures and plans to carry out the work safely are in place. Based on their review, CNSC staff conclude that there is also low potential for workers to receive a radiation dose above acceptable regulatory limits while conducting this work. All workers conducting remediation activities are designated as NEW's. A robust RP program that has been reviewed by CNSC staff remains in place to ensure that doses remain ALARA and are monitored.

It is the position of CNSC staff that SRC is qualified to carry on the various licensed activities with the exception of the construction of landfill B until further notice, and that SRC has made adequate provision for the protection of the environment, the health and safety of persons.

3.0 CONCLUSIONS

CNSC staff have concluded that:

- The detailed plans are consistent with the remediation plans approved by the Commission;
- SRC is qualified to carry out the remediation activities of the Gunnar Other Site Aspects, with the exception of landfill B, which are authorized by the waste nuclear substance licence WNSL-W5-3151.00/2024; and
- SRC will, in carrying out those activities, make adequate provision for the protection of the health and safety of persons, the environment and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

4.0 RECOMMENDATION

CNSC staff recommend that the DG DNCFR, as delegated by the Commission:

a) accept CNSC staff conclusions; and

b) approve the detailed plan to remediate the Gunnar Other Site Aspects with the exception of Landfill B.

References:

[1] Commission Record of Proceedings Request for the Partial Removal of a Hold Point for the Gunnar Remediation Project (September 30, 2015) e-Doc 4890573

[2] Commission Record of Decision for the Removal of a Hold Point for Phase 2 of the Gunnar Remediation Project (September 22, 2016) e-Doc 5134643

[3] Waste Nuclear Substance Licence Saskatchewan Research Council Gunnar Legacy Uranium Mine Site, WNSL-W5-3151.00/2024 (January 15, 2015) ,e-Doc 4496683

[4] Saskatchewan Research Council (SRC) submission of Gunnar Mine Other Site Aspects Detailed Remediation Design Report-Final, (November 28, 2018), e-Doc 5720182

[5] CNSC Technical Memo –RE: Gunnar Mine Other Site Aspects Detailed Remediation Plan (January 30, 2019), e-Doc 5724209

[6] SRC Response -RE: Gunnar Mine Other Site Aspects Detailed Remediation Design Report and Appendices –Responses to CNSC Comments (April 9, 2019), e-Docs 5875067 and 5875069

[7] CNSC Technical Memo –DERPA Disposition of SRC's Response to CNSC Staff's Technical Assessment of Gunnar Other Site Aspects Detailed Remediation Design (May 8, 2019), e-Doc 5875407

[8] SRC letter –RE: Response to Additional Questions of CNSC Staff's Review of SRC's Response to CNSC staff's Technical Assessment of Gunnar Other Site Aspects Detailed Remediation Design (April 25, 2019), e-Doc 5934614

[9] CNSC Technical Memo –DERPA Disposition of SRC's Response to Additional Questions of CNSC Staff Review on the SRC's Response to CNSC Staff's Technical Assessment of Gunnar Other Site Aspects Detailed Remediation Design (July 19, 2019), e-Doc 5950969

[10] SRC submission –GOSA Landfill A Design Adjustment (September 26, 2019), e-Doc 6105988

[11] SRC submission –RE: GOSA Landfill A Design Adjustment (October 1, 2019), e-Doc 6013296

[12] SRC submission –RE: GOSA Landfill A Design Adjustment (October 10, 2019), e-Doc 6016472

[13] CNSC email –RE: GOSA Landfill A Design Adjustment (October 18, 2019), e-Doc 6022058

7 CNSC Record of Approval (CNSC) *Request for approval by SRC of the construction of Landfill B of the other aspects work for the Gunnar Remediation Project*, June 22, 2020 (e-Doc 6287432).

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Record of Approval, Including Reasons for Approval

In the Matter of

Applicant:	Saskatchewan Research Council (SRC)
Subject:	Request for approval by SRC of the construction of Landfill B of the other aspects work for the Gunnar Remediation Project
Date:	June 22, 2020

e-Doc 6287432 (Word)
e-Doc 6306286 (PDF)

Record of Approval

Applicant:	Saskatchewan Research Council (SRC)
Address/Location:	Saskatchewan Research Council #125-15 Innovation Blvd Saskatoon, SK S7N 2X8
Purpose:	Request for approval by SRC for the detailed design for Landfill B of the Gunnar Other Aspects Detailed Remediation Design Phase 2 for the Gunnar site
Request Received:	Initial detailed design plans were received in December 2018

The Director General of the Directorate of Nuclear Cycle and Facilities Regulation, as delegated by the Commission, approves other aspect work plans for the Gunnar site remediation activities.

Introduction

Saskatchewan Research Council (SRC) has submitted an updated detailed design for the construction of Landfill B which is the remaining item for approval of the Gunnar Other Aspects Detailed Remediation Design Phase 2 for the Gunnar site. This detailed design is an update of the Updated Preliminary Remediation Design submitted in 2016 (Phase 1) [1, 2]. Other detailed remediation plans for the Gunnar other sites aspects were already approved by the delegated authority on March 13, 2020 [3] as delegated by the Commission under *Commission Record of Proceedings Request for the Removal of a Hold Point for Phase 2 of the Gunnar Remediation Project* (Section 2-9).

Landfill B will consist of waste such as pH impacted waste rock and concrete and soil from the former acid plant area. In addition, landfill B will also contain non-tailings low-level radioactive waste and petroleum hydrocarbon impacted soils.

Following a hearing held in September 2016, the Commission granted approval to SRC for the removal of the hold point on the remediation of the other site components, which included the waste rock piles, open pit, mineshaft and demolition waste [1]. The Commission required that SRC submit and obtain approval for the detailed design plans for the other aspects remediation work prior to carrying out the remediation activities. This approval was delegated to the Director General of the Directorate of Nuclear Cycle and Facilities Regulation (DG DNCFR) or the Executive Vice-President and Chief Regulatory Operations Officer (EVP CROO); as noted in the *Record of Proceedings, Including Reasons for Decision in the matter of the Request for the Partial Removal of a Hold Point for the Gunnar Remediation Project* (November 27, 2015) [2] and in the *Commission Record of Decision for the Removal of a Hold Point for Phase 2 of the Gunnar Remediation Project* (September 22, 2016) [1].

Conditions

In considering the request, the DG DNCFR, as delegated by the Commission, must determine if:

> The detailed plans for Landfill B are consistent with the remediation plans approved by the Commission.

Decision

Based on the consideration of the matter, as described in more detail in the following sections, and CNSC staff's information and recommendations as outlined in the referenced memo [4], the DG DNCFR, as delegated by the Commission concludes that SRC has met the conditions required for them to proceed with the construction of Landfill B and the remediation work described. Therefore,

> The DG DNCFR, as delegated by the Commission approves the remaining detailed plan to remediate the Gunnar Other Site Aspects which now includes Landfill B.

Issues and Findings

1. In making this decision, the DG DNCFR considered a number of issues relating to SRC's activities and performance in order to approve the proposed work.
2. The DG DNCFR reviewed CNSC staff's assessment of the revised detailed plan for Landfill B submitted by SRC [4]. The DG DNCFR noted CNSC staff conclusions that the proposed work is consistent with the remediation plans approved by the Commission, and the detailed design plan meets the CNSC criteria outlined in related sections of the LCH as well as engineering best practice.
3. The DG DNCFR noted CNSC staff confirmation that the work poses very low risk to workers and the environment and all necessary procedures and plans to carry out the work safely are in place. There is also very low potential for workers to receive a radiation dose while conducting this work.

Conclusion

The DG DNCFR, as delegated by the Commission, has considered the information and submissions set out in the material available for reference.

Therefore, the DG DNCFR approves SRC's detailed plan for the construction and remediation work related to Landfill B which is part of the other site aspects work at the Gunnar site.

References

[1] Commission Record of Decision, Request to Remove the Hold Point for Phase 2 of the Gunnar Remediation Project, dated September 22, 2016, (e-Doc 5134643).

[2] Commission Record of Proceedings, Including Reasons for Decision, *Request for the Partial Removal of a Hold Point for the Gunnar Remediation Project,* dated September 30, 2015, (e-Doc-4890573).

[3] CNSC letter to SRC for Delegated Authority Gunnar Other Aspects, March 13, 2020, (e-Doc 6259364).

[4] CNSC Delegated Authority Memo, -Saskatchewan Research Council's request for approval of the detailed plans for the other site aspects remediation activities June 10, 2020, (e-Doc 6287431)

Haidy Tadros, M.Sc.
Director General
Directorate of Nuclear Cycle
and Facilities Regulation

Date 22 June 2020

e-Doc 6287432 (Word)
e-Doc 6306286 (PDF)

8 CNSC Environmental Review Identification - Request Form *RE: Renewal of Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 -Saskatchewan Research Council Gunnar Legacy Uranium Mine Site*, April 2024 e-Doc 7197621).

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ENVIRONMENTAL REVIEW IDENTIFICATION – REQUEST FORM

After receiving a licence application (the applicant's initial submission), project officers should promptly fill out Section A, provide full e-Access rights to the Environmental Review Division (ERD), and email this form to er-ee@cnsc-ccsn.gc.ca for ERD staff to identify the type of environmental review required.

Section A. Application details *(Licensing/Project Officer to complete)*

Division	**Project Officer**	**ITAS code**
UMMD	Dana Pandolfi	**521B52-LL-NN**

Application title RE: Renewal of the Waste Nuclear Substance Licence WNSL-W5-3151.00/2024 – Saskatchewan Research Council Gunnar Legacy Uranium Mine Site

Applicant	**Licence info # in e-Doc profile**
Saskatchewan Research Council (SRC)	WNS_521B52
Date received by licensing division **Oct 20, 2023/ July 4, 2024**	**Requested ERD response date** *(two weeks is typical)* **March 20, 2024 (revised with new application, no change in review)**
e-Docs of application and relevant supporting documents *(attach to e-mail)* 7197374/7319100	**e-Docs of current licence and LCH** *(if applicable)* **4832476**
Location Lake Athabasca, Saskatchewan	**Is this on federal lands?** *(For reference, see list of federal real property)* **Yes** ☐ **No** ☒

Are DERPA staff included as FAC Team members for this application, and have they been contacted?
Yes ☒ **No** ☐ **N/A** ☐
If yes, please provide their names:

Decision-maker ☒ Commission ☐ Designated Officer

Application classification ☐ Class IA ☐ Class IB ☐ Mine/Mill ☐ Class II ☒ Other WNSL

Is the application for an existing facility? ☒ Yes ☐ No

Licensing action ☐ Issuance ☐ Amendment ☒ Renewal ☐ Approval under a licence condition ☐ Abandon

Comments: will be requesting a panel of 1 Commission decision with a request that all future licensing decision making powers be delegated to a designated officer as the remediation work is almost completed.

Application description*) SRC is currently requesting a 20-year licence for the Gunnar licence to complete the remaining remediation work and once this is completed, move into the Phase 3 Long term monitoring phase. UMMD staff are looking at recommending a 10-year licence as once the remediation work is completed (Langley Bay, dismantling of camp and covering landfills) should be completed within 2 years (SRC has requested a hold point at approx. 18 months after the renewal date) and would require a licence amendment to move into phase 3*

Canada

which is post-remediation long-term monitoring for a number of years prior to SRC applying to Saskatchewan's institutional control program. UMMD staff are requesting a panel of 1 commission decision and will also request that all future licensing decisions be delegated to the designated officer level.

Section B. Environmental review identification (*ERD staff to complete)*

ER Officer/Specialist: Nicole Frigault	**e-Doc: 7197621**
Date of completion: March 26, 2024	**Peer review completed by: Doug Wylie**

B1. Federal Lands Provisions of the *Impact Assessment Act* (IAA)

Complete steps below (see Agency's guidance document, as needed) to evaluate if there are IAA section 82 requirements (projects on federal lands).

1. Is the proposed work/activity in whole or in part on **federal lands**, as defined under section 2(1) of the IAA?

   Yes ☐ **No** ☒

   If no, skip questions 2 to 5.

2. Is the proposed work/activity a **project**, as defined under section 81?

   A project is a **physical activity**, i.e., a task or action requiring a degree of physical effort, such as construction, operation, expansion, decommissioning or abandonment; or a **physical work**, i.e., including human-made structures with a defined area and fixed locality?

   Yes ☐ **No** ☐

3. Will the Commission **carry out the project or exercise a power, perform a duty or function, or provide financial assistance** in relation to this project, as per section 82?

   Yes ☐ **No** ☐

4. Is the proposed work/activity within an **excluded class of projects set out in a Ministerial Order** issued under section 88?

   Yes ☐ **No** ☐

5. Is the project in response to an emergency under section 91?

   Yes ☐ **No** ☐

Are there requirements under the IAA that must be met: Yes ☐ **No** ☒

B2. Knowledge of other jurisdictions' EA requirements

Is another jurisdiction required to conduct an EA? (province, land claim agreement area)

Yes ☐ **No** ☒ **Unknown** ☐

B3. Need for an Environmental Protection Review (EPR) per the *Nuclear Safety and Control Act* (NSCA)

Is an EPR required? Yes ☒ **No** ☐

All CNSC licensing actions with the potential for environmental interactions undergo an EPR under the NSCA (if the designated project provisions of the IAA do not apply).

How will the EPR be reported / conveyed to the decision-maker?

Periodic EPR report (referenced in CMD) ☐ **EPR report** (appended to CMD) ☐

Environmental Protection section of CMD / DOD ☒ **N/A (no EPR required)** ☐

Details:

Date of last EPR report (if applicable): **CEAA 2012 EA August 2014** **E-Doc: 4497595**

Does the EPR report need to be updated: **Yes** ☐ **No** ☐ **N/A** ☒

Rationale: The proposed work is to complete the Gunnar remediation project as described and assessed in the CEAA 2012 EA Report that was completed in August 2014.

B4. Next Steps

ERD staff recommend the licensing division facilitates an environmental protection review within the NSCA licensing process that will be summarized in the EP section of the CMD noting that the proposed work has already been assessed under CEAA 2012.

This evaluation is based on the information and assumptions provided by the applicant. If relevant information or assumptions change, or if the proposal changes and reconsideration is required, please contact the ERD.