Wheeler River Project

Provincial Technical Proposal and Federal Project Description

Denison Mines Corp.
May 2019

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Project Summary

Summary

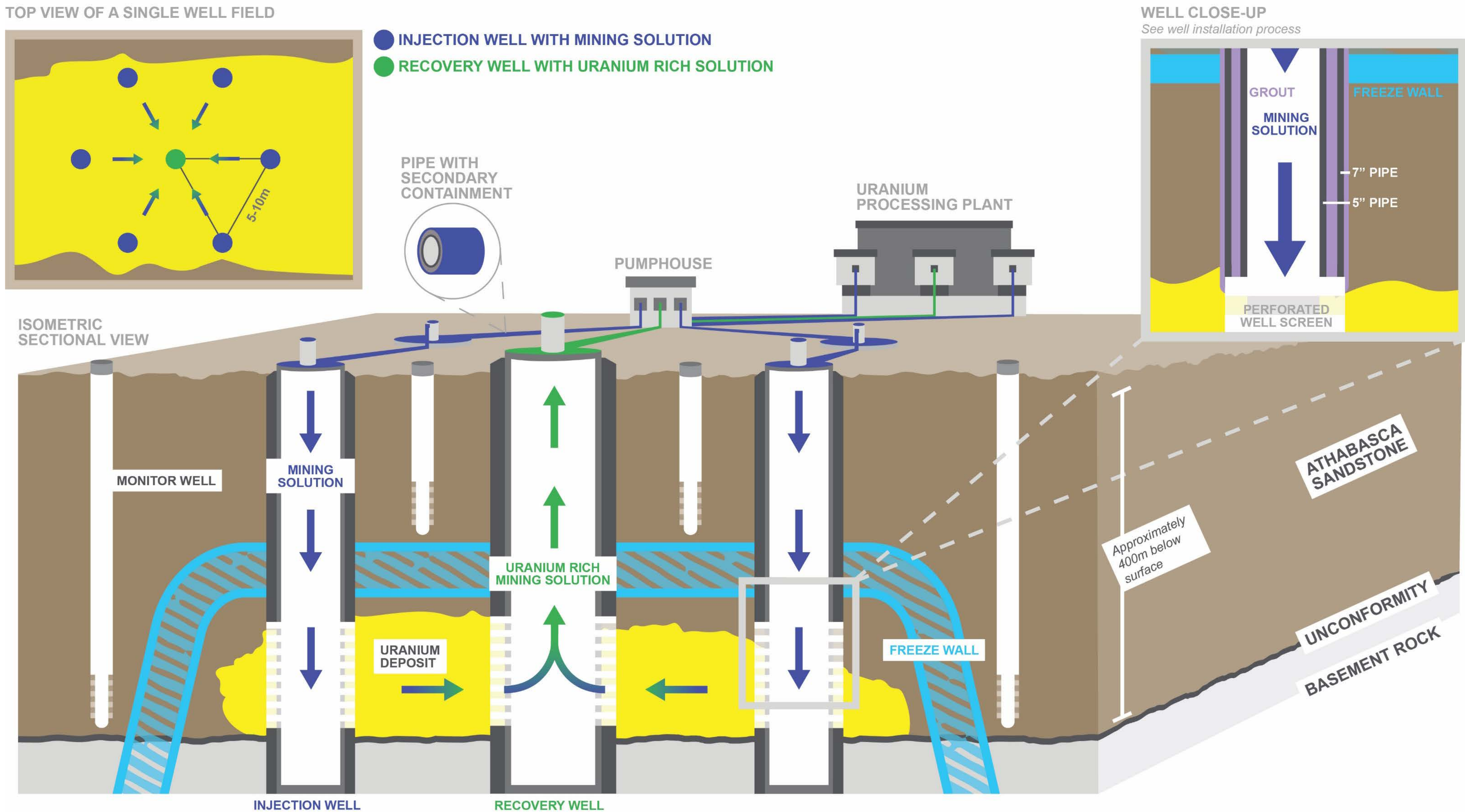
Wheeler River Project

The Wheeler River Project (Wheeler or the Project) is a proposed uranium mine and processing plant in northern Saskatchewan, Canada. It is located in a relatively undisturbed area of the boreal forest about 4 km off of Highway 914 and approximately 35 km north-northeast of the Key Lake uranium operation.

Wheeler is a joint venture project owned by Denison Mines Corp. (Denison) and JCU (Canada) Exploration Company Ltd. (JCU). Denison owns 90% of Wheeler and is the operator, while JCU owns 10%. Denison is a uranium exploration and development company with interests focused in the Athabasca Basin region of northern Saskatchewan, Canada with a head office in Toronto, Ontario and technical office in Saskatoon, Saskatchewan. Historically Denison has had over 50 years of uranium mining experience in Saskatchewan, Elliot Lake, Ontario, and in the United States. Today, the company is part owner (22.5%) of the McClean Lake Joint Venture which includes the operating McClean Lake uranium mill in northern Saskatchewan.

To advance the Project, Denison is applying an innovative approach to uranium mining in Canada called in situ recovery (ISR). The use of ISR mining at Wheeler means that there will be no need for a large open pit mining operation or multiple shafts to access underground mine workings; no workers will be underground as the ISR process is conducted from surface facilities. While this mining method has been used extensively on an international basis and currently accounts for more than 50% of global uranium production, it has not previously been used in Canada for uranium mining. Denison has done significant research on international uranium ISR operations to understand best practices and incorporate lessons learned into the design of Wheeler. In order to implement ISR at Wheeler, Denison will apply existing technologies to eliminate the typical challenges experienced at some international uranium ISR operations.

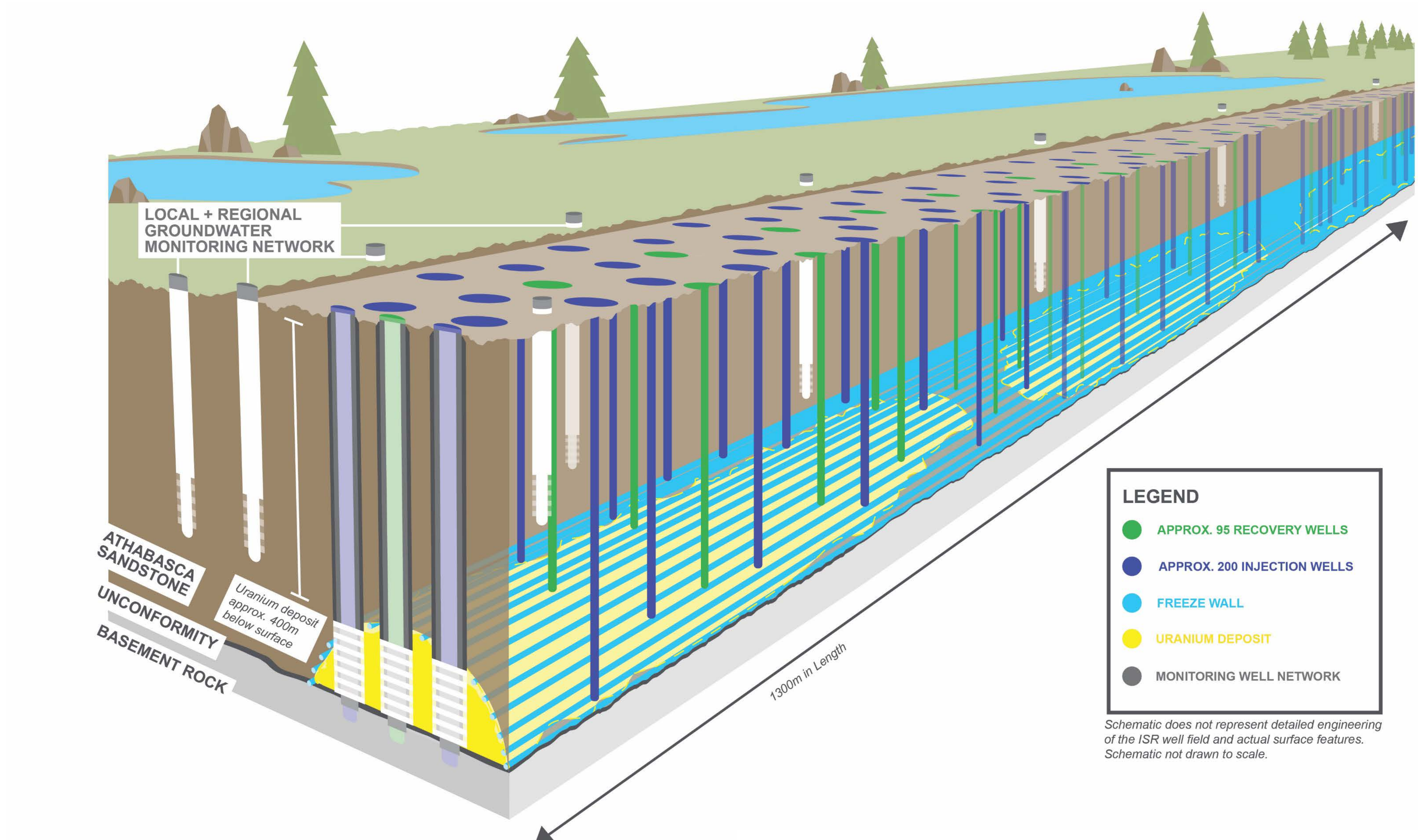
ISR mining at Wheeler will involve injecting a mining solution into the uranium deposit through a series of cased drill holes (about 4 to 8 inches in diameter) called injection wells (Figure A). The mining solution proposed for Wheeler is a low pH or acidic mining solution. As the mining solution passes from the injection wells through the uranium deposit it dissolves the uranium and leaves virtually all other minerals in the host rock in place. Once dissolved, the uranium rich mining solution is recovered and pumped back up to surface through another set of cased drill holes called recovery wells. The combination of injection and recovery wells is called a wellfield. Denison anticipates the wellfield will have the general arrangement of one recovery well in the centre surrounded by 6-8 injection wells with about 10 m spacing between wells. With these configuration options, the final wellfield may include approximately 310 wells over a 90 m x 900 m area.



Schematic does not represent detailed engineering of the ISR well field and its components. Schematic not drawn to scale.

Denison Mines	**Wheeler River Project** **Provincial Technical Proposal and Federal Project Description**
Figure A: In Situ Recovery Process Overview	**May 2019**

Criticism of international ISR operations largely involves the containment of mining solution and the interaction of the mining solution with groundwater. At Wheeler, in order to contain the solution within the uranium deposit and maximize recovery as well as prevent interaction of the mining solution with surrounding groundwater, Denison will create an isolated mining chamber using conventional ground freezing technology. Ground freezing will establish an impermeable barrier above and on all sides of the mining chamber, with the existing impermeable basement rock acting as a bottom barrier. The approximate dimensions of the mining chamber are 100 m wide x 30 m high x 1,300 m long and it will be located approximately 400 m below the surface (Figure B).



Schematic does not represent detailed engineering of the ISR well field and actual surface features. Schematic not drawn to scale.

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Figure B: Sketch of Proposed Wheeler In Situ Recovery Wellfield, with Freeze Wall, Wells, Mining Chamber and Uranium Deposit	**May 2019**

Once on surface, the uranium rich mining solution recovered from the wellfield will be pumped to the on-site processing plant. Inside the processing plant a relatively simple precipitation process will be used to separate the uranium from the mining solution. Once the uranium is removed, the mining solution is refortified with reagents and returned to the wellfield for re-injection and further mining. The process is a closed loop system with potentially no need for treated effluent discharge to the environment. The uranium will be dried, packaged and trucked off site, destined for eventual use in a nuclear power plant.

Once sold and refined off-site, the uranium will be used as fuel for nuclear power plants. Denison estimates that the uranium produced from Wheeler can be used to power 1 million modern homes for approximately 160 years with minimal greenhouse gas emissions. This highlights the importance of the Project at a time when reducing global greenhouse gas emissions are of the utmost importance in the battle against climate change.

In addition to ISR mining and uranium processing, the Project will also require construction, operation, and decommissioning of a number of supporting components. This includes a short (7 km) access road from Highway 914 to the site, an accommodation complex, operations centre, airstrip, a 5 km long road from the site to the airstrip, site roads, a lined pad for storage of impurities from the processing plant and mineralized drill cuttings from wellfield development, water treatment ponds, potable, sewage, and waste water treatment plants. Power will be supplied to Wheeler by connecting into the existing provincial power line along Highway 914 with emergency generators available as a back-up power supply.

The main phases of the Project are construction, operation, decommissioning and post-decommissioning. The Project is subject to both a federal and provincial environmental impact assessment and various licences and permits will also be needed. Following receipt of regulatory approvals, construction would last for approximately two years and may start as early as 2022. Production activities commence following commissioning of the facilities and would last up to 20 years with a production rate of up to 12 M lbs U_3O_8 per year. Decommissioning is expected to last for five years. The five main decommissioning activities include: mining chamber remediation, decontamination, asset removal, demolition and disposal, and reclamation. Closure of the entire Project will be completed in accordance with all provincial and federal regulations and guidance documents with the fundamental considerations being to ensure physical and chemical stability of the site in order to protect human health and the environment. A five-year post-decommissioning phase will serve to monitor Wheeler and confirm that it is acceptable for either direct release back to the Crown with no future use restrictions or acceptance into the provincial Institutional Control Program for decommissioned sites.

Existing Environment

The Project is located in the Wheeler River Upland Landscape Area of the Athabasca Plain Ecoregion. Exploration activity has occurred in the area over the past 40 years. There are recreational, industrial and traditional land use leases nearby; however, the nearest permanent residences are about 150 km away. The Slush Lake Reserve registered to the English River First Nation, which has no permanent residents, is located approximately 15 km west of Wheeler.

Denison initiated a comprehensive biophysical environmental data collection program in 2016 to characterize the existing or baseline conditions. A robust dataset of atmospheric, hydrogeological, aquatic, and terrestrial data has been collected for the Wheeler site, local and regional study areas and targeted data collection is ongoing. The biophysical environment data collection program to date has focused on defining existing conditions for: air quality (radon and dust), groundwater quality, groundwater levels, surface water quality, lake levels, lake bathymetry, stream flow, sediment quality, aquatic habitats, benthic invertebrates (communities and chemistry), plankton, fish (communities, spawning habitat, and tissue chemistry), amphibians, birds, small mammals, semi-aquatic furbearers, large mammals, ecosite mapping, vegetation (communities and chemistry), soil quality, and wildlife habitat.

Wheeler is located in the Treaty 10 area and the local and regional area surrounding the proposed Project has been claimed by four distinct Indigenous communities as partially or entirely falling within their traditional territories, where traditional land use activities have been historically or are currently practiced. These groups consist of the English River First Nation and the Kineepik, Sipishik and A La Baie Métis locals of the communities of Pinehouse, Beauval and Ile a la Crosse, respectively. Traditional land use activities practiced within the local and regional area of the Project consist of subsistence hunting and fishing, seasonal harvesting of native plants for food and medicinal purposes. During the open water season the rivers and lakes in the area serve as transportation routes to and from areas for harvest of plants and game as well as preferred campsites and cabins. During the winter months the frozen lakes, river banks and muskegs are used as transportation routes to cabins, trap lines and preferred hunting areas. Heritage resource surveys completed at Wheeler to date identified one artifact and the Project has been redesigned to avoid the location of the artifact find.

Overall, Denison believes the baseline biophysical and human environments in the Project areas have been adequately characterized to support the completion of an environmental impact assessment and support future environmental monitoring programs.

Potential Effects

ISR mining, as proposed for the Project, results in a uranium mining and uranium processing Project with no tailings, a relatively small surface disturbance footprint, minimal volumes of clean waste rock (all in the form of drill cuttings), minimal volumes of waste rock (mineralized drill cuttings from wellfield development), minimal generation of other contaminated wastes, near zero carbon emissions and limited (if any) water treatment and discharge. Wheeler will be designed to contain all hazardous materials and careful consideration will be taken to ensure contaminated areas are kept separate from non-contaminated areas. Through Project design, implementation of best management practices, and application of other mitigation measures, Denison will strive to minimize interactions of the Project with the biophysical and human environments throughout all phases of the Project.

The main potential Project effects on the biophysical environment are expected to be: changes in air quality from various emission sources including the processing plant; changes in air quality if radon and radon progeny degas from the uranium rich mining solution; potential changes in groundwater quality from mining solution excursions or the potential discharge of treated effluent to groundwater; changes in water quality, sediment quality, and possibly other aquatic components from the potential discharge of treated effluent to a surface water body; direct loss of wildlife habitat; and indirect effects on wildlife through sensory disturbance. However, Denison anticipates that none of these potential effects will be significant and overall the Project does not pose any long-term risks to the biophysical environment.

The Project's potential effect on the socio-economic component of the human environment is expected to be positive. Wheeler will employ approximately 300 people during two years of construction and about 100 to 150 people during operations. Business opportunities will be available for supplies and services. Any potential effects on traditional land use activities will be limited to the site and local study areas and these effects will be short term and limited to the construction and operating phase of the Project. After decommissioning is completed, access to the site and the ability to practice traditional activities such as fishing and hunting will be fully restored. No effects on traditional land use are expected to occur in the regional study area. Potential effects on workers from a conventional health and safety standpoint will be similar to other mining and industrial sites and Denison expects these effects can be mitigated through management and development of a strong safety culture. Potential effects on workers from radiological exposures will be minimized through Project design measures and closely monitored and managed through implementation of a Radiation Safety Management Program.

In the EIA, Denison will demonstrate that the Project can be constructed, operated, and decommissioned with no significant adverse effects on the biophysical and human environments. Potential effects of the Project will be rigorously and transparently assessed and presented in the EIA. This includes the completion of a human health and ecological risk assessment to demonstrate the overall low impacts of the Project. The EIA will also outline details of an effective monitoring program. Monitoring will be required to provide proof that the Project is operating legally and within the bounds of its licence obligations.

Engagement

Denison recognizes the importance of engaging with local and Indigenous communities, residents, businesses, organizations, land users and the various regulatory authorities, collectively referred to as 'Stakeholders.' Since 2016 Denison had been engaging with Stakeholders in an ongoing effort to build positive relationships with all parties. Broadly speaking, Denison has categorized the stakeholders into three categories:

- Indigenous communities
- Regulatory authorities
- The general public

Denison has engaged with Stakeholders to provide Project updates and collect input that has been incorporated into the Project's design. This approach is expected to continue. Further, Indigenous Knowledge has been integrated into the baseline data collection programs to ensure appropriate scientific data is collected in key areas to allow for a robust assessment of potential Project interactions as part of the environmental impact assessment.

Denison and several local Indigenous and non-Indigenous communities have executed mutual Memorandums of Understanding (MOU) regarding the Project. These non-binding MOUs formalize the signing parties' intent to work together in a spirit of mutual respect and cooperation to collectively identify practical means by which to avoid, mitigate, or otherwise address potential impacts of the Project upon the exercise of Indigenous rights, Treaty rights, and interests. In addition, the MOUs outline the signing parties' intent to work together to ensure that benefits will flow from the Wheeler River project, provide a process for continued Project engagement and information-sharing about the project, and establish a relationship to identify business, employment and training opportunities for the parties with respect to the Project.

Denison is proud of the relationships it has established with all Stakeholders, and looks forward to continuing to build upon those relationships through an ongoing engagement program as Wheeler advances.

Sommaire

Projet Wheeler River

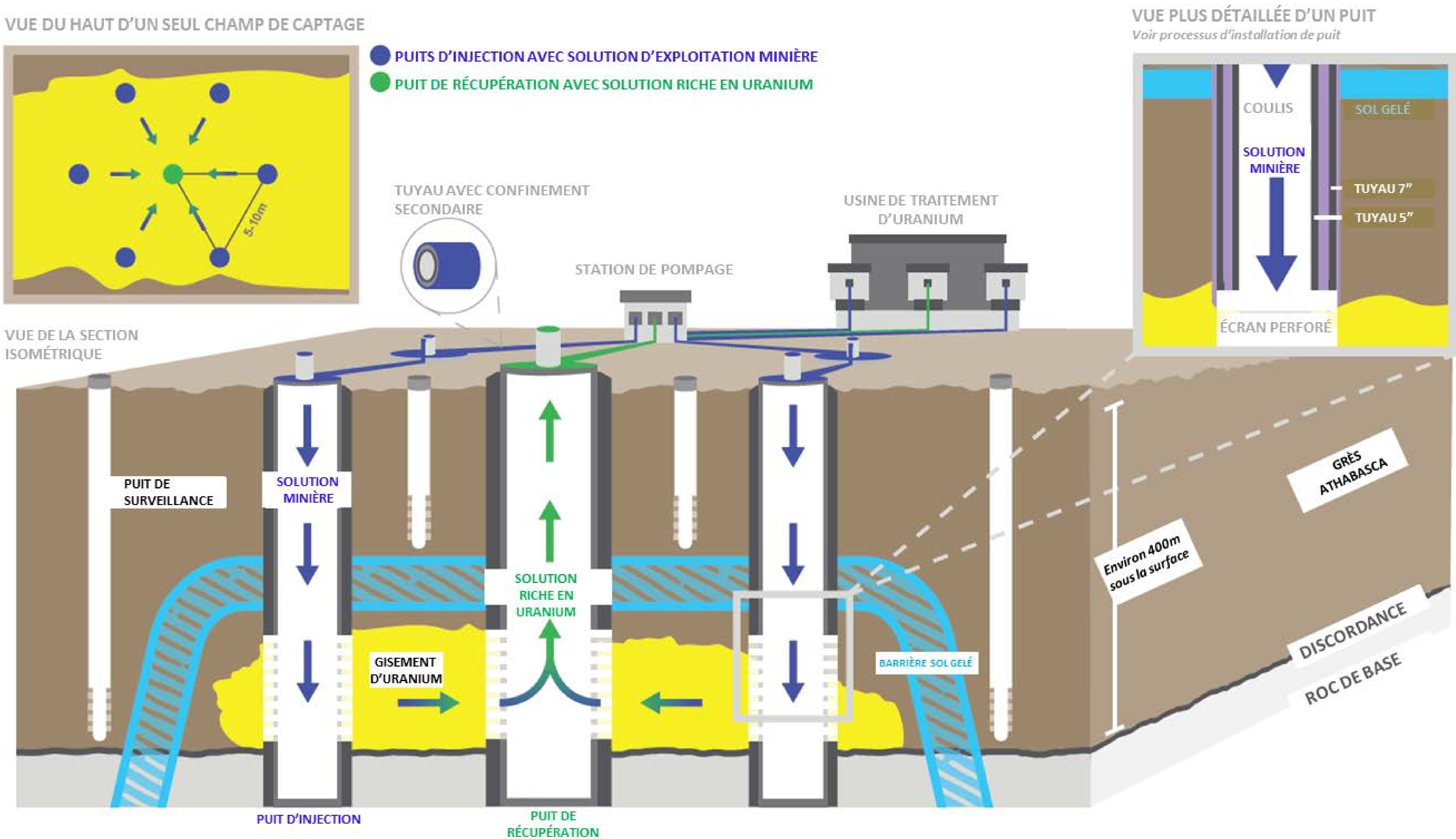
Le projet Wheeler River (Wheeler ou, le Projet) comprend une mine d'uranium et une usine de traitement proposées dans le nord de la Saskatchewan, au Canada. Il se situe dans une zone relativement peu perturbée de la forêt boréale, à environ 4km de l'autoroute 914 et à environ 35km au nord-nord-est du site d'exploitation d'uranium de Key Lake.

Wheeler est un projet de coentreprise appartenant à Denison Mines Corp. (Denison) et à JCU (Canada) Exploration Company Ltd. (JCU). Denison détient 90% de Wheeler et en est opérateur, tandis que JCU en détient 10%. Denison est une compagnie d'exploration et de développement d'uranium dont les intérêts sont concentrés dans la région du Bassin Athabasca dans le nord de la Saskatchewan au Canada, avec son bureau primaire à Toronto, Ontario et un bureau technique à Saskatoon, Saskatchewan. Denison a plus de 50 ans d'expérience historique dans l'extraction d'uranium en Saskatchewan, à Elliot Lake en Ontario, et aux États-Unis. Présentement, la compagnie est propriétaire (22.5%) de la coentreprise McClean Lake qui comprend l'usine de traitement d'uranium au nord de la Saskatchewan.

Pour faire avancer le projet, Denison applique une nouvelle méthode à l'extraction de l'uranium au Canada qui appelée récupération in situ (RIS). L'utilisation de l'exploitation minière de RIS à Wheeler signifie qu'il ne sera plus nécessaire de recourir à une grande exploitation à ciel ouvert ou aux infrastructures pour accéder les travaux d'une mine souterraine; il n'aura aucun ouvrier sous terre puisque le processus de RIS est mené à partir d'installations de surface. Bien que cette méthode d'exploitation minière ait été largement utilisée à l'échelle internationale et représente présentement plus de 50% de la production mondiale d'uranium, elle n'était auparavant pas utilisée au Canada pour l'extraction d'uranium. Denison a effectué d'importantes recherches sur les opérations internationales de RIS pour l'uranium afin de bien comprendre les meilleures pratiques et d'intégrer les leçons apprises à la conception de Wheeler. Afin de mettre en œuvre la RIS à Wheeler, Denison utilisera les technologies existantes pour éliminer les défis typiques rencontrés à quelques opérations internationales de RIS d'uranium.

L'exploitation par RIS à Wheeler impliquera l'injection d'une solution d'exploitation minière dans le gisement d'uranium à travers une série de trous de forage tubés (d'un diamètre de 4 à 8 pouces) appelés puits d'injection (Figure B). La solution minière proposée pour Wheeler est une solution à pH bas ou acide. Lorsque la solution minière passe des puits d'injection à travers le gisement d'uranium, elle dissout l'uranium et laisse pratiquement tous les autres minéraux dans la roche hôte.

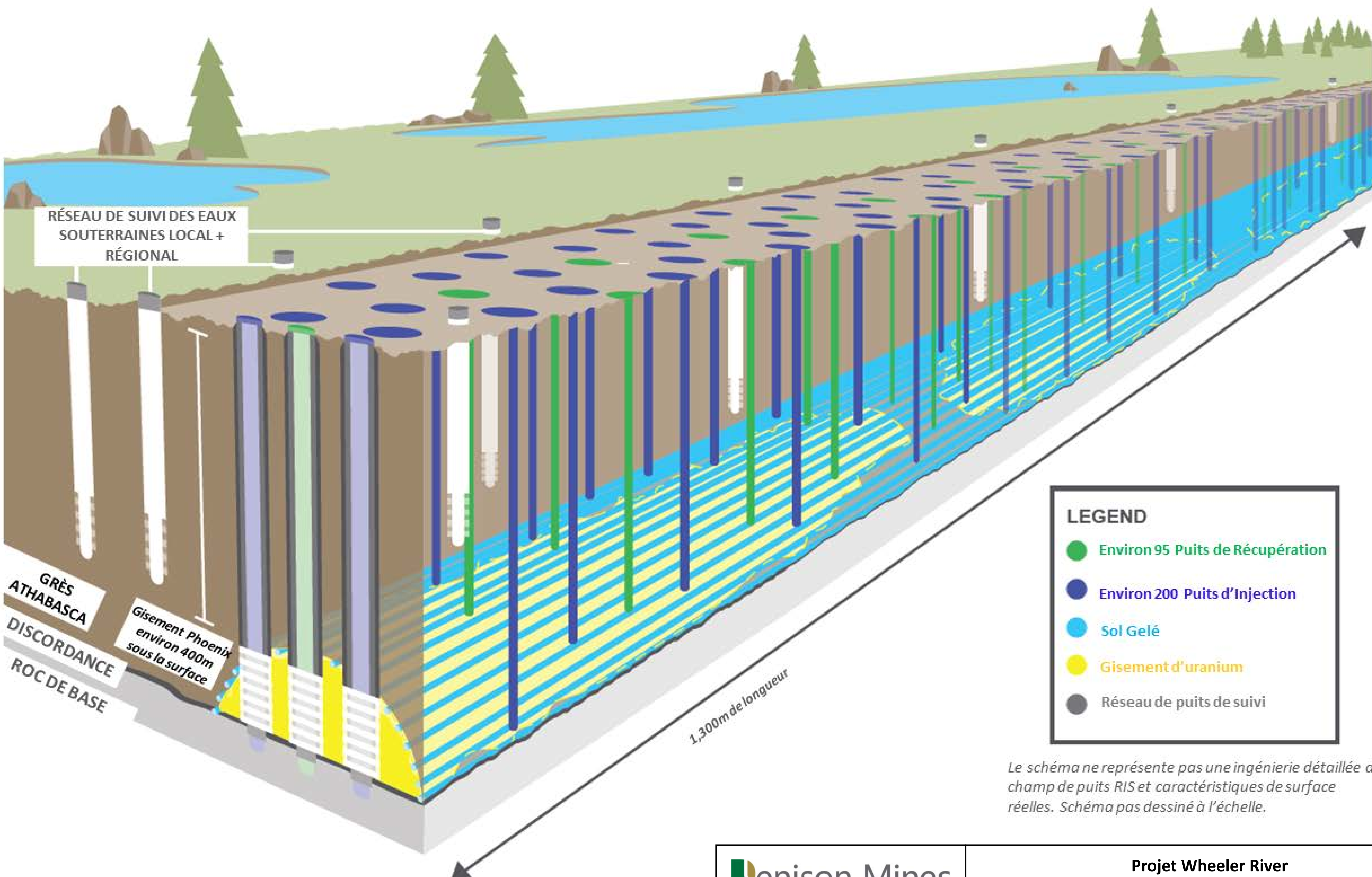
Une fois dissoute, la solution minière, riche en uranium, est récupérée et remontée à la surface par un autre ensemble de trous de forage tubés appelés puits de récupération. La combinaison des puits d'injection et de récupération s'appelle un champ de captage. Denison prévoit que le champ de captage aura la configuration générale d'un puits de récupération au centre entouré de 6 à 8 puits d'injection espacés d'environ 10 m. Avec ces options de configuration, le champ de captage final pourra inclure environ 310 puits sur une aire de 90m x 900m.



Le schéma ne représente pas une ingénierie détaillée du champ de puits RIS et de ses composantes. Schéma pas dessiné à l'échelle.

Denison Mines	Projet Wheeler River **Proposition Technique et Description de Projet**
Figure A: Aperçu du Processus de Récupération In-Situ (RIS)	**Mai 2019**

Les critiques des opérations internationales de RIS concernent largement le confinement de la solution minière et l'interaction entre la solution minière avec les eaux souterraines. À Wheeler, afin de contenir la solution dans le gisement d'uranium, et d'optimiser la récupération ainsi que d'empêcher l'interaction de la solution minière avec les eaux souterraines environnantes, Denison créera une chambre d'extraction isolée utilisant la technologie conventionnelle de congélation du sol. La congélation du sol établira une barrière imperméable au-dessus et de tous les côtés de la chambre d'extraction, avec le roc de base servant de barrière inférieure. La chambre d'extraction minière se situera à environ 400 m sous la surface (Figure B) et les dimensions approximatives mesurent 100 m de large x 30 m de haut x 1,300 m de long.



Denison Mines

Projet Wheeler River
Proposition Technique et Description de Projet

Figure B: Croquis du champ de captage de récupération in-situ avec barrière de sol congelé, puits, chambre d'extraction et gisement d'uranium

Mai 2019

Une fois à la surface, la solution minière riche en uranium récupérée du champ de captage sera pompée vers l'usine de traitement sur site. À l'intérieur de l'usine, un processus de précipitation relativement simple sera utilisé pour séparer l'uranium de la solution minière. Une fois que l'uranium est extrait, la solution minière est reconditionnée avec des réactifs et renvoyée au champ de captage pour être réinjectée et extraite. Le processus suit un système en boucle fermée qui ne nécessite, potentiellement, aucun rejet d'effluent traité dans l'environnement. L'uranium sera séché, emballé et acheminé par camion hors site, destiné à être utilisé dans une centrale nucléaire.

Une fois vendu et raffiné hors site, l'uranium sera utilisé comme combustible pour les centrales nucléaires. Denison estime que l'uranium produit par Wheeler peut servir à alimenter 1 million de foyers modernes pendant environ 160 ans avec des émissions minimales de gaz à effet de serre. Cela souligne l'importance du projet à un moment où la réduction des émissions mondiales de gaz à effet de serre revêt une importance capitale dans la lutte contre le changement climatique.

En plus des activités d'extraction (RIS) et de traitement d'uranium, le projet nécessitera également la construction, l'exploitation, et le déclassement d'un certain nombre de composantes de support. Cela comprend un court chemin d'accès (7 km) allant de l'autoroute 914 jusqu'au site, un complexe d'hébergement, un centre d'opérations, une piste d'atterrissage, une route de 5 km allant du site à la piste d'atterrissage, des routes de chantier, une plateforme couverte de doublure pour le stockage de résidus de l'usine de traitement et des déblais de forage minéralisés provenant de la mise en valeur des champs de captage, des bassins de traitement d'eau, et des usines de traitement (eau potable et eaux usées). L'électricité sera fournie à Wheeler par une connexion à la ligne électrique provinciale existante le long de l'autoroute 914 avec des génératrices de secours disponibles comme source d'alimentation secondaire.

Les phases principales du projet sont la construction, l'exploitation, le déclassement, et le post-déclassement. Le projet est assujetti à une évaluation des impacts sur l'environnement au niveau fédéral ainsi que provincial, et divers permis et licences seront également nécessaires. Après avoir reçu les approbations réglementaires, la construction durerait environ deux ans et pourrait commencer dès 2022. Les activités de production débutent suivant la mise en service des installations et dureraient jusqu'à 20 ans, avec un taux de production pouvant atteindre 12M lb U_3O_8 par an. Le déclassement devrait durer cinq ans. Les cinq principales activités de déclassement sont les suivantes : assainissement de la chambre d'extraction, décontamination, élimination des actifs, démolition et élimination, et réhabilitation. La clôture de l'ensemble du projet sera effectuée conformément à tous les règlements et directives provinciaux et fédéraux, les considérations fondamentales étant d'assurer la stabilité physique et chimique du site afin de protéger la santé humaine ainsi que l'environnement. Suivant le déclassement, une phase de cinq ans servira à surveiller Wheeler et à confirmer qu'il est acceptable de le restituer soit directement à la Couronne sans restrictions d'utilisation futures, ou au programme provincial de contrôle des établissements pour les sites déclassés.

Environnement Existant

Le projet est situé dans la région paysagère des hautes terres de la rivière Wheeler de l'écorégion de la plaine Athabasca. Des activités d'exploration ont eu lieu dans la région au cours des 40 dernières années. Il y a des utilisations récréatives, industrielles et traditionnelles des terres à proximité; cependant, les résidences permanentes les plus proches sont à environ 150 km du site. La réservation de Slush Lake, appartenant aux Premières Nations d'English River, qui n'a pas de résidents permanents, est située à environ 15 km à l'ouest de Wheeler.

Denison a lancé un programme complet de collecte de données biophysiques sur l'environnement en 2016 afin de caractériser les conditions existantes ou de base. Un ensemble de données robustes de données atmosphériques, hydrogéologiques, aquatiques, et terrestre a été collecté pour le site Wheeler; les zones d'étude locales et régionales et une collecte de données plus spécifiques est toujours en cours. À ce jour, le programme de collecte de données sur l'environnement biophysique s'est concentré sur la définition des conditions existantes pour : la qualité de l'air (radon et particules), la qualité des eaux souterraines, le niveau des eaux souterraines, la qualité des eaux de surface, les niveaux des lacs, la bathymétrie des lacs, le débit des cours d'eau, la qualité des sédiments, les habitats aquatiques, les invertébrés benthiques (communautés et chimie), plancton, poissons (communautés, habitat de frai, chimie des tissus), amphibiens, oiseaux, petits mammifères, animaux à fourrure semi-aquatiques, grands mammifères, cartographie d'éco-sites, végétation (communautés et chimie), qualité du sol, et habitat faunique.

Wheeler est situé dans la zone du Traité 10 et quatre communautés d'autochtones distincts ont prétendu que la zone locale et régionale entourant le projet proposé appartenait en tout ou en partie à leurs territoires traditionnels, ou des activitées traditionnelles d'utilisation des terres ont anciennement été ou sont présentement pratiquées. Ces groupes comprennent la Première Nation English River et les habitant de Kineepik, Sipishik, et À La Baie Métis des communautés de Pinehouse, Beauval, et Île à la Crosse respectivement. Les activités traditionnelles d'utilisation des terres pratiquées dans la zone locale et régionale du projet comprennent la chasse et la pêche de subsistance, et la récolte saisonnière de plantes indigènes à des fins alimentaire et médicinales. Pendant la saison des eaux libres, les rivières et les lacs de la région servent de voies de transport pour la récolte de plantes et de gibier, ainsi que pour les sites de campings et chalets préférés. Pendant les mois d'hiver, les lacs gelés, berges des rivières, et muskegs sont utilisés comme voies de transport vers les cabanes, les lignes de piégeage, et les zones de chasse préférés. Les enquêtes sur les ressources patrimoniales réalisées à Wheeler à ce jour ont permis d'identifier un artefact et le projet a été repensé afin d'éviter l'emplacement de la découverte de l'artefact.

En tout, Denison estime que les facteurs biophysiques et humains de l'environnement dans la zone du projet ont été correctement caractérisés pour appuyer la réalisation d'une évaluation de l'impact sur l'environnement ainsi que les programmes de suivi environnemental à venir.

Effets Potentiels

L'exploitation minière RIS, telle que proposée pour le projet, aboutit à un projet d'extraction et de traitement d'uranium sans résidus, avec une empreinte de perturbation de surface relativement petite, des volumes minimaux de stériles propres (tous sous la forme de déblais de forage), des volumes minimaux de stériles (déblais de forage minéralisés provenant du développement du champ de captage), volumes minimaux d'autres déchets contaminés, près de zéro émissions de gaz à effet de serre, et un traitement et rejet minimal d'eau (le cas échéant). Wheeler sera conçu pour contenir toutes les matières dangereuses et un soin particulier sera pris pour s'assurer que les zones contaminées sont séparées des zones non contaminées. Par la conception du projet, la mise en œuvre des meilleures pratiques de gestion et l'application d'autres mesures d'atténuation, Denison s'efforcera de minimiser les interactions du projet avec les environnements biophysiques et humains au cours de toutes les phases du projet.

Les principaux effets potentiels du projet sur l'environnement biophysique devraient être les suivants : modifications de la qualité de l'air provenant de diverses sources d'émission, y compris l'usine de traitement; des changements dans la qualité de l'air si le radon et les descendants du radon proviennent de la solution minière riche en uranium; les changements potentiels dans la qualité des eaux souterraines résultants d'excursions de solutions minières ou le rejet potentiel d'effluent traités dans les eaux souterraines; les changements dans la qualité de l'eau, la qualité des sédiments et éventuellement d'autres composantes aquatiques dus au rejet potentiel d'effluents traités dans un plan d'eau de surface; perte directe d'habitat faunique; et, effets indirects sur la faune par des perturbations sensorielles. Cependant, Denison prévoit qu'aucun de ces effets potentiels seront significatifs et que en tout, le projet ne pose aucun risque à long terme pour l'environnement biophysique.

L'effet potentiel du projet sur la composante socio-économique de l'environnement humain est prévu d'être positif. Wheeler emploiera environ 300 personnes pendant deux ans de construction et entre 100-150 personnes durant les opérations. Des opportunités seront disponibles pour les fournisseurs de services et de matériaux. Tous les effets potentiels sur les activités d'utilisation traditionnelle des terres seront limités au site et aux zones d'étude locales. Ils seront de courte durée et limités à la phase de construction et d'exploitation du projet. Une fois que le déclassement est terminé, l'accès au site et la possibilité de pratiquer des activités traditionnelles telles que la pêche et la chasse seront entièrement rétablis. Aucun effet sur l'utilisation traditionnelle des terres ne devrait se produire dans la zone d'étude régionale. Les effets potentiels sur les travailleurs du point de vue santé et sécurité seront similaires à ceux d'autres sites miniers et industriels, et Denison s'attend à ce que ces effets puissent être atténués grâce à la gestion et au développement d'une forte culture de sécurité. Les effets potentiels des expositions radiologiques sur les travailleurs seront minimisés grâce aux mesures de conception du projet, suivis de près et gérés par la mise en œuvre d'un Programme de Gestion de la Protection contre la Radiation.

Dans le cadre de l'évaluation des impacts environnementaux (EIE), Denison démontrera que le projet peut être construit, exploiter, et déclasser sans aucun effet négatif important sur les environnements biophysique et humain. Les effets potentiels du projet seront évalués et présentés de manière rigoureuse et transparente dans l'EIE. Cela comprend la réalisation d'une Évaluation des Risques pour la Santé Humaine et l'Environnement afin de démontrer les faibles impacts du projet au complet. L'EIE indiquera également les détails d'un programme de suivi efficace. La surveillance sera nécessaire pour fournir la preuve que le projet fonctionne légalement et dans les limites de ses obligations en matière de licence.

Engagement

Denison reconnaît l'importance de s'impliquer avec les communcautés locales et autochtones, les résidents, les entreprises, les organisations, les utilisateurs des terres, et les diverses autorités de réglementation, ci-après dénommés « Parties Prenantes ». Depuis 2016, Denison engageait les parties prenantes dans leur effort continud'établir des relations positives avec toutes les parties. De manière générale, Denison a classé les parties prenantes en trois catégories :

- Communautés autochtones
- Autorités réglementaires
- Public général

Denison s'est engagé auprès des parties prenantes pour fournir des mises à jour du projet et collecter des informations qui ont été intégrés à la conception du projet. Cette approche est prévue de se poursuivre. De plus, le savoir autochtone a été intégré dans les programmes de collecte de données de base afin de garantir la collecte de données scientifiques appropriées dans des domaines clés, afin de permettre une évaluation robuste des interactions potentielles du projet dans le cadre de l'évaluation de l'impact sur l'environnement. Denison est fière des relations établies avec les communautés et réjouit de pouvoir continuer à améliorer ces relations et ces avantages pour les communautés par moyen du programme en cours de participation des parties prenantes à mesure que Wheeler avance.

Denison et plusieurs communautés locales autochtones et non-autochtone ont conclu des accords de principe ou des protocoles d'entente mutuels. Ces protocoles d'entente non-contraignant formalisent l'intention des signataires de travailler ensemble dans un esprit de respect mutuel et de coopération pour identifier collectivement des moyens pratiques permettant d'éviter, d'atténuer, ou adresser des impacts potentiels du projet sur l'exercise des droits autochtones, droits issus de traités, et domaines d'intérêt mutuels. De plus, les accords de principe et protocoles d'entente décrivent l'intention des signataires de travailler ensemble pour assurer que les avantages découleront du projet Wheeler River, fournirnont un processus permettant de poursuivre l'engagement du projet et le partage d'informations sur celui-ci, et établiront une relation en vue de définir des opportunités d'affaires d'emploi et de formation pour les parties liées au projet.

Denison est fier de la relation établie avec toutes les parties prenantes, et se réjouit de continuer à développer ces relations par moyen d'un programme d'engagement en cours à mesure que le projet Wheeler avance.

Yatı nedué holį

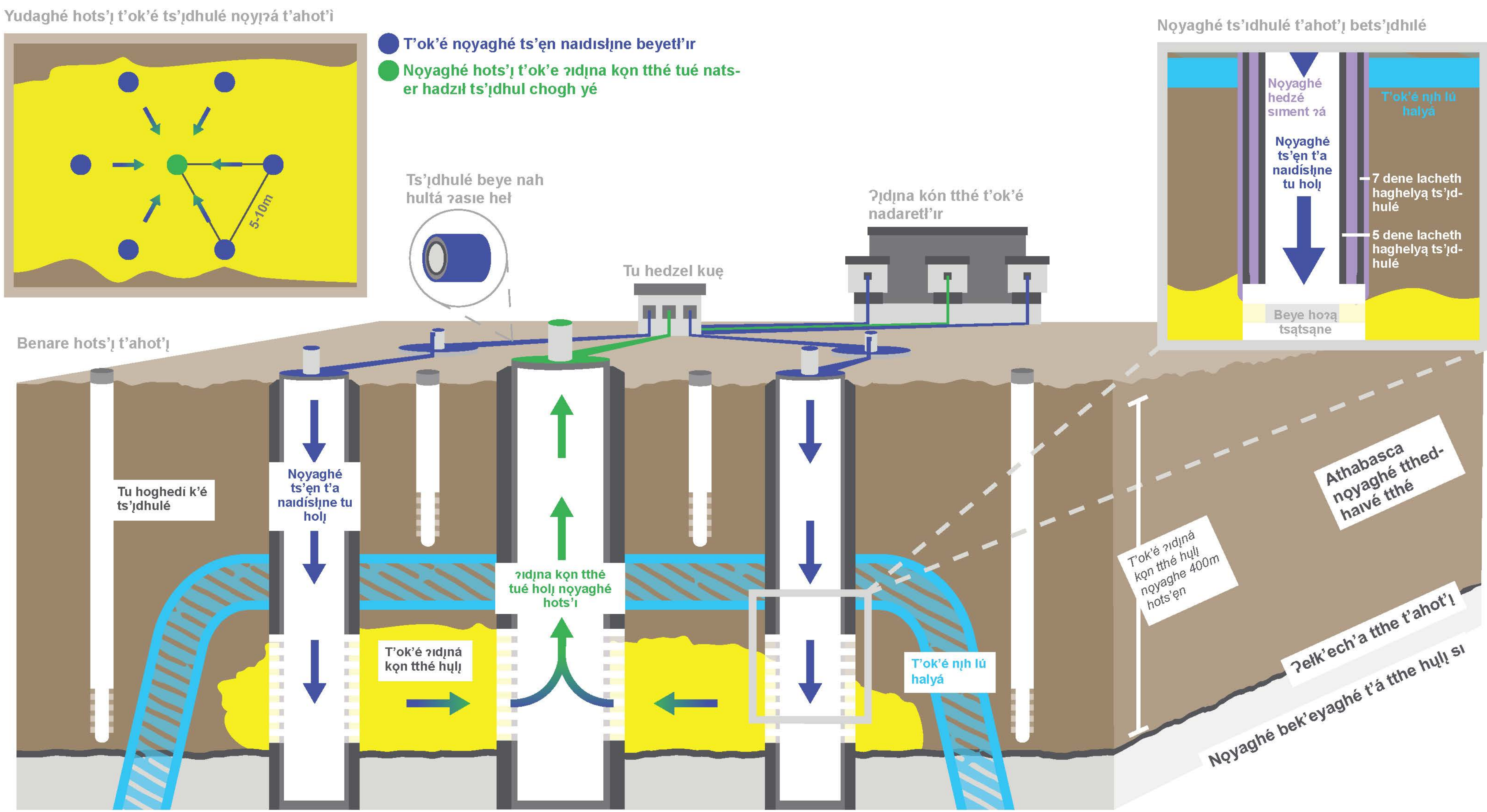
Wheeler desé t'a Lak'e hołé ghonį

Ku ɂeją Wheeler des nare tsąmba k'e gha yati k'i (Wheeler huto Lak'e k'esi hudzi si) yunadhe tsamba k'e chu t'a begodher betué hųlį k'onį ha yatı hołé sı ɂedırı Saskatchewan, Canada hots'į yutthį ts'ęn. ʔa t'ok'é hołé hadé dechęn yaghé 4 km hulta tulu 914 ga chu nasí ts'ęn 35 km Key Lake tsąmba k'e uranium operation hots'į.

Wheeler tsamba k'é k'ı Denison Mines Corp. hots'į tsąmba k'é hoɂą ɂełts'enį k'é sı. (Denison) chu JCU (Canada) tthe kadanetá dene Exploration Company Ltd hulyé k'í. (JCU). ʔa Denison k'í 90% bets'į hultá sı ɂedırı Wheeler lak'e hadé bets'ęn ɂasıhetł'el sı, ku JCU 10% bets'į sı. Denison ɂıdįna kǫn tthe kanetá dene sı uranium exploration chu tsąmba k'e nųɂa ha ɂedısı yutthęn nęnę Athabasca Basin k'eyaghe nadanetá Saskatchewan, Canada yutthęn hots'ęn Toronto ts'ęn bets'į ɂerıhtł'ıs kuę nedhe hoɂą, Ontario ts'ęn hu Saskatoon, Saskatchewan tth'ı ɂįłaghe bets'į ɂerıhtl'ıs kuę hoɂąsí. Ku yunį ɂedırı Denison k'í 50 nęnę hudher k'adąné ɂıdįná kǫn tthé kadanįtá sı ɂeją Saskatchewan chu Elliot Lake, Ontario ts'ęn, United States Beschogh nęnę tth'í nare. Ku dųhų dzįne k'e (22.5%) hulta McClean Lake Joint Venture hel hołɂąsí tsamba k'e hųlį chu t'ok'e tthenadzıs kuę McClean Lake hoɂąsı yutthęn Saskatchewan beł hekoth sí.

Ku ɂedırı tsamba k'e nųt'a ha naıłná hadé, Denison ɂedırı yatı thełtsį sı horegodhe ɂıdįná kǫné hıłchú ha Canada nask'athé ha ɂedırı t'atthé hołé ha tthot'įne ɂa ın sıtu recovery hulyé nǫyaghé ts'įdhulé ɂa hadzıł ha (ISR) hulyé sı. Ku ɂedırı ISR beghaladá k'ı Wheeler tsamba k'e bek'enats'edé hadé nǫka nįh ghalada haılé ha ɂeyı chu nǫyaghé ts'ęn tth'í ɂeghalada haílé há; dene tth'í nǫyaghé ts'ęn la k'é nadé haílé ha ɂedırı ISR ɂası ɂahot'į dé nǫká hut'á ɂasí ɂá hut'á ha. Ku ɂedırı ɂası t'oreɂá k'í nįbąne dene łą yet'arát'į sı dųhų k'asjęnę 50% hanełt'é ɂıdįná kǫn tthé nałtsí sı dųhų, k'ąnį hįłdų t'atthé bet'oreɂa ha Canada nask'athé hadé. Denison hotıé ɂedırı basé nadanetá sı t'ąt'u ɂedırı ɂasıe bet'oreɂá ISR bebasí tsamba k'e nųt'á ɂeją Wheeler tsamba k'e nųt'á ha. Ku ɂedırı ISR Wheeler lak'e nųt'á hadé, Denison hotıé ɂedırı k'esí ɂasí k'enats'edí t'ąt'ú yet'odorełɂa sı k'esí yek'enadé ha t'ok'e ISR tsamba k'e daholá sı basí.

Ku ɂedırı ISR t'a tthé ghaladá k'í Wheeler tsamba k'e k'í dǫt'ú hasį naıdısłįnį nǫyaghé ts'ęn hedzelí ha ts'įdhųlé yé t'ok'é ɂįdįná kǫn tthé hųlį ts'ęn (ku ɂeyı ts'įdhulé nǫyįɂá k'í 4 hots'į 8 lacheth hots'ęn harelayą ha) ku ɂeyı beyedzıłr injection wells hulyé (A hultá k'é). Ku ɂeją tthe ghalada ha k'í beye k'esłes tué pH natserhılé t'oreɂá ha ɂedırı k'esłes tué bet'á tthé nałxį há. Ku t'ohó ɂedırı k'esłes tué tthe nįsį hajá dé ɂıdįná kǫn tthé nałxį há ɂeyer tł'ąghé dé ɂëładųné ts'įdhulé yé yudaghé ts'ęn hedzeł há. Ku ɂeyı nats'ęn nįh ghaladá k'í nǫyaghé ts'ęn ts'ıdhulé well fields hulyé sı. Denison hadanįdhęn hú ɂedırı ts'įdhul hųlį k'é benaré 6-8 hutó nǫyaghé ts'ęn k'ełes tué hedzelí k'é injection wells hųlį begá k'asjęnę 10 m begesé hoɂą há t'ok'é ts'įdhulé naré. Ku ɂeyí kǫt'ú hoɂą dé horelyų nįh k'é, k'asjęnę 310 nǫyaghé ts'ęn ts'įdhulé hųlį ha 90 m x 900 m haghélyą nįh k'é.



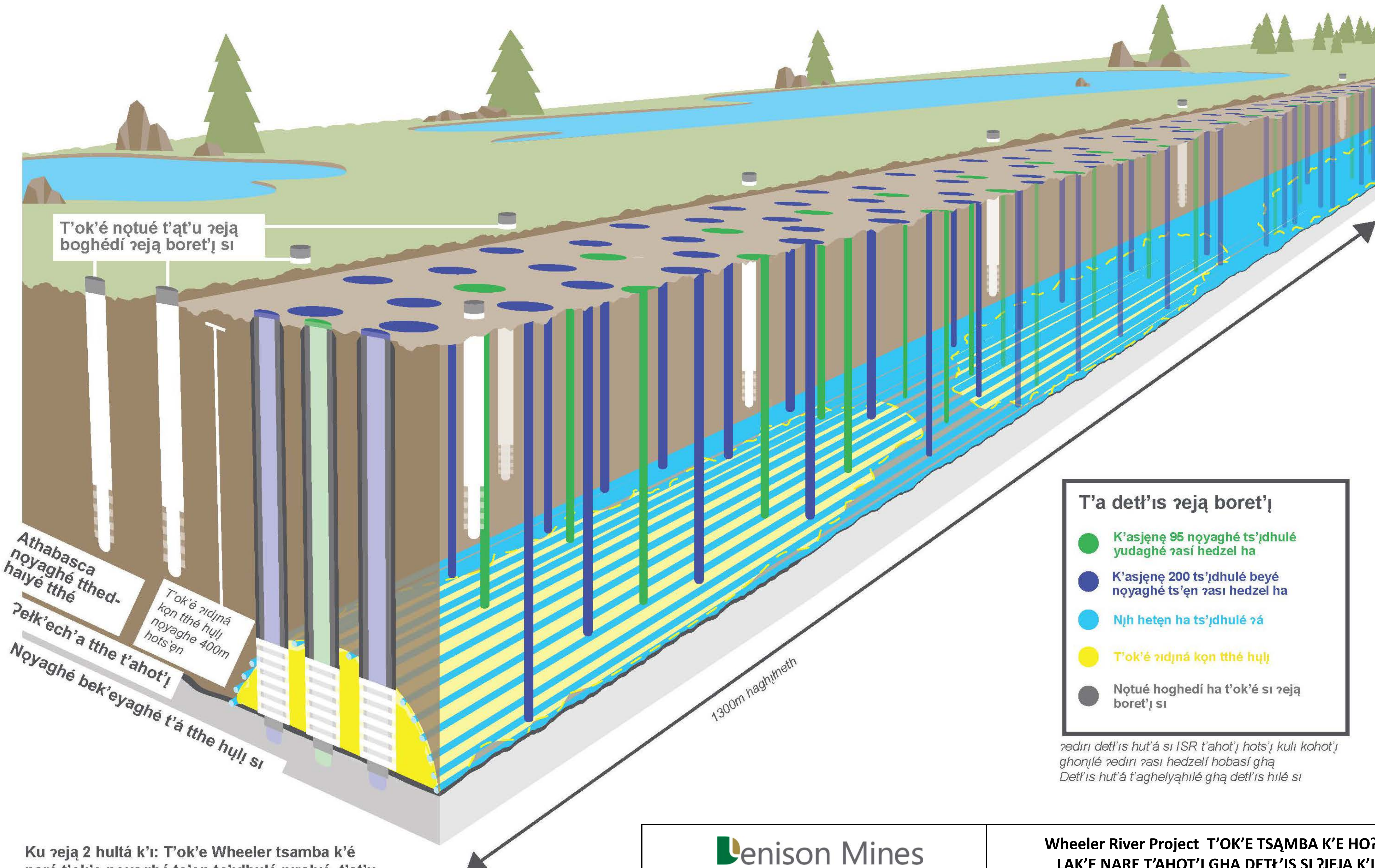
1 hulta: nǫyaghé t'ąt'u hedzel t'ahot'ı

ɂedırı detł'ıs hut'á sı ISR t'ahot'į hots'į kulı kohot'į ghonįlé ɂedırı ɂası hedzelí hobasí ghą

Hobenaré beghą detł'ıs hut'á koghelyą hılé sí

Denison Mines	Wheeler River Project T'OK'E TSĄMBA K'E HOɁĄ LAK'E NARE T'AHOT'Į GHĄ DETŁ'IS SI ɁJEJĄ K'I
Nǫyaghé t'ąt'ú beghaladá In Situ Recovery hulyé t'ahot'ı há	Eghézé zaá 2019

Nįh bąnį t'ąt'é ɂa nąní ɂedırı ISR tthé hılchú daízí dayałtí hadé t'ok'é beghaladá k'í t'á tu bet'orįdher t'ok'e bek'onį chú ɂeyı t'u k'í t'ok'é nǫtué hęlį sı tthí heł ɂełtatł'ır ghonį basí. ɂeyí ɂa ɂeją Wheeler tsamba k'é hołé k'í t'á tu hųłį sı hotıé boghédí hasí, kur t'a nǫyaghé ɂıdįná kǫn tué hųlį sı hotıé horelyų deghạré hadzíł ha hozeldzaí ha nǫtué heł hųlį ch'á, Denison horelyų nį hetęn halé há benaré t'ąt'ú nįh hetęn k'enats'édé k'esí. Ku ɂeyı nįh hetęn dé benųsé ɂasí huhtł'ır ha dué sı t'ok'é ɂasí hųlį honaré beyaghé tthé hųlį tth'í bet'oreɂá ha. Ku ɂeyı t'aghelyą k'í 100 m harįłkoth chu x 30 m hanarełthá x 1,300 m haghįłneth hu 400 m nǫyaghé ts'ęn hųlį há (B hultá boret'į k'é).



Ku ʔeją 2 hultá k'ı: T'ok'e Wheeler tsamba k'é naré t'ok'e nọyaghé ts'ẹn ts'ı̨dhulé nı̨ralyé, t'ąt'u nı̨h hetẹn ha ts'ı̨dhulé, chu t'oke tthe ghalada chu t'ok'é ʔıdı̨na kọn tthé tsamba hulʔą

Denison Mines	Wheeler River Project T'OK'E TSĄMBA K'E HOɁĄ LAK'E NARE T'AHOT'Į GHĄ DETŁ'IS SI ɁEJĄ K'I
t'aghelyą nı̨h t'ok'é ts'ı̨dhulé k'é hụlı̨ Wheeler In Situ Recovery nı̨h ʔahot'ı̨, Nọlų hu, Ts'ı̨dhulé k'é hu, t'ok'é ʔıdı̨ná kọne hu t'oké horelyų tthé hụlı̨ naré	Eghézé zaá 2019

Ku nǫdaghé ts'ęn hedzel dé, t'a beyé ɂıdįná kǫn tué hųlį sı beyé natser sí kú ɂeyer hots'į t'ok'é selyé kuę hųlį sı nįtł'ír ha. Ku ɂeyer yısį t'á tu chų ɂıdįná kǫn hųlį sı ɂełch'así halyé há ɂasí horįchahılé sı ɂeyí k'í. Ku ɂıdįná kǫn hılchú dé, t'á tu bëghódhé sı beyé naıdísłįnę hanalyé hú nǫyaghé ts'ęn hedzel ha bet'oreɂá nadłį há. Ku ɂeyı k'esí bet'oreɂá ɂá nǫdaghé ts'ęn tu ch'lele nıdíł haíle ha hoketł'á bet'oreɂá há. Ku t'á ɂıdįna kón bets'į hılchú ha.

ɂa ɂdırı ɂıdįná kǫn tthé naní tł'ąghé dé, t'á ɂıdįná kǫn tthé holį sı nįh bąní ɂıdįná kǫn tł'ulé ye kǫn hełtsí ha bet'oreɂá hasį yunadhé dé. Denison hots'į dene hadanįdhęn hu t'á ɂıdįná kǫn tthé holį sı k'asjęnę 1 lımillion dene kuę ye kǫn hełtsí há yunadhé 160 nęnę hots'ęn bets'į horetth'agh tth'í łąhılé heł. ɂeyı ɂą t'ąt'é ɂa bet'oreɂá ha korıjala dųhų bet'á horetth'agh borełnį łą hılé ha ɂá yunadhé dé nįh k'é honídhíl ch'á.

Ku ɂedırı ISR tthé k'enats'éde hel t'ąt'ú beghaladá chu hołé basí hadé, ɂedırı tsamba k'é hołé chu beghaladá hu t'ohó beląghé nųnįdher dé nįh senalyé tth'í hoɂąlá yunadhé dé. T'a ɂasí hadé tulú nedué (7 km) hołé t'ok'é 914 tulú hulta hots'į t'ok'é tsamba k'e ts'ęn, dene naradé ha yoh hołé hu t'ok'é ɂasí hetł'el hots'į hu, dzıret'aí k'é hu, tulú 5 km lak'e hots'į dzıret'aí k'é ts'ęn, tsamba k'e naré tulú hú, tu k'é hołé ɂejedheth bebąné hu t'ok'é tu ch'ele bek'oní chu tthe heldeth bezasé k'onį t'oho ttheheldeth hots'į, tu soreldhęn k'e hu, tu ts'edą k'é hu, tu ch'ele k'onį k'é hu, tu soreldhęn kuę hu. Ku dųhų ɂıdįná kǫn tł'ulé hųlį 914 hulta ts'įdhįlé ku t'ąxą netthath dé tsątsąne hetl'el ha hųlį kǫn hełtsí ha.

Ku ɂeją lak'e bonįdher dé ɂełk'įnį donódhí ha, lak'e honaré ɂası hołé tthé hu, la k'e beghalada, beląghe nųnįdher dé ɂasí nanelyé ha, ku ɂeyı nodher dé nįh sehenųt'á ha. Ku nıhts'ęn k'oldé nahts'ęn hots'į betł'esí ɂası boghedí hoɂą province chu Canada hots'į k'oldé nıh t'ąt'u bet'ahot'į ha bel sehúlyé hoɂą hotthé ɂasí bonıdhí ts'ęn tth'ú. ɂa horelyų ɂasí senųnįdher dé, tsamba k'e naré ɂasí hołé naké nęnę hots'ęn 2022 nęnę honįdhér k'é. Ku t'oho la honįdher tł'ąghe dé tthé tsamba 20 nęnę hots'ęn hoɂą ha ɂįła nęnęn k'e 12 M lımıllıon hająłdath U_3O_8 ɂıdįná kǫn tthé łes deltthogh hołé ha. Ku beląghé tł'ąghé dé sǫlah nęnę ts'ęn nıh sehenųt'á ha. Ku ɂeyer nųnįdher dé ɂedırı sǫlaghé ɂasıé tthere bek'enats'edé ha: t'ok'e tthé tsamba hılchú sı nǫyaghé senahúlyé ha, ɂası bornełnį dįłyé hu, la yué tth'í dįlyé ha hú, ɂası nanélyé chu senįlyé, ɂeyı chu nıh sehenųt'á ha. Ku ɂeyer nųnįdhé dé t'ąt'ú nıh sehenųt'á hoɂą k'í hotıé degharé t'a ɂasí hoghedí k'e hoɂą province chu Federal nıhts'ęn k'oldé betł'esí yunadhé dene ɂeyer honaré hoɂą ɂesorané ch'á nıh tth'ı hotıé besúdí hoɂaɂ ɂá. Ku ɂeyı nodher tł'ąghé de sǫlah nęnę hots'ęn nıh boghedí ha Wheeler des honare t'ok'é la k'é ghįlé naré t'ąt'u ɂasí senalyá walí sı ha net'į ha ku nezų dé nıhts'ęn k'oldé bets'ęn benaredí ha yunadhé bek'e yatí theɂąlé dé nıh benaredí ha kǫt'ú boghedí ha province hots'į k'oldé bets'ęn.

Ku dųhų nıh k'é t'áhúɂą

Ku ɂedırı tsamba k'e nųt'á Wheeler des nare yudaghe ts'ęn nıh k'e ɂası k'enats'edé ha Athabasca Plain Ecoregion t'ąt'ú nıh hudzí honaré. Hotthe yuné 40 nęnę ɂązí tthe kadanáhotą sı ɂeyer honaré. ɂeyer honaré kǫn k'é chu jeth kuę dahóla sı ɂeyı chu tsamba k'é tth'I dahóla sı bets'įdhılé ts'ęn chu nąní dene nıh k'é nakoreldé sı ku dene naradé hadé ɂeją hots'į 150 km hanįłthá naradé sı. Ku ɂedırı Slush Lake Reserve Beghąnįch'ere bets'į nıh hudzaı hų́lį English River First Nation hulyé k'í bek'é dene narade hılé 15 km theɂą Wheeler ts'įdhılé.

Denison yunı 2016 nęnę k'é hotıé degharé nıh k'e t'a ɂası hųlį sı nadanetá ha yek'įdéł nıh horelyų hąt'ere nadanetá ha dųhų t'a yatí hųlį sı ɂeła nįyįlé ha. Degharé hok'enats'įdé sı nįłts'í hu, tu ye hu, té. Hu chu nǫk'é t'a ɂası hųlį horelyų ɂeją Wheeler honaré bek'enats'įdé sı, ku ɂeyer honaré chu bets'ıdhılé hel halyá sı dųhų ts'ęn bek'enats'edé. Ku horelyų nıh hu yedá hu te. Yaghé ts'ęn hu horelyų ha net'į hoɂą: nįłts'í beyé (radon naıdısłįne chu ts'er), nǫtué beyé t'ahųt'é hu, nǫtué narįłthá nelɂą hú, nǫdaghé t'a tu hųlį sı t'ąt'é hu, tu dathela t'a hųlį sı tarįłthá hu, tu tarįłtha sı basí hu, t'a ts'ęn tu daįlį, tetł'aghé t'a ɂasí hųlį sı net'į hu, te t'a ɂasí daghená, te tarįłthá ts'ęn t'á ɂasí daghéna (t'anet'é chu t'ąt'é hųlį sı), te hots'į gu chu łué (t'a łué hųlį hu t'ok'é hedel chu betthęn t'ąt'é), ts'aılí chu gu hu, ɂı́yesé, tech'adıeɂasé, nǫk'é tsadheth t'a ɂełk'ech'a hųlį, tech'adıé nedhe, nıh k'e t'ahuɂą beghą t'a yatı hųlı t'ąchaı ɂełk'ech'a (t'ok'é hųlį chu t'anełt'é hųlį sı), nįh t'ąt'é hu tech'adıé t'a hųlį sı t'ok'é naradé.

Wheeler tsamba k'e t'a nįh k'é hųlį sı Treaty sǫlaghe tsamba nalyá 10 hulta k'eyaghé sı ku t'á dene yets'įdhılé naradé sı dįghí ɂełk'ech'a dene xaiyorįla hots'į sı t'a nįh ɂeyer honaré nıh t'odorełɂá sı, yunısı chu dųhų ɂełk'esı yek'e naradaı sı. Ku ɂedırı nąní dene k'í Beghąnįch'ere hot'įne English River First Nation chu ɂena hots'į denë Kineepik, Sipishik chu begharék'ą dene A La Baie dene chu Pinehouse hots'į ɂena chu Beauval chu kuę Ile a la Crosse, hel sí. Ku t'ą dene ɂeyer honaré t'á nįh t'odorełɂá sı horelyų ɂełk'ech'a ɂasıé ha naralyé chu łue kadanįdhęn hu jıé chu nǫts'į naıdıé horelyų t'a hųlį sı kodorelɂįh sı nįh dąnéłt'ú. Sįne dé t'a des hu tú hųlį sı dene ts'ıyé yek'e dzırédıł sı ɂası kodorelɂįh ha naıdıé chu tech'adıé chu dorełk'ą huto nǫnįsé bekoę dahóla naradé nį dąłt'ú. Ku xaıyé nųnįdher dé t'a des hu tu daítą sı, dene yek'e dzıredıł nadłį sı nakoreldé ha, nǫnısı bekoę dahóla ts'ęn chu ɂįłdzúsé dathełá chu naralzé há t'ok'é horelyą ts'ęn. Ku yunısí denenįzasé t'a ɂįłaghé hulɂąsí Wheeler nare t'ok'é húlɂą sı ts'įdhılé ɂası hołé haılé bet'á hulɂá ch'á.

Ɂa horelyú ɂası net'į, Denison hots'į dene hadánįdhęn hu t'á yatí holį sı k'enełt'é sı dųhų bet'a nįh ɂahót'į ha ɂerıhtł'ıs nedhe hołé t'ąt'ú nįh t'oredhí ha ɂeją tsamba k'e hołé honaré hotıe t'ąt'ú holé ha k'enełt'é yatı holį sı la ts'ıranį ha.

Ku nįh k'é ɂedłahúné ghonį há

ISR gharé nǫyaghé ts'įdhúlé t'oreɂá k'í ɂedırı tsamba k'e hołé k'í bet'á tthé tsamba hılchú chu ɂıdįná kǫn łes deltthogh hołé tthénadzıs kuę hedį, nįh tth'í necha ɂahot'į haılé tthé tth'í łą hųlį haılé (t'a hųlį sı tthenaldeth zasé hut'á hasį), tthé tth'í lą nįlyé haılé (t'ok'é nǫyaghé ts'įdhulé nįlyé sı bezasé hut'a hųlį hasį), ku horelyų t'á ɂasí boretnį ha lą haılé ha (ku hųlį dé) tu soreldhęn chu t'a nıdıł hut'á. Wheeler la k'é t'a hołé hadé horelyų t'a ɂasí borełnį sı hotıé bek'ónį ha nįłyé ha ɂeyer honaré t'a nįh bet'ahót'įlé ts'įdhılé ɂası nįlyé ch'á. T'ąt'ú tsamba k'e hołé hadé, hotıé ɂası ghoghédı ɂası k'enadé sughuá tth'í ɂası hołé hu, Denison degharé nįh ghadalaná ha ɂasí nodhí ch'á bek'e horelyų sughuá halyé dé dué hané haılé yunadhé de, Denıson hotıé nįh hoghéłnį ha dene yets'įdhılé tth'í hoɂįh haılé la bonįdher tł'ąghé dé.

Ku t'a ɂasıe boghedí hadé ɂedırı tsamba k'é ɂa nįh hobasí t'a ɂasí ɂedų hané ɂedırı net'į hoɂą: nįłts'í t'a ɂeyer naré hųlį sı yasí ɂedų hané ghónį t'ok'é nǫyaghé hots'į tu hutł'ır bet'á; bet'á ɂedų hané ghonį beye naıdısłįné radon chu naıdısłįné radon progeny degas hulyé beyé hųlį de t'a nǫyaghé ɂıdįná kǫn tthé tué natser dé; nǫtué t'a hųlį sı ɂeyer honaré ɂedų hané ghonį t'a nǫyaghé tu yudá t'axą tu soreldhen kuę tu hutł'ır nįtł'ır de ɂeyer gá; t'ok'é tech'adıé daghéna dįłas ghonį tsamba k'e nųt'ą ɂá; ɂeyı chu tech'adıé ɂeyer naré naradé ɂeją ɂası k'enats'edé ɂa dįłɂas ghonį. Kulí, Denison hotsı'į dene hadanįdhęn hu ɂedırı ɂasıe behayaįtı bet'a doɂǫnzı ɂedų haılé t'ok'é nįh ɂahot'į ha.

Ku ɂedırı la k'e hołé hobasí dene ha la hołé chu ɂasí k'enats'edé hadé nezų ha bet'oreɂá ha. Wheeler lak'e k'asjęnę 300 dene lak'e nadárełyá t'oho hołé de nak'e nęnę huk'é ku ɂeyı beląghé nųnįdher dé k'asjęnę 100-150 hots'ęn dene ɂeją ɂeghadalaná ha. Ku nąnį dene ɂedırı lak'e naré ɂeghadalana hodorelɂįh dé dene ha hoɂą ha. Ɂa ɂedırı la nųt'a k'í bet'a dene łą yet'orełɂá ha tsamba chogh hołé ha ɂá bet'á la chu dene yenaré ɂeghadalaná ha yutthęn Saskatchewan hots'į dene xa t'ą dene ɂeyer honaré naradé dųhų ba horená hoɂą dé. Ku t'ą dene ɂeyer honaré nįh ɂarat'į sí doɂǫsí horįchá haılé nįh necha bet'oreɂa haılé ɂa tsamba k'é nųt'á ha. Yunadhé t'oho la k'é ɂenahút'é tł'ąghe nįh senųt'ą dé nįh hotthé bet'ahot'į nįh k'esí hoɂą nadłį ha dene yek'e nakoreldé ha. Ku dųhų t'a yatı holį k'í dene t'ą nįh ɂarat'į sı ba dué haılé ha. Ku t'ą dene lak'e nadarełyá k'ı hotıé boghedí ha t'ok'e Dennıson bets'į tsamba k'e dene hoghedí k'esí hı ha hotıe dene la k'e hoghedı yatı gharé. Ku ɂedırı ɂıdįná kǫn tthé behodhele dene yets'įdhılé hoɂįh hoɂąhılé t'ąt'u ɂası holį begharé dene hoghedí ha ɂedırı Radiation Safety Management Program ɂerıhtł'ıs nedhé hogharé t'á boghedí ha tsamba k'e naré dene xa.

ɂa ɂedırı nįh ghaladárıhtł'ıs EIA k'e, Denison degharé yatí thełtsį sı t'at'u sughuá ɂası k'enadé ɂedırı lak'e hełtsı ha k'ı chu yeghalaná hu t'oho beląghé dé nįh t'ąt'u senaıyílé ha bet'a nįh chu dene ha dué haılé. Ku t'a ɂası bet'a t'ahuɂą hotıé ɂedırı njh basí EIA ɂerıhtł'ıs holį sı hotıé holį dene nalé tth'í thelá ha. Ku ɂeyı t'a yatı holį sı dene hel t'ahuɂą bası yatı kodorelɂįh sı (HHERA hulyé) bet'á dene ha t'ahuɂą ha betth'ı hu beł t'anodhı ghonį basí.Ku ɂedırı EIA ɂerıhtł'ıs nedhe k'e t'ąt'u nįh ghaladá boghedí dąlį ghą holį sı. Ku nįh hoghedí dé t'ąt'u ɂeghalada sı hotıé nįh k'é ɂası hełtsı hoɂą sı beghare nųt'ą sı k'esí hoɂą łá kulı bedį ha dué sı, ɂeyı ha hotıé boghedí sı.

Denedédłįne chu nąní dene ɂeyer honaré t'ąt'u beł yatı nųt'a ha

Denıson hotıe ɂedırı k'olyą sı dene t'ą ɂeyer honaré naradé sı beł yatı hoketł'ą ts'ęn, t'ą ɂası k'e naradé hu, dene t'ą ɂası beł hołé bası chu t'ą nįh ɂarat'į sı ɂeyer honaré hots'į. Yuní 2016 nęnę hots'į

Denison hots'į dene ɂeyer honaré denedédłįne chu honésí dene hel nadayaįłtí nįh sughua nųɂá k'enadé ha. Horelyų honet'į hadé, Denıson ɂedırı taghe ɂası yatı thełts'į sı ɂeyı basɪ:

- T'ok'e denedédłįne naradé
- T'ąt'u k'oldé betł'esí nıh ts'ęn k'oldé
- Honezı ɂeyer honaré dene naradé

Denıson hotıé dene heł ɂası k'enadé sı ɂeyer honaré nįh ɂarat'į sı basɪ t'oho La k'e Project basɪ yatı godhé holį dé kudąne dene ts'ęn yatı nįt'a t'ahot'į basɪ. Ku ɂeyı k'esı ɂası hołé dé dene beyatıé tth'ı beghoręt'a ha t'a nįh basɪ yatı hołé huk'e dé ɂeyı hogharé yunaghé nįh k'e t'ąt'u ɂedų ghonį kat'u hotıé boghedí ha honįdhęn ɂá.

Denison chu nąní haıyórįla dahóla sı ɂeła lımarshıɂasé datheɫtsį nı Memorandum of Understanding hulyé t'ąt'ú ɂeła sughuá hoɫɂą ha (MOU). Ku ɂedırı yatı nedhe MOU holį k'ı dųhų ɂełneredí ha holį yunadhé bet'a lımarshí nedhe hołé ha ɂeyer dé Denison hots'į dene hotıé dene sughuá senųɂá k'enadé ɂeją Wheeler tsamba k'e nųt'a ts'ęn tth'ú. Denison hots'į dene ɂeyer honaré dene heł k'adąne holą nadaįłtí sı dųhų hots'ęn begharé t'ąt'u tsamba k'e hołé dąlį ha begharé yatí holį sı tsamba nałya yatıe tth'ı narayıs hılé hu t'at'u dene heł sughua hoɂąsı sı k'e hoɂą ha.. Dene t'ą nįh ɂarat'į behonıé gharé ɂası holį sı nįh basɪ ɂerıhtł'ıs nedhe MOU holį nį yé bet'orįdher sı hotıé horelyų yatı ɂeła nįlyá ɂa ɂįłaghé yatı nedhe holį sı dene horelyų ɂełts'edarįnį ɂá. Denison hots'į hotıé danįdhęn sı dųhų ts'ęn t'ąt'ú dene heł ɂeghadalaįna ghą sughuá dene heł hołɂą danįdhęn sı yunadhe dene heł hotıé ɂasıe k'enadé hodorelɂįh tsamba k'e nųt'á hots'ęn ɂeją Wheeler tsamba k'e nųt'a hots'ęn.

Denıson benįk'esı chu ɂedırı ghą sughua nįdhęn sı t'ąt'u dene hel ɂası k'enaradé yunadhé tsamba k'e nųt'a ts'ę'n tth'u ɂeją Wheeler naré t'ąt'u sughua ɂası k'enadé sı k'e hoɂą ha yunadhé ɂedırı la k'e nut'a ts'ęn tth'ú

MAMOY ITWIWIN

WHEELER SEPIY ISICIKIWIN

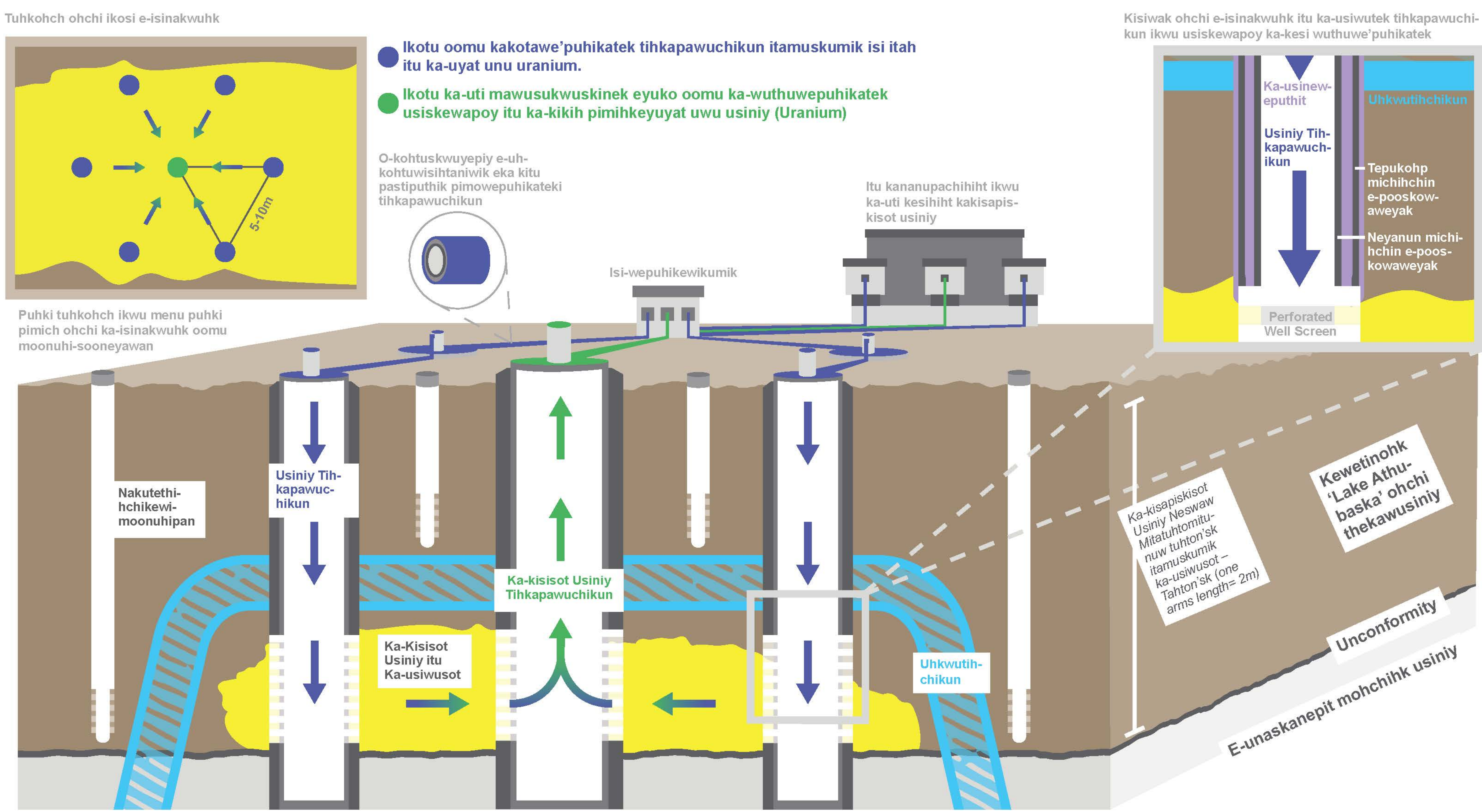
Ikote ooko kakesi othethihtuhkwaw ewi – paskihtenuhkwaw moonuhisooneyawan ooko moonuhisooneyawewi kimanuhk ohci oooko Denison Mines ka – itihchik. Ikote isi kewetinohk, tepukohp tipuhuskan puskeskunuhk, nisto – mitunuw – neyanunosap kachimasiki tipuhuskanu, puhki kewetinohk isi menu nuwuch poko machi – kesikunohk, Apihtukuhikuni – Sakuhikunihk, (Key Lake) ohchi.

Oma Wheeler Sepiy Sakamocikiwin masiniykan oci Uranium Monahahk soniyowan ikwa kisinihkiw waskiykan oti kewitinok om a tihpahaskan Saskatchewn, Canada. Ita oma kawi isicikik ita eka ipiskicikatik uski, nantow niyo tipahaskan oci kici miskank 914 ikwa nantow nistomintanow-niyanosap cipahskans kewitinohk- macikisikani ita Key Lake mikwa atoskaniwik.

Wheeler oho i wihci cesikimacik ikwa Denision Mines Corp. ikwa JCU(Canada) Exploration Company. Denison mamowe kikac-mitatomintano 90% tipiytamok Wheeler ikwa kotakwak mitatat 10% poko. Denison oho kapi itonako Uranium ikwa kotaka otosikwina i opinaki oti kewitinok Athabasca. Mikwac Toronto, Ontario ikw ota Saskatoon kayacik. Elliot sakiykan,Ontario ikwa mina Kicimohkiman uski ayowak. Mikwac wiya paki tipiytamok McClean Lake Uranium nantow nistanow-nisisap 22% oti kewiytinok.

Oti nikan titastikicik, Denison oho iwi pitos wepinikic to monahoht awa usini ikwa itamok situ recovery(ISR). Yakoma kawi iyki moya ta misi monatikewak akwaci atamik tisi monatikicik, maka waskitc titakamikan. Sasiy iki kita patamok kotaka iskiya akamaski isi atosikicik. Osam poko niyano-mitanow-50% iko sawa isotinit awa Uranium. Ikosi kwa Wheeler oma kawiyask soki waskawistamok ikosoma ka wi iswipitcikik.

ISR monahikiwin, Wheeler ta kotwi paham nipi ita oci kaki poskwahiykicik, nantow niyo isko iynaniw mihcicin poskawa ita monahopana ikwa nipi potsikinamok ikwa i tikawpawit awa asini ikwa kitwam nipi otinamok waskiykani isi wipahoyt. Mamawi nistow mintatomitanow mina mitat pohskwa tositawak mina 90m X 900m tawatiykan tositawak (figure A) tapasiniykan.



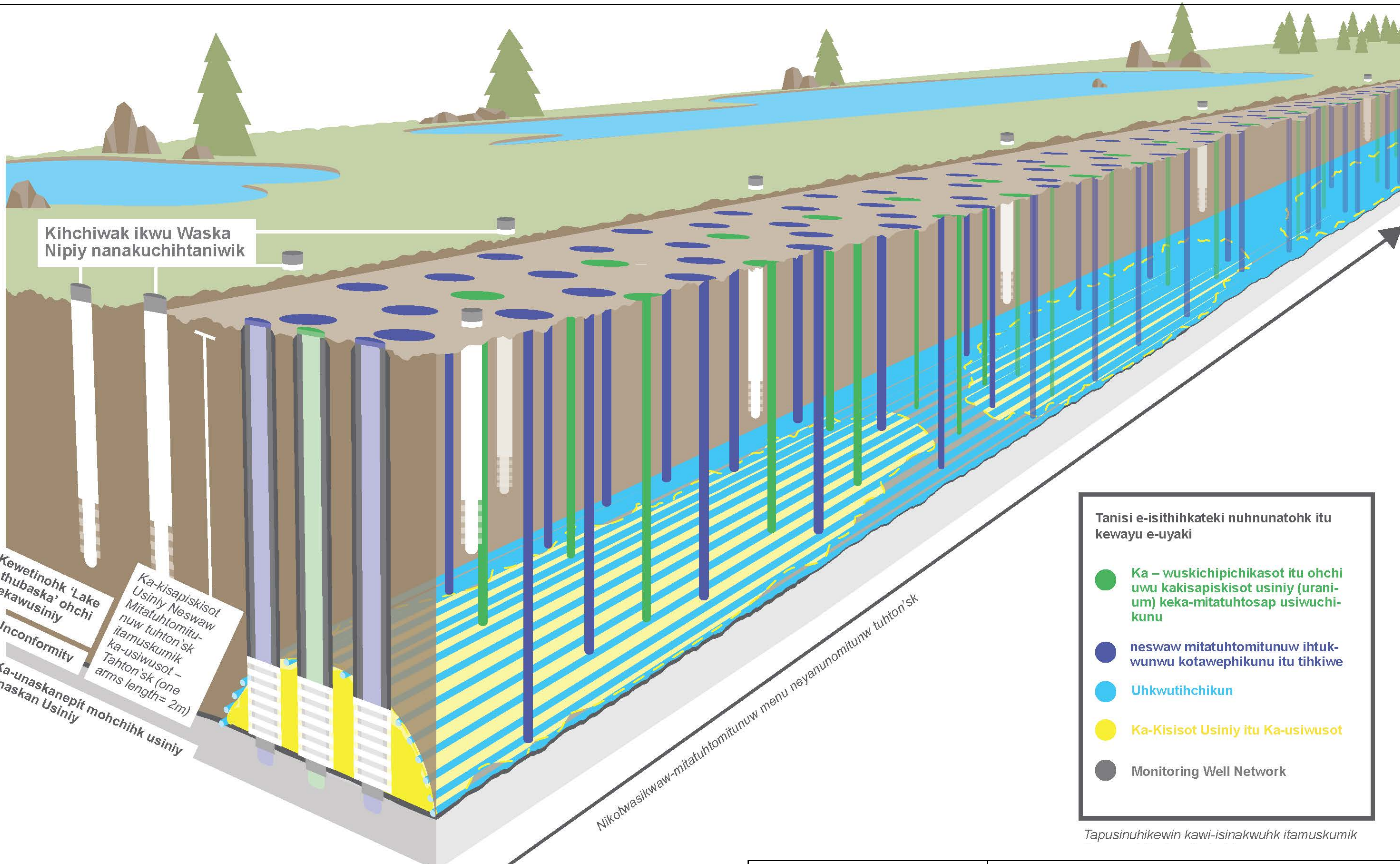
Tapusinuhikewin kawi-isinakwuhk itamuskumik ikwu wuskitus-kumik ohchi

Ka-ispichi-kuhkuhkeyak

E-yuko oomu kawuthuwe'puhikatek eyuko oomu uranium itamuskumik ohchi otukiseyapeyu ekotawapekumoki itamuskumik isi ikwu ikotu ohchi kakospoowepuhikatek eyuko oomu uranium

Denison Mines	WHEELER RIVER SEPIY
Yakoma tapasiniykan tansi kawi isi atoskimaka	opiniyâwewowpîsim 2019

Mihcit kiyapic moya tapwi , wiya oma nipi ikwa intwita natow is ti sayak. Maka wiya mina yako ki kitapatamok. Atimi oma ita oma koci itinakwow ikw isiwpahakwa, ikota oma ta waska akwacitawak ika wikac notow isi ti si sipwi ciwa. yakoma atami , osamoko ita kawi atoski mamowi mitatomitanow ospitconis tisiy ayukiskow, nistomintanow tisi spow ikwa peyakwaw kitci mintatomitanow mina nistowmintanow tisi kinaw, ikwa neyow mihtatowmitanow atami uski.



Tapusinuhikewin moonuhisooneyawan e-wi-isinakwuk, Kuhkithuw kitu-uhkwutihki usi-chitukawu

Denison Mines	WHEELER RIVER SEPIY
ikosoma kawi isinakwa atamaski Wheeler kawi isicikicik	opiniyâwewowpîsim 2019

Mamowi Aski Kitakwa

Mikwac oma ita kawi opina atoskiwin kiciwak Wheeler Sepiy ispaski itawin ciki mina Athabasca itowin kiyapic nitonom kotak asiniya aspihin oci neyo mintanow aski. Ata wiya kiyapic maciwak , mitawiwak moya awiyak kisiwak ayow topiykit. Mitatomintow mina niyomitanow tihpahaskan mowic kisiwak awiyak , yako ma Slush Lake iskonikan, English River ka akisocik ota, apo mina pakisomo tiki moya awiya ayow.

Ikosi Denison iki itotom ikwa masinanam, kisiwak ikitapata uski, nipi, pisiyskowa ikwa mina nanatok ta kitapimiko kakiyow kiwiy, kinosiw ita amiyit, piysis ita ka pimacihot ita mina nipi oci ikwa astik.

Ikosi kwa Wheeler nistowinom, neyow piskic itoninowak ikota iyakiso Treaty 10 ochi. Wiya iyapicta iyaco isiwak uskikan. Iyako English River Itinowak, Kinepik-Pinehoue, Sepesiy-Beauval ikwa Sahkitawa-Ile La Crosse Apitowkosanak. Ikosiy kwayask apatan oma aski ka nipi ikwa kapihpo.

Ikosi Denison tapwi itam kwayask kayow aski oci ikwa itowin iktapata ikwa masinahum mina tisi nakatoki uski.

Tansi taki isiki

ISR atosikwin ka masina oma oci Uranium atoskiwin ikwa Uranium Kisitawin, ika kikwiy iskonikiwin, ta wanata uski, ika ta siwanata nipi, tapikinai, asini ka poskwaha, ta pikina, ikosiy kwayask Wheeler ta nakotokih oma isicikiwin.

Ikosi mina kapi ta nakato nipi, kistikana kakiya kikwiy papamik ka pimata. Ikosi Denison itiyi tum , ika nanatow tisi siwanata uski, anowc ikwa mwestus.

Wheeler itwew mamowi nesto- mitatomitanow topina oma atoskiwin , nistom nesso askiwin mina takoc mitatomitanow mins mitatomitanow niyanmitanow itnowuk tatoski. Kapi ta kitapimi iyawis ka tosksi ikota.

Ikosi Denison ta nokotow kakiyow kikwiy soki tati ispiyik, Iya mina soki tatoski ta masinaha tisi kacitina oma masiniykan tisi opinana ikwa tatoskimaka.

Mamowi Isicikiwin

Aspin oci 2016 Denison nistowinawiw i yawis ka kiso oma opinikiwin. I yakoni ohoh kanitowinawat:

- iyawis itawina
- Oyasowi nowak okimakani
- Iyawis kiciwak ka kiso

Denison kiyapic natkato kakiyow ka ti nakiska ikwa wica atoskiw kakiyow itiniwa mina kakitom apowak ta yamicik ka tispiyik. Sasiy mina masiniykan masinamo isi napo nistota. Ika miwstas iwyak ta pwakatam kitusowi.

Denison nahnaskomo ikwa mamtiso iyawis ka miyo wicito ikwa katiski. Kiyapic mina oti nikan.

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Abbreviations

ALARA	As Low As Reasonably Achievable
CEAA 2012	*Canadian Environmental Assessment Act 2012*
CNSC	Canadian Nuclear Safety Commission
CWQG	Canadian Water Quality Guidelines
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
Denison	Denison Mines Corp.
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ERFN	English River First Nation
ha	hectare
HCB	Heritage Conservation Branch
HHERA	Human Health and Ecological Risk Assessment
IK	Indigenous Knowledge
ISR	In Situ Recovery
JCU	JCU (Canada) Exploration Company Ltd.
km	kilometre
masl	metres above sea level
mg/L	milligram per liter
M lbs/yr	million pounds per year
NAD	Northern Administration District
PFS	prefeasibility study
Project	Wheeler River Project
SARA	*Species at Risk Act*
SKCDC	Saskatchewan Conservation Data Centre
SEQG	Saskatchewan Environmental Quality Guideline
SK MOE	Saskatchewan Ministry of the Environment
SSWQO	Saskatchewan Surface Water Quality Objectives
VC	Valued Component
WTP	Water Treatment Plant
Wheeler	Wheeler River Project

1 Introduction

The Wheeler River Project (Wheeler or the Project) is a proposed uranium mine and processing plant in northern Saskatchewan, Canada (Figure 1.1).

Wheeler is a joint venture project owned by Denison Mines Corp. (Denison) and JCU (Canada) Exploration Company Ltd. (JCU). Denison owns 90% of Wheeler and is the operator, while JCU owns 10%. The Wheeler property contains a number of areas of mineralization, including but not limited to the Phoenix and Gryphon deposits.

Figure 1.1: Wheeler River Location in Canada

Wheeler is located in Saskatchewan's Athabasca Basin about 4 km west of Highway 914. It is located mid-way between Cameco Corporation's Key Lake Mill and McArthur River Mine (Figure 1.2) and is 600 km north of Saskatoon.

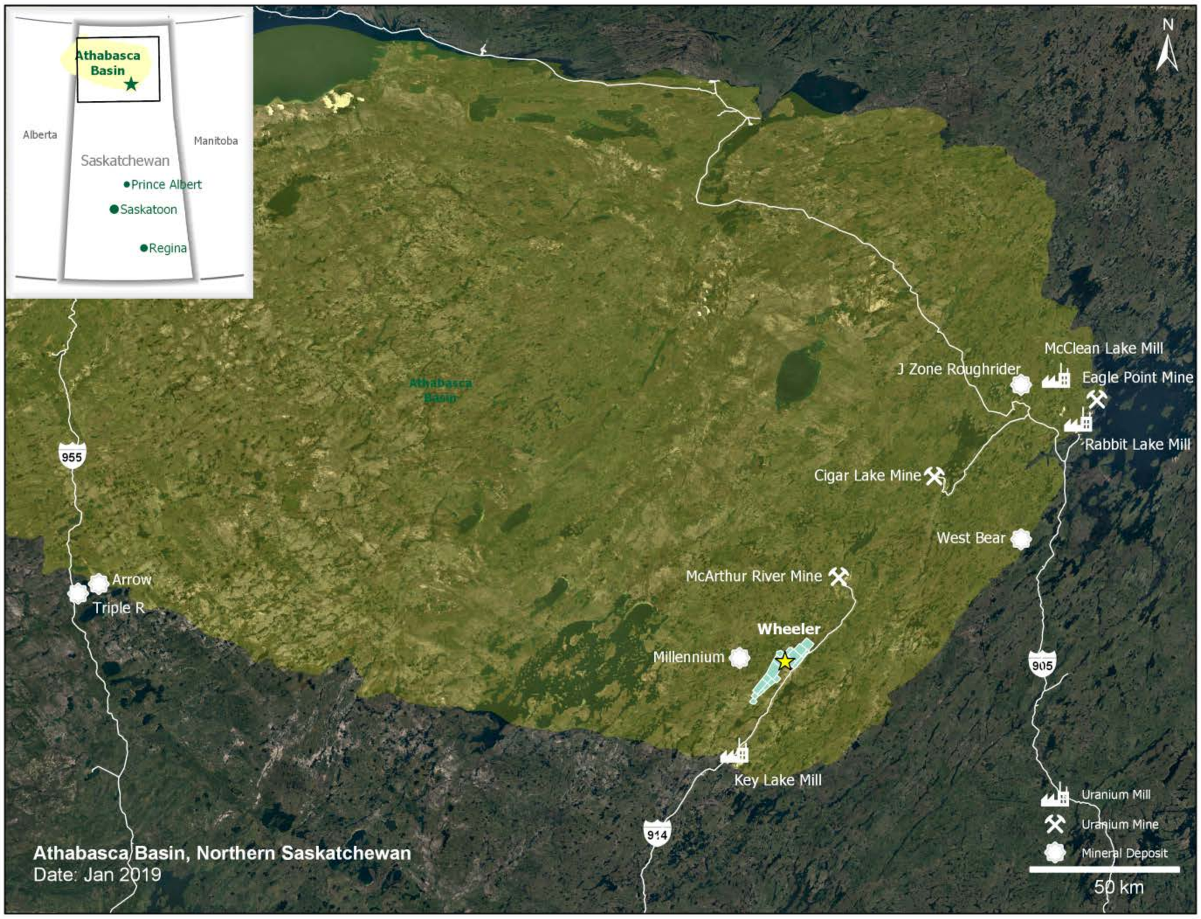

Figure 1.2: Wheeler River Location in the Athabasca Basin

1.1 Project Proponent

Denison is a publicly traded uranium exploration and development company with interests focused in the Athabasca Basin region of northern Saskatchewan, Canada. The company trades on the Toronto Stock Exchange and New York Stock Exchange, and headquartered in Toronto, Ontario with offices in Saskatoon, Saskatchewan and Vancouver, British Columbia.

Historically, Denison (and its predecessor companies) has had over 50 years of uranium mining experience in Elliot Lake, Ontario, Saskatchewan, and in the United States. Today, the company is part owner (22.5%) of the McClean Lake Joint Venture which includes the operating McClean Lake uranium mill in northern Saskatchewan. In addition, Denison provides expert mine decommissioning and environmental services through its Denison Environmental Services division and serves as the manager of Uranium Participation Corporation, a publicly traded company that invests in uranium oxide and uranium hexafluoride.

The company's history of uranium mining, unique expertise in the specialized sectors of uranium mine decommissioning and exploration, as well as its active involvement in the uranium sales and marketing business through its management of Uranium Participation Corporation, have uniquely prepared Denison to be a qualified proponent to develop and operate Wheeler.

As exemplified under our current licences with the Canadian Nuclear Safety Commission (CNSC) at our Elliot Lake and McClean Lake uranium facilities, Denison is committed to the operation of its facilities in a manner that prioritizes safety, environmental protection, and sustainable development.

The proponent is Denison Mines Corp.

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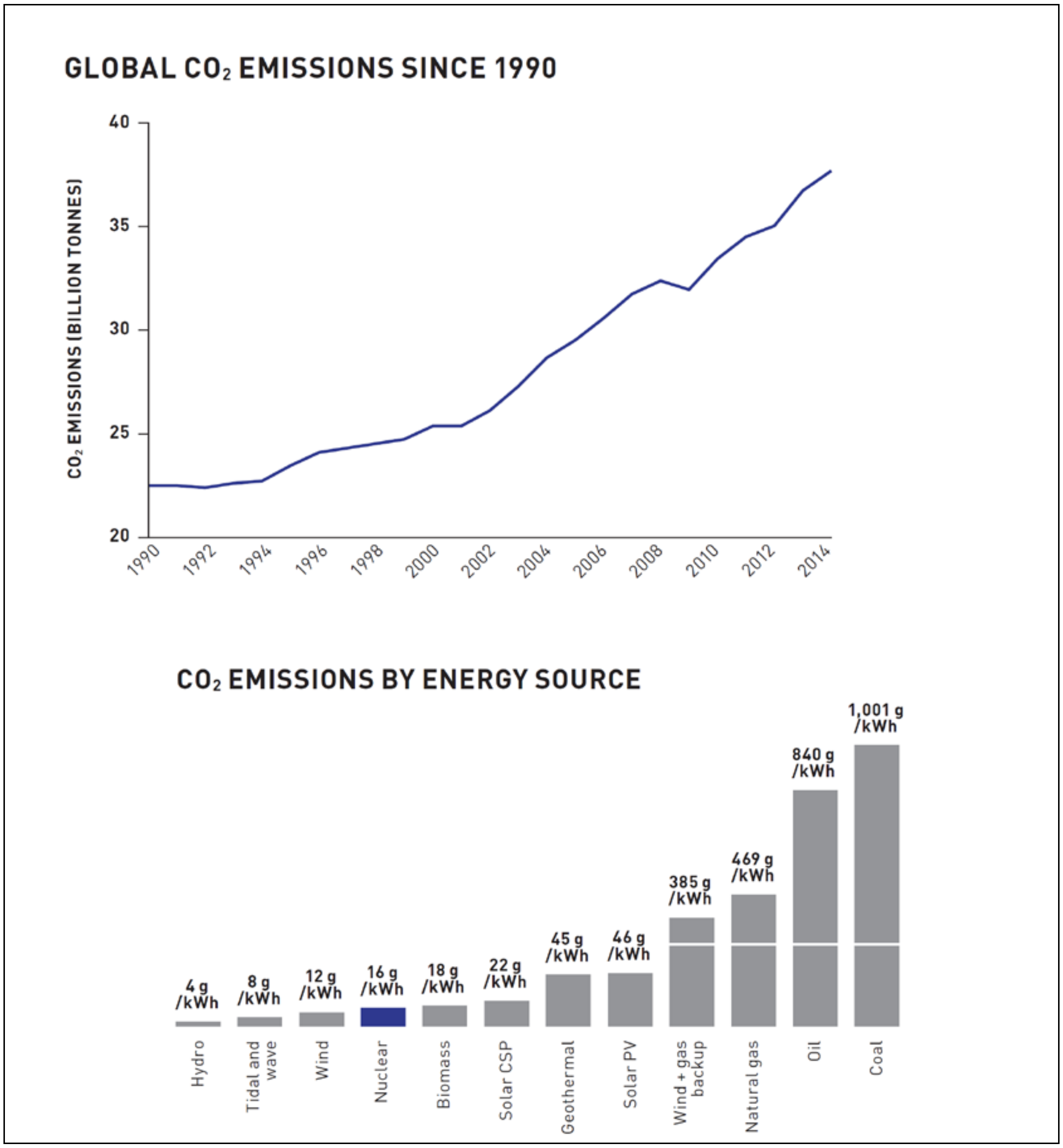
Saskatoon, SK, Canada S7K 0E9
Phone: 306-652-8200
Email: pbennett@denisonmines.com

1.2 Project Needs and Benefit

Mining of uranium is the first step in the nuclear fuel cycle, which ultimately concludes with the furnishing of nuclear fuel assemblies to nuclear power plants around the world for the generation of low carbon and low-cost electricity. Accordingly, uranium mining is an essential component in the global battle against climate change and the shift towards the generation of low carbon electricity.

The United Nations estimates that the world's population will grow from approximately 7.5 billion in 2017 to over 9.7 billion in 2050 (United Nations 2017) which is expected to substantially increase global electricity demand. Economic development in non-OECD countries is rapidly shifting global electricity demand and generating more interest in new nuclear plant investments (Massachusetts Institute of Technology 2018). According to the International Atomic Energy Agency (IAEA 2018), high-case projections for nuclear generating capacity suggest that current global capacity could increase from 392 GWe in 2017 to 748 GWe in 2050. At present, there are approximately 450 operable reactors worldwide with an additional 50 to 60 under construction (Canadian Nuclear Association 2017). In addition, momentum is building in regards to the future potential associated with the development of small modular nuclear reactors, which could bring reliable and low-cost energy to remote communities around the world, and ultimately create significant additional demand for nuclear fuel.

Hand-in-hand with the rising demand for reliable and low-cost energy is the discussion surrounding greenhouse gas emissions and climate change. Despite numerous environmental initiatives and on-going research, global climate change continues at an alarming rate. In 2017, global atmospheric concentration of carbon dioxide (CO_2) rose by 1.4% which is the largest annual rise ever recorded (World Nuclear Association 2018). One of the most influential energy sources available to combat the rise of CO_2 emissions is nuclear power (Figure 1.3). If all the world's coal and natural gas plants were replaced with low carbon nuclear, CO_2 emissions would be reduced by over 22% (Canadian Nuclear Association 2017).



Source: The Canadian Nuclear Association 2017

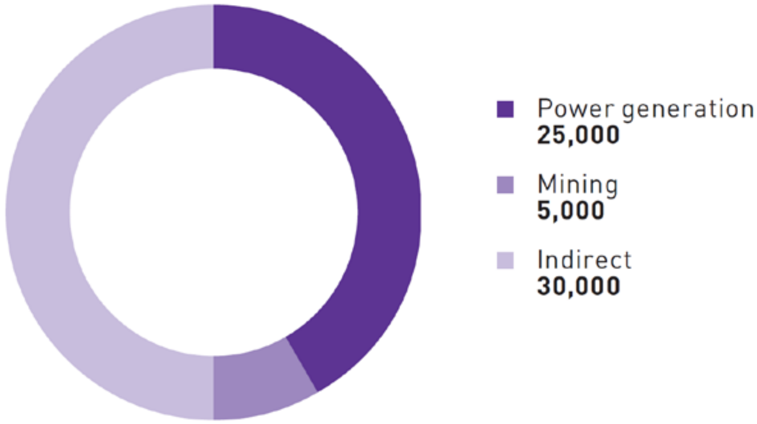
Figure 1.3: Global CO_2 Emissions since 1990 and CO_2 Emissions by Energy Source

A recent report by the United Nations Intergovernmental Panel on Climate Change that examined 89 climate change mitigation scenarios concluded that achieving the 1.5°C target from the Paris Agreement will require global greenhouse gas emissions to start being reduced immediately, and an increase in nuclear power generation of approximately 2.5 times by 2050 (World Nuclear Association 2018). Without a significant contribution from nuclear energy, as the global power mix shifts to respond to climate change initiatives, the cost to achieve meaningful decarbonisation targets will steadily rise or targets will simply go unmet. Nuclear is critical to global climate change objectives because of its unique combination of low carbon emissions, large scale, and reliability.

In terms of scale, the uranium expected to be produced from Wheeler would be sufficient to power 1 million homes for approximately 160 years (assuming 200 tonnes U_3O_8 fuels a 1,000 MWe plant for one year). Alternatively, the uranium produced from Wheeler could provide fuel to meet all of the projected Canadian nuclear utilities' base requirements from 2019 to 2035 including New Brunswick Power, Ontario Power Generation and Bruce Power.

Canada is uniquely positioned to support global climate change initiatives. Canada is the second largest producer and exporter of uranium in the world, with approximately 88% of the uranium produced in Canada destined for export to support global nuclear power use (Natural Resources Canada 2018). At present, Canada's current uranium production comes from uranium mines operated in northern Saskatchewan. Canada has a rich history of involvement with nuclear power and the technological advances that have been made within the industry since the early 1940s. According to Natural Resources Canada, 15% of the country's electricity was provided by nuclear power in 2016 (Natural Resources Canada 2018). Given the integral role it plays in our economy, the nuclear power industry has been and will continue to be a growth vehicle for economic and employment opportunity, an aid to the rapidly increasing electricity demand, and a key contributor in the battle against the environmental impacts associated with greenhouse gas emissions. The mining and processing of uranium as part of the Project will support the projected future growth in nuclear power both domestically and internationally.

Nuclear in Canada is a $6 billion industry that directly and indirectly supports a total of 60,000 jobs throughout the country (Canadian Nuclear Association 2017) (Figure 1.4).



Source: The Canadian Nuclear Association Factbook 2017

Figure 1.4: Jobs Supported by the Nuclear Industry in Canada

With refurbishment plans in place for 10 of the 19 nuclear reactors in Canada (primarily located at the Ontario Power Generation and Bruce Power nuclear facilities in Ontario) there is a distinct opportunity to add further employment opportunities within the industry and throughout the nuclear fuel cycle. Government research and studies suggest that the economic benefits of refurbishing only 4 of the 10 reactors (located at the Ontario Power Generation facility in Darlington, Ontario) would be almost $90 billion (Canadian Nuclear Association 2017). At its peak, the refurbishment of Bruce Power's nuclear facility will create 22,000 direct and indirect jobs annually and will secure the organization's future for decades creating demand for reliable and safe uranium production for many years to come (Bruce Power and Ontario Power Generation 2018).

While Canada's nuclear facilities are mainly concentrated in Ontario, the majority of uranium production in Canada comes from northern Saskatchewan, which is home to the world's largest and highest-grade uranium deposits – some with concentrations more than 100 times the global average (Natural Resources Canada 2018). Wheeler is located in the Athabasca Basin in northern Saskatchewan where established uranium mining and milling operations are a major employer of the province's northern and Indigenous peoples. The advancement of Wheeler will not only contribute economically to Canada's nuclear energy industry, but is also expected to provide additional employment and business opportunities to Indigenous and northern communities in Saskatchewan.

The world and Canada need uranium and Wheeler can provide this critical component in the nuclear fuel cycle while making a meaningful contribution to the Canadian economy and Saskatchewan's northern and Indigenous communities.

1.3 Regulatory Context

This document was written to meet the requirements and guidance for both a federal Project Description under the *Canadian Environmental Assessment Act 2012* (CEAA 2012; *Prescribed Information for the Description of a Designated Project Regulations* and Canadian Environmental Assessment Agency 2015a) and a provincial Technical Proposal (Government of Saskatchewan 2014a) under Saskatchewan's *Environmental Assessment Act*.

Denison anticipates that the provincial and federal environmental assessment processes for Wheeler will be conducted in parallel; the Saskatchewan Environmental Assessment & Stewardship Branch and the CNSC will cooperate in conducting a coordinated provincial-federal EA that will follow the spirit of the Canada-Saskatchewan Agreement on Environmental Assessment Cooperation (2005) to the extent possible. The agreement allows for cooperation in the assessment of projects that require regulation by both levels of government. The cooperation agreement allows for the production of a single environmental impact assessment (EIA) that meets the requirements of both levels of government, so that each level of government can make an independent decision.

Please see Appendix A for the table of concordance with the *Prescribed Information for the Description of a Designated Project Regulations*.

1.3.1 Environmental Assessment Requirements

1.3.1.1 Federal

The proposed Project will include the construction, operation and decommissioning of a uranium mine, processing plant and supporting facilities on a site that is not within the boundaries of an existing licensed uranium mine or mill. As such, Wheeler is a designated project as set out in section 31 of the *Regulations Designating Physical Activities* and is therefore subject to a federal environmental assessment.

The CNSC will be the federal responsible authority for Wheeler's environmental assessment.

Applicable federal Acts and regulations applicable to Wheeler include but are not limited to:

- *Fisheries Act*
  - *Metal and Diamond Mining Effluent Regulations*
- *Canadian Environmental Assessment Act*
  - *Regulations Designating Physical Activities*
  - *Prescribed Information for the Description of a Designated Project Regulations*
- *Species at Risk Act*
- *Nuclear Safety and Control Act*
  - *General Nuclear Safety and Control Regulations*

  - *Uranium Mines and Mills Regulations*
  - *Packaging and Transport of Nuclear Substances Regulations*
  - *Radiation Protection Regulations*
- *Migratory Birds Convention Act*
- *Transportation of Dangerous Goods Act*
  - *Transportation of Dangerous Goods Regulations*
- *Canadian Environmental Protection Act*
  - *Environmental Emergency Regulations*
- *Canadian Wildlife Act*
- *Navigation Protection Act*

Denison acknowledges Bill C-69 that proposes a number of changes to the current environmental assessment process. Section 182 of the bill outlines that EIAs for CNSC designated projects started under *CEAA (2012)* will continue under *CEAA (2012)*.

Accordingly, this project description has been prepared to comply with the requirements of *CEAA (2012)*.

1.3.1.2 Provincial

Environmental Assessment in Saskatchewan is regulated by the *Environmental Assessment Act* and its application hinges on whether a project is a development, or not, based upon the criteria in Section 2(d):

> 2(d) “development” means any project, operation or activity or any alteration or expansion of any project, operation or activity which is likely to:
>
> (i) have an effect on any unique, rare or endangered feature of the environment;
> (ii) substantially utilize any provincial resource and in so doing pre-empt the use, or potential use, of that resource for any other purpose;
> (iii) cause the emission of any pollutants or create by-products, residual or waste products which require handling and disposal in a manner that is not regulated by any other Act or regulation;
> (iv) cause widespread public concern because of potential environmental changes;
> (v) involve a new technology that is concerned with resource utilization and that may induce significant environmental change; or
> (vi) have a significant impact on the environment or necessitate a further development which is likely to have a significant impact on the environment.

The likely applicable Section 2(d) triggers are Sections 2(d) (iv) and (v); a potential for public concern, and a new technology application in Saskatchewan (in situ recovery for uranium), respectively.

Accordingly, Denison is self-declaring that Wheeler is a development under the *Environmental Assessment Act*; Denison is not seeking a ministerial determination on whether the Project is a development.

Denison will be submitting the Project's draft Terms of Reference to the province under a separate cover.

Denison will conduct, prepare and submit an environmental impact statement (EIS) to Saskatchewan Ministry of Environment's Environmental Assessment and Stewardship branch that meets the requirements outlined in the Saskatchewan Environmental Assessment Act. Ultimately the Project will require issuance of a ministerial approval under section 15 of the Saskatchewan *Environmental Assessment Act* before proceeding to licensing and permitting.

Relevant provincial Acts and associated regulations applicable to Wheeler include but are not limited to:

- *Environmental Assessment Act*
- *Environmental Management and Protection Act*
  - *Mineral Industry Environmental Protection Regulations*
  - *Hazardous Substances and Waste Dangerous Goods Regulations*
  - *The Waterworks and Sewage Works Regulations*
  - *Environmental Management and Protection (Saskatchewan Environmental Code Adoption) Regulations*
- *Wildlife Act*
  - *Wildlife Regulations*
- *Wildlife Habitat Protection Act*
  - *Wildlife Habitat Lands Disposition and Alteration Regulations*
- *Fisheries Act (Saskatchewan)*
  - *Fisheries Regulations*
- *Forest Resource Management Act*
  - *Forest Resources Management (Saskatchewan Environmental Code Adoption) Regulations*
  - *Forest Resources Management Regulations*
- *Natural Resources Act*
- *Prairie and Forest Fire Act*
- *Heritage Property Act*

- *Provincial Lands Act*
  - *Provincial Lands Regulations*
- *Saskatchewan Employment Act*
  - *Mines Regulations*
  - *Occupational Health and Safety Regulations*
- *Radiation Health and Safety Act*
  - *Radiation Health and Safety Regulations*
- *Reclaimed Industrial Site Act*
  - *Reclaimed Industrial Sites Regulations*
- *Water Security Agency Act*
- *Dangerous Goods Transportation Act*
  - *Dangerous Goods Transportation Regulations*
- *Mineral Resources Act*
- *Crown Minerals Act*
- *Public Health Act*
  - *Plumbing Regulations*
- *Boiler and Pressure Vessel Act*
  - *Regulations Respecting the Design, Construction, Installation and Use of Boilers and Pressure Vessels*
- *Electrical Inspection Act*
  - *Electrical Inspection Regulations*
- *Gas Inspection Act*
  - *Gas Inspection Regulations*
  - *Gas Licensing Regulations*

1.3.2 Guidelines, Policies, Standards

In addition to regulatory requirements from federal and provincial Acts and regulations, Denison will apply a number of other guidelines, policies and standards to the Project. The following list provides examples of guides, policies and standards Denison will use in completing the Wheeler EIA and is not exhaustive:

- Canadian Environmental Assessment Agency:
  - Technical Guidance for Assessing Physical and Cultural Heritage or any Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance under CEAA (2012)

  - Addressing "Purpose of" and "Alternative Means" under the CEAA (2012)
  - Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the CEAA (2012)
  - Considering Aboriginal traditional knowledge in environmental assessments conducted under CEAA (2012) (CEAA 2015b)
- Federal Policy on Wetland Conservation
- Various CNSC regulatory documents (REGDOCS), for example:
  - 2.9.1 Environmental Principles, Assessments and Protection Measures (CNSC 2017)
  - 3.1.2 Reporting Requirements, Volume I: Non-power reactor class I facilities and uranium mines and mills
  - 3.2.2 Aboriginal Engagement (CNSC 2016a)
- CNSC's generic guidelines for the preparation of an environmental impact statement (CNSC 2016b)
- Various CSA Standards, for example:
  - N288.4-10 Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills
  - N288.7-15 Groundwater protection programs at Class I nuclear facilities and uranium mines and mills
  - N286-12 Management System Requirements for Nuclear Facilities
  - N288.5-11 Effluent Monitoring Programs at Class I nuclear facilities and uranium mines and mills
  - N288.6-12 Environmental risk assessments at class I nuclear facilities and uranium mines and mills
  - N294-09 Decommissioning of facilities containing nuclear substances
- Guidelines for Northern Mine Decommissioning and Reclamation, November 2008, Version 6, Saskatchewan Ministry of Environment
- The Saskatchewan Environmental Code and attendant standards

1.3.3 Licensing and Permitting

The following permits, approvals, and licences are anticipated at different stages of the Project:

- Provincial environmental assessment approval
- Federal environmental assessment approval
- CNSC licences to:
  - Prepare site and construct

  - Operate
  - Decommission
  - Abandon (release from licensing)
- Surface lease agreement
- Heritage Conservation Branch approval
- Forest Product Permit
- Aquatic Habitat Protection Permit
- Approval to Construct Highways Approach
- Approval to Construct and Operate Pollutant Control Facilities
- Environmental Protection Plan for Industrial Sources
- Approval to Construct Hazardous Substances and Waste Dangerous Goods Facility and Store Hazardous Substances and Waste Dangerous Goods
- Permit to Operate Waterworks
- Permit to Operate Sewage Works
- Approval to Decommission Pollutant Control Facilities
- Release from Decommissioning and Reclamation
- Provincial Acceptance of Decommissioned and Reclaimed Site into Institutional Control Program

1.4 Regional Studies

EIAs have been completed or are underway for nearby projects related to uranium mining and milling as well as a provincial highway extension. This includes Cameco Corporation's original EIAs and any subsequent expansion EIAs for mining and milling of uranium at Key Lake Operation and mining of uranium at McArthur River Operation. An EIA was initiated and subsequently halted by Cameco for the proposed Millennium Project, a proposed uranium mine located between Key Lake and Wheeler. Saskatchewan Ministry of Highways has initiated the provincial environmental assessment process for extending Highway 914 from McArthur River Operation to Cigar Lake mine and constructing a by-pass at the Key Lake Operation.

Other regional studies include:

- Eastern Athabasca Regional Environmental Monitoring Program;
- Canadian Nuclear Safety Commission's Independent Environmental Monitoring Programs; and
- Saskatchewan Boreal Watershed Initiative (Government of Saskatchewan 2017a) which includes a summary of available air quality, aquatic ecosystems, terrestrial ecosystems and Indigenous Knowledge.

1.5 Engagement

Denison recognizes the importance of engaging with local and Indigenous communities, residents, businesses, organizations, land users and the various regulatory authorities, collectively referred to as 'Stakeholders.' Since 2016 Denison had been engaging with Stakeholders in ongoing efforts to build positive relationships with all parties.

Denison has engaged with the following Stakeholders in regards to Wheeler:

- English River First Nation
- Hamlet of Patuanak
- Kineepik Métis Local Inc.
- Pinehouse village
- Sipisishik Métis Local 37
- Beauval village
- A La Baie Métis Local 21 Inc.
- Ile a la Crosse village
- Recreational lease holders
- Northern Saskatchewan Environmental Quality Committee
- Canadian Nuclear Safety Commission staff in the Environmental Assessment division and the Uranium Mines and Mills division
- Saskatchewan Ministry of Environment staff with the Environmental Assessment and Stewardship branch and the Uranium and Northern Operations branch.

Details of Denison's engagement with Stakeholders, including engagement results to date, influence of engagement on the Project design, and the plan for ongoing engagement activities are provided in sections 7 and 8 below.

Engagement initiated by Denison in 2016 is part of an ongoing commitment by Denison to actively engage all Stakeholders throughout the Project development phases.

Denison's early engagement initiatives with local Indigenous communities have allowed for the integration of Indigenous Knowledge with the Project development process, environmental baseline studies completed, and socio-economic initiatives directly related to the Project. Some of the key activities demonstrating this integration are presented in the Project timeline shown in Figure 1.5.

Denison's ongoing Stakeholder engagement program reflects the results of feedback received to date from previous engagement sessions and is intended to be flexible and adaptive.

Denison will visit local Stakeholders, as appropriate, and will provide Project updates as Wheeler is advanced. It is currently envisioned that community meetings will be held at least once per year in a number of local communities, and more frequently if desired by any of these communities.

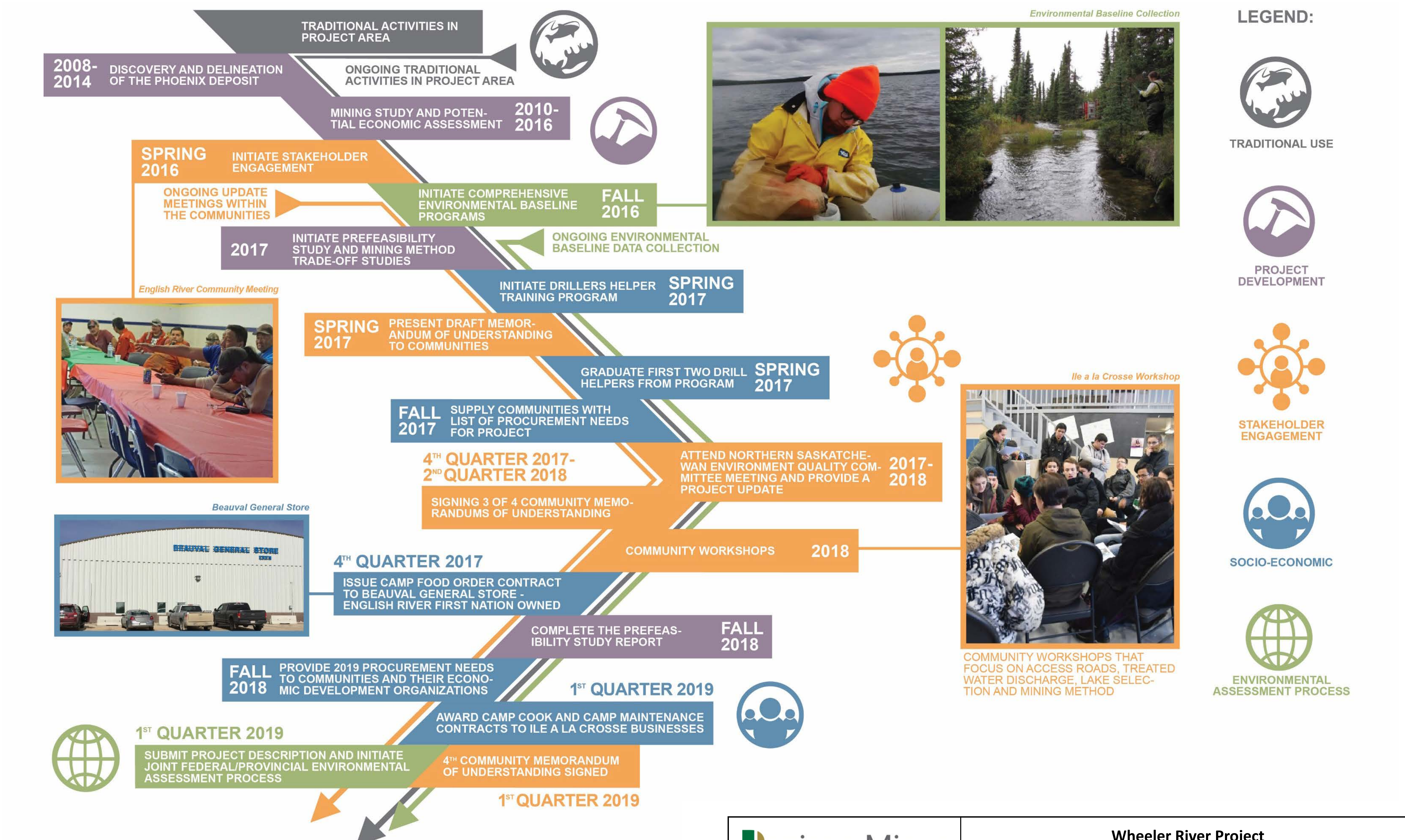
Denison is also committed to meeting with the leadership of these communities, in addition to other stakeholder organizations, as and when requested as part of the Company's standing commitment to respond to any enquires regarding the Project.

As the Project advances Denison is committed to continue to utilize local community radio stations, social media, and print media that may reach northern audiences.

In order to formalize Denison's commitment to its local Indigenous communities (and their associated non-Indigenous communities), Memorandums of Understanding (MOU) have been signed between Denison and:

- English River First Nation;
- Kineepik Métis Local and the community of Pinehouse;
- A La Baie Métis Local 21 and the community of Ile a la Crosse; and
- Sipisishik Métis Local 37 and the community of Beauval.

These non-binding MOUs formalize the signing parties' intent to work together in a spirit of mutual respect and cooperation to collectively identify practical means by which to avoid, mitigate, or otherwise address potential impacts of the Project upon the exercise of the indigenous rights, treaty rights, and interests. In addition, the MOUs outline the signing parties' intent to work together to ensure benefits will flow from the Project, provide a process for continued Project engagement and information-sharing about the project, and establish a relationship to identify business, employment and training opportunities for the parties with respect to the Project.



Denison Mines	Wheeler River Project Provincial Technical Proposal and Federal Project Description
Figure 1.5: Project Timeline	May 2019

2 Project Information

2.1 Project Overview

2.1.1 Deposit & Geology

Several areas of uranium mineralization amendable to in situ recovery (ISR) have been defined at Wheeler with the most prominent area being the Phoenix deposit. Phoenix is the highest-grade undeveloped uranium deposit in the world. It is geologically situated at or immediately above the unconformity between the Athabasca Basin sandstone and older basement rocks, approximately 400 metres below surface. To date, these zones have been estimated to contain a total of 70.2 million pounds U_3O_8 of indicated mineral resources based on 166,400 tonnes of ore at an average grade of 19.14% U_3O_8. There are additional zones of mineralization at Wheeler that have not been fully defined from exploration activities.

2.1.2 Selection of In Situ Recovery Mining Method

After completion of the 2016 Wheeler Preliminary Economic Assessment (Denison 2016) Denison initiated a detailed review of the development plan for the Phoenix deposit, which had originally been designed as an underground mine using a jet boring system as the extraction technology.

The 2016 Preliminary Economic Assessment identified disadvantages associated with the jet boring system mining method – including technical risks, comparatively high operating and capital costs, and long pre-production construction timelines. Accordingly, Denison initiated an extensive review process, seeking suitable alternative mining methods for the Phoenix deposit. A total of 32 different mining methods were initially identified and screened. The final two preferred technologies were advanced into a more rigorous evaluation process at the prefeasibility (PFS) level of assessment. Ultimately, In Situ Recovery (ISR) mining was selected as the preferred mining method due to its significant economic, environmental, and technical advantages.

ISR mining is also known as solution mining or in situ leaching – as the mining method uses an engineered fluid or solution to dissolve uranium from the host rock without physically removing the host rock for processing on surface. There are no underground or open pit workings required in an ISR operation; no heavy equipment is needed and people do not work underground. The process utilizes a series of injection wells to inject mining solution into the uranium deposit and another series of wells (recovery wells) to return the uranium rich solution back to surface for processing. There is minimal surface disturbance, minimal waste rock generated and no tailings are produced.

2.1.3 Experience and Lessons Learned from International In Situ Recovery Operations

Globally, ISR mining is considered to be the lowest-cost and industry leading method for uranium extraction. The method was first used in the 1960's and now accounts for over 50% of the world's annual uranium production, with use in Kazakhstan (the world's largest and lowest cost producer of uranium), the United States, China, Russia, and Australia, among others. ISR mining is amenable to uranium deposits in certain sedimentary formations and is well known in the industry for having comparatively minimal surface impact, high production flexibility, and low operating and capital costs relative to open pit or conventional underground mining methods. There has been continuous development and improvement of ISR mining techniques in recent years, particularly in the two decades since the International Atomic Energy Agency published the *Manual of Acid In-Situ Leach Uranium Mining Technology* (IAEA 2001).

The general benefits of ISR include:

- *No tailings* – as the dissolution of the uranium contained in the host rock occurs "in-situ", there is no processing of the host rock on surface and thus there is no waste / tailings generated by the ISR mining method;
- *Minimal surface disturbance* – In addition to having relatively modest needs for buildings and structures on site, ISR mining does not involve the sinking of shafts or the development of a large open pit. The surface impact associated with an ISR wellfield is limited to a series of cased injection, recovery and monitoring wells with a diameter of approximately 4-8 inches;
- *Established safety practices and procedures* – with over 50% of global uranium production coming from ISR mining in multiple countries, the mining method has become well known within the uranium mining industry and has allowed for the establishment of a wealth of safety practices and procedures to ensure health and safety of workers;
- *Minimal environmental impacts* - Amongst other additional comparative benefits, ISR mining operations are known for low noise levels, minimal dust and air emissions, low water consumption levels, minimal treated effluent discharge volumes, and minimal waste rock generation; and
- *Economic advantages* – ISR mining operations often have comparatively low capital and operating costs, as well as shorter timelines to first production and greater flexibility to allow production to be scaled to meet market demands.

In evaluating the application of ISR technology to the Athabasca Basin, Denison initiated a detailed review of the experience from international ISR operations over the last 50 years. Information is publicly available from ISR activities in the following countries:

- Australia (5 sites)
- USA (49 sites)
- Kazakhstan (17 sites)
- Bulgaria (19 sites)
- China (3 sites)
- Czech Republic (2 sites)
- Hungary (1 sites)

- Mongolia (3 site)
- Niger (1 site)
- Pakistan (1 site)
- Russia (2 sites)
- Ukraine (3 sites)
- Uzbekistan (3 sites)

Other countries such as Germany also have experience with ISR operations but have less extensive publicly available records to date.

While each operation is unique based on site-specific characteristics, the two general challenges to international ISR operations are: 1) potential groundwater impacts during operations and 2) remediation of the mining zones after mining is complete.

2.1.3.1 Potential Impacts to Groundwater

Traditional ISR operations rely on natural barriers (aquitards) or artificial pumping to create a drawdown of the regional groundwater to help contain the mining solution and minimize loss of the mining solutions to the regional groundwater. Containment of the mining solution in this way may create downstream problems including:

1. Loss of the mining solutions to the environment (known as excursions) may occur. Depending on the site-specific characteristics, these excursions will have varying levels of impact on the groundwater. In some instances, the excursions are allowed to continue while in other cases operations are required to implement mitigation strategies such as drilling additional pumping wells, reversal of wellfield flows and increase in draw down rates of the regional groundwater to capture the excursion.
2. Artificial drawdown of the aquifer brings excess water into the ISR process plant known as a bleed. Depending on site specific characteristics the bleed is either treated and discharged or directly discharged. In either case, it results with handling additional volumes of groundwater, an increased demand on energy and stress on the regional groundwater system.

In order to eliminate potential excursion to the regional groundwater Denison will engineer and create an artificial freeze wall to encapsulate the uranium deposit and create an isolated mining chamber (details in Section 2.3.1.3). The freeze wall will prevent the mining solution from travelling into the regional groundwater system and at the same time prevent the regional groundwater from entering the mining chamber area and diluting the mining solution.

2.1.3.2 Remediation After Operations

The second major challenge to international ISR operations is the remediation of the site after mining is complete. Remediation efforts in international operations vary significantly depending on site specific characteristics as well as the time period in which the operation occurred. In general, more recent operations have increased efforts towards remediation. Similar to many legacy mining sites, some historical ISR operations were operated with limited environmental considerations and as a result have led to contamination of the regional groundwater system.

In some operations, conditions surrounding the wellfield support a natural attenuation approach to remediation. In this context as groundwater travels outside the mining area it naturally improves. No active treatment outside the wellfield area is completed. Natural attenuation is typically completed in areas where the pre-mining environment showed poor background groundwater quality, limited or no use of groundwater for agriculture or human consumption, and/or areas with geochemical characteristics capable of naturally neutralizing the groundwater.

In some operations active treatment of the wellfield is completed. This can be completed by injecting reagents into the mined-out wellfield to neutralize the impacted groundwater, flushing the wellfield with clean water (in the same manner as mining was completed) with treatment and discharge of the collected groundwater or a variety of other options.

Denison's inclusion of a freeze wall (details Section 2.3.1.3) will mitigate many of the remediation challenges encountered at international operations. The freeze wall will allow for a controlled remediation process to occur unaffected by the regional groundwater. The depth to the deposit (400 metres below surface), the existing poor quality pre-mining groundwater chemistry, and limited volume of groundwater disturbance due to the isolation of the mining chamber will eliminate any impacts on regional groundwater use. Remediation of the contained mining chamber will be completed using active treatment and containment will continue until conditions inside the chamber demonstrate acceptable geochemical conditions.

Denison has extensively researched best practices and challenges experienced in international operations. The design of the Wheeler ISR project has specifically targeted the elimination of the major challenges seen at international operations which is expected to result with the Wheeler being one of the most environmentally friendly mining projects in the world.

2.1.4 Objective and Overview of Wheeler In Situ Recovery

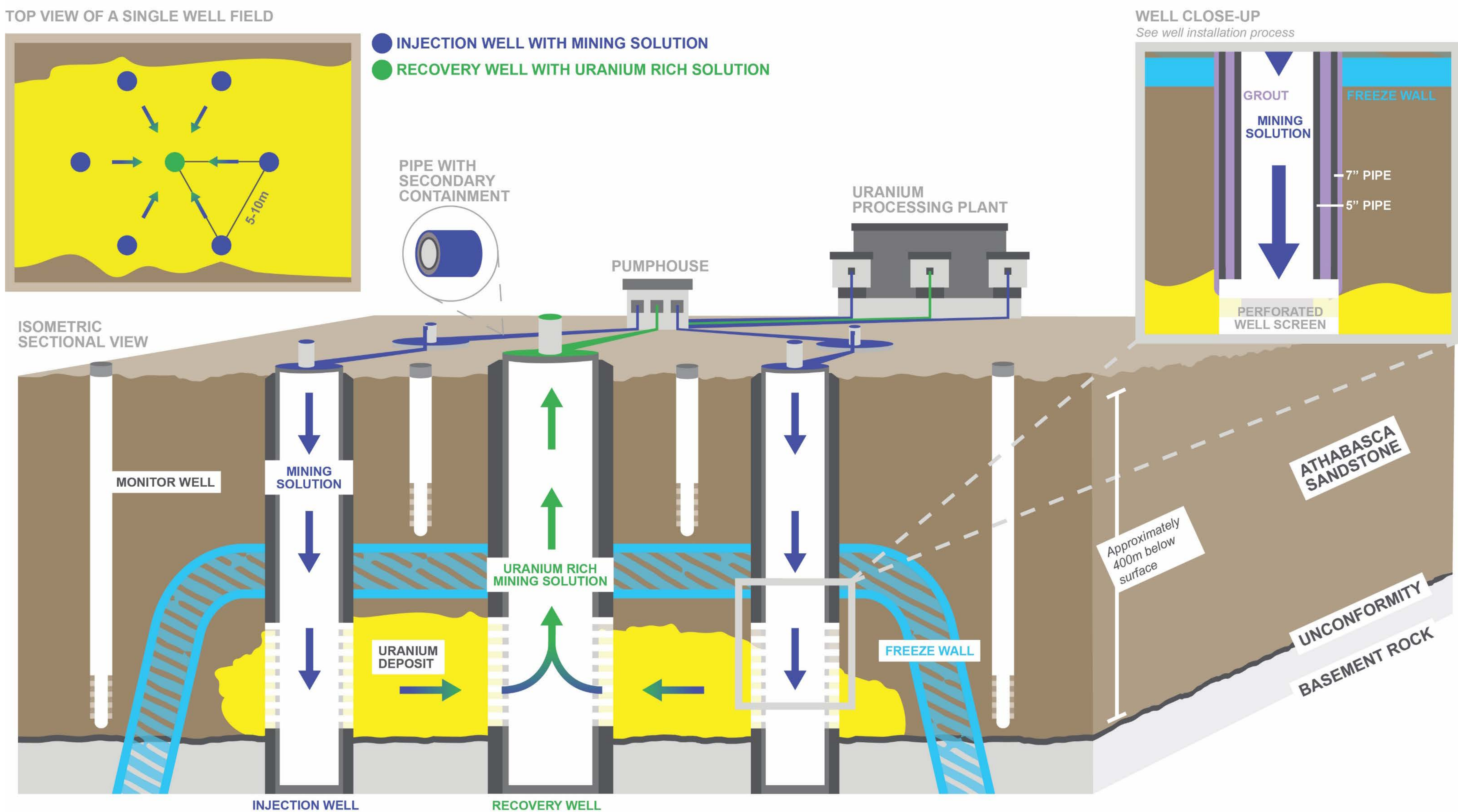
The objective of the Project is to construct, operate, and decommission an ISR uranium mine and processing plant.

The mining solution proposed at Wheeler will be similar to the leaching solution currently used in conventional Saskatchewan uranium mills and will consist of water and reagents such as sulphuric acid mixed to a consistent and relatively dilute concentration. The low pH or acidic mining solution oxidizes and dissolves the uranium as it travels through the uranium deposit. The process involves injecting the mining solution into the uranium deposit through a series of cased (contained) drill holes called injection wells. Following sufficient contact between the mining solution and the uranium deposit, the uranium is dissolved into the mining solution. The uranium rich mining solution is then pumped back to surface via a similar series of cased recovery wells. This process is shown graphically in Figure 2.1 and details are provided in Section 2.3.1. Once on surface, the uranium rich mining solution will be piped to the processing plant for chemical separation of the uranium from the mining solution.

At Wheeler the uranium deposit is confined to a relatively small area (approximately 900 m x 90 m) and has proved readily leachable in laboratory testing. As a result, infrastructure disturbance (e.g., number of wells, extent of surface piping systems) are expected to be significantly reduced when compared to conventional low-grade ISR operations or conventional open pit operations.

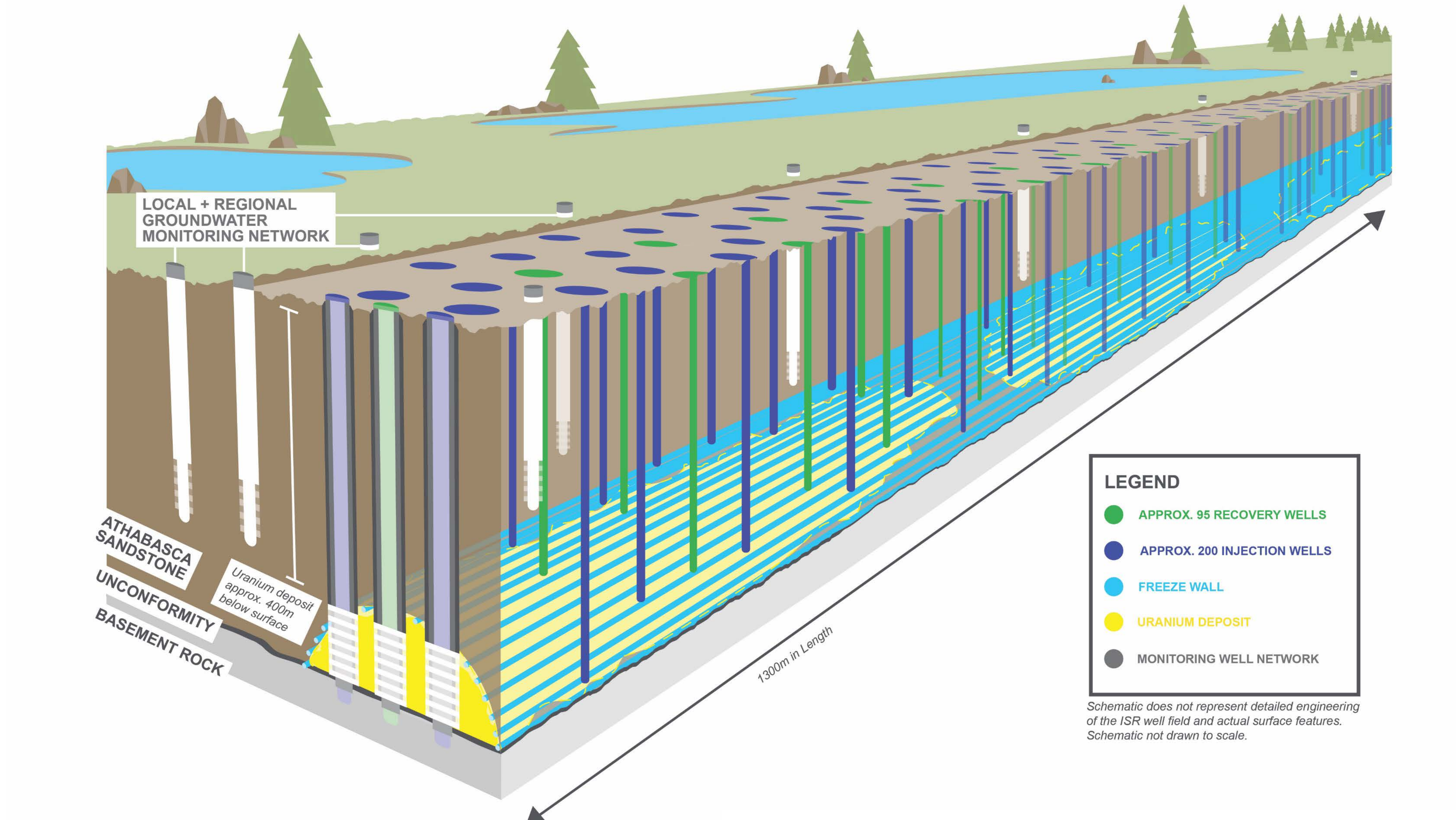
In conventional ISR operations, containment of the mining solution is typically achieved by naturally impermeable bounding layers in the geological strata (i.e., aquitards) and/or by creating an artificial drawdown (via pumping) of the water table towards the uranium deposit. At Wheeler, there is a natural impermeable layer below the deposit, in the form of competent basement rock, but the deposit is otherwise hydraulically connected to the regional groundwater system in the overlying sandstone formation that is consistent throughout the Athabasca Basin. Given the depth and small spatial extents of the uranium deposit, extraction could be done without an upper bounding layer of containment; however, doing so will require significant engineering controls between the injection and recovery wells to facilitate the necessary containment of the mining solution.

In order to simplify these controls and associated costs as well as to maintain proper concentrations of the mining solution and constant contact of the mining solution with the uranium deposit, an artificial freeze wall will be created to serve as an impermeable layer above and around the uranium deposit (details are provided in Section 2.3.1.3). When combined with the low permeability basement rock underneath the uranium deposit, the dome-shaped freeze wall will isolate the uranium deposit, creating the mining chamber (Figure 2.2). Within the mining chamber, the mining solution can then circulate from the injection wells through the deposit to the recovery wells without interacting with the surrounding groundwater. The freeze wall will also facilitate controlled restoration of the mining chamber during the decommissioning phase.



Schematic does not represent detailed engineering of the ISR well field and its components. Schematic not drawn to scale.

Denison Mines	**Wheeler River Project** **Provincial Technical Proposal and Federal Project Description**
Figure 2.1: In Situ Recovery Process Overview	**May 2019**

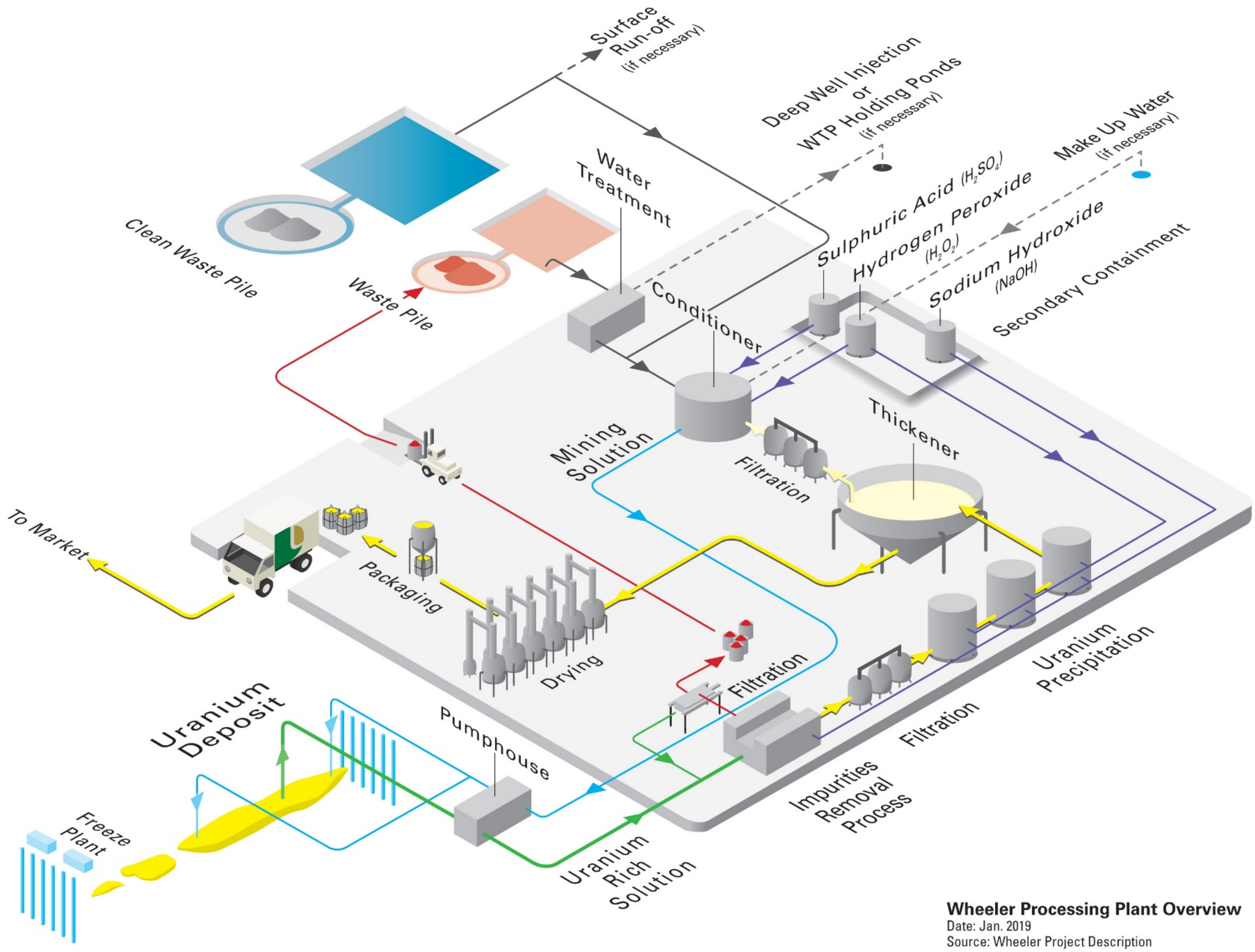


Denison Mines	Wheeler River Project Provincial Technical Proposal and Federal Project Description
Figure 2.2: Sketch of Proposed Wheeler In Situ Recovery Wellfield, with Freeze Wall, Wells, Mining Chamber and Uranium Deposit	**May 2019**

As part of the Project evaluation process, Denison completed numerous metallurgical test programs to simulate the ISR mining process, in accordance with industry standards – including leach tests, agitation leach tests, column tests, and post-mining restoration tests. The test results have been used to inform the design of the processing plant.

The processing plant design will be relatively simple for a variety of reasons. The first is that the ISR mining method eliminates the need for treatment of ore through conventional milling circuits like crushing, grinding and leaching. Secondly, as a result of the high uranium concentration and low levels of impurities in the uranium deposit and the uranium rich mining solution, Denison has demonstrated through test work that direct precipitation of the uranium is viable and may eliminate the need for ion exchange or solvent extraction circuits. However, to be conservative and allow for operational flexibility, future design work may evaluate use of additional processing circuits to improve performance. Finally, since the ISR process produces no tailings there is no need for tailings preparation circuits and a tailings management facility.

The processing of the uranium rich mining solution will consist of an impurities (mainly iron) precipitation circuit followed by the uranium precipitation, drying and packaging circuits (Figure 2.3). Details are provided in Section 2.3.2. The processing plant will be designed as a closed loop system, meaning that once the uranium is precipitated, the mining solution is refortified with reagents and returned to the wellfield for re-injection and further mining.



Wheeler Processing Plant Overview
Date: Jan. 2019
Source: Wheeler Project Description

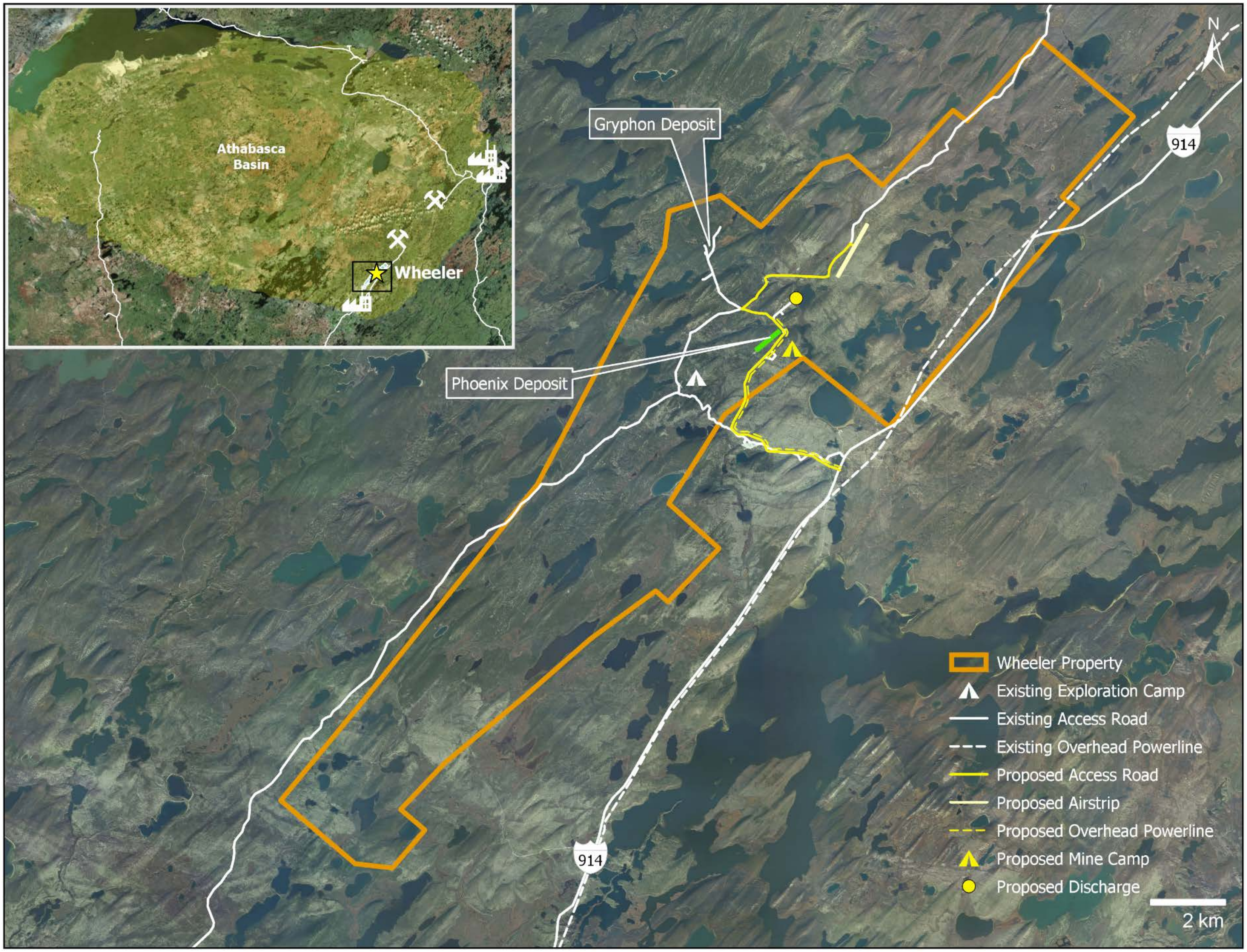
Denison Mines	**Wheeler River Project** **Provincial Technical Proposal and Federal Project Description**
Figure 2.3: Wheeler Processing Plant Overview	**May 2019**

2.2 Site History

2.2.1 Property Description

The Wheeler River exploration property is host to the Phoenix uranium deposit discovered in 2008 and Gryphon deposit discovered in 2014 (Figure 2.4) plus additional zones of mineralization and other prospective exploration targets.

Access to the property and deposits is by road, helicopter, or fixed wing aircraft from Saskatoon. Vehicle access to the property is by Highway 914. Access to Highway 914 north of Key Lake Operation is controlled by a gatehouse operated by Cameco. An older access road, the Fox Lake Road, between Key Lake Operation and McArthur River Operation provides access to most of the northwestern side of the property. The Fox Lake Road was decommissioned in 1999 and has been unmaintained since with the removal of all bridges and culverts in 2017. Gravel and sand roads and drill trails provide access by either four-wheel-drive or all-terrain vehicles to the rest of the property.



Denison Mines	Wheeler River Project Provincial Technical Proposal and Federal Project Description
Figure 2.4: Location of Wheeler River Property and Phoenix Deposit	**May 2019**

2.2.2 Land Tenure

The property consists of 19 mineral claims totalling 11,720 ha with an aggregate annual requirement of $293,000 in either work or cash to maintain title to the mineral claims. In Saskatchewan, a mineral claim does not grant the holder the right to mine minerals. A mineral claim (Crown disposition) grants the right or privilege to explore or prospect for any Crown mineral or any other right to or interest in any Crown mineral or any Crown mineral lands. Based on previous work submitted and approved by the province of Saskatchewan, Denison has secured the title of the Wheeler River property until 2035. Denison continues to explore on the Wheeler River property and the right to explore on the property are reviewed on a project basis annually by the Saskatchewan Ministry of Environment.

A Saskatchewan mineral claim (Crown disposition) in good standing can be converted to a lease (Crown Lease) upon application. Leases have a term of 10 years and are renewable. A lease gives the holder the exclusive right to explore for, mine, work, recover, procure, remove, carry away, and dispose of any Crown minerals within the lease lands which are nonetheless owned by the province. Denison current has not converted any mineral claims to mineral leases. A surface lease agreement will be developed with the province following the successful completion of the environmental impact assessment process. It is anticipated that a small portion of the 11,720 ha mineral lease area will be converted to a surface lease.

Any uranium produced from the Wheeler River property is subject to uranium mining royalties in Saskatchewan, in accordance with Part III of the *Crown Mineral Royalty Regulations*. There is a 10% Net Profits Interest associated with the property held by the Wheeler River Joint Venture in approximate proportion to the ownership interests of each participant. There are no other back-in rights or third-party royalties applicable to this property.

There are no known environmental liabilities associated with the property, and there are no other known significant factors and risks that may affect access, title, or the right or ability to perform work on the property. All necessary permits for surface exploration on the property are in place and current. There are no known authorizations relating to a water lot in the Project area.

2.2.3 Exploration History

The Wheeler River property was staked on July 6, 1977. Excluding the years 1990 to 1994, exploration activities (such as airborne and ground geophysical surveys, geochemical surveys, prospecting, and diamond drilling) have been carried out on the property from 1978 to present. In November 2004, Denison became operator of the property and in 2005 carried out property-wide airborne geophysical surveys. The Phoenix deposit was discovered by diamond drilling in 2008, with subsequent delineation completed over the next six years from 2008 to 2014.

2.2.3.1 Current Site Conditions

Exploration field operations are currently conducted from Denison's on-site camp facilities, which are located approximately 3 km southwest of the Phoenix deposit (Figure 2.4). The camp provides accommodations for up to 40 field staff using ATCO trailer units and tent facilities (Figure 2.5). Fuel and miscellaneous supplies are stored in existing warehouse and tank facilities at the camp. Drill core from exploration activities is also stored on site. The exploration site currently generates its own power by diesel generator.

Denison maintains portions of the site roads necessary to gain access to the camp facilities (Figure 1.1) and complete field activities. This maintenance includes installation of temporary water crossings (bridges) and general road maintenance to ensure safe travel by either four-wheel drive vehicle or ATV. In addition, several gravel and sand roads as well as drill trails provide access by either four-wheel-drive or all-terrain vehicles to the rest of the property. These roads are maintained only as necessary.

Figure 2.5: Denison's Wheeler River Project Exploration Camp

Outside of the Phoenix drilling area (Figure 2.6) and Wheeler exploration camp facility, various surface disturbances have occurred since commencement of exploration activity in 1978. Several ground geophysical survey grid lines transect the property uniformly with an approximate additional 750 exploration pads that were cleared to accommodate diamond drill hole exploration programs. As a result of exploration drilling activities, several portions of the property have been previously disturbed with the removal of vegetation to allow for access trails and drilling areas.

Figure 2.6: Phoenix Deposit Aerial View

2.3 Project Components

The following section describes the anticipated Project components.

An overview of all proposed Project components is provided in Figure 2.7 and the proposed site layout is available in Figure 2.8.

2.3.1 In Situ Recovery of Uranium

2.3.1.1 Mining Solution

Test work completed to date indicates that the uranium at Wheeler is amenable to the same type of leach solution that is used to leach other Athabasca Basin uranium ores in mills: an acidic or low pH solution.

The Wheeler ISR mining solution will initially be created by adding certain reagents (e.g., sulphuric acid (H_2SO_4) and sodium chlorate ($NaClO_3$)) to fresh water. The fresh water will be sourced from either a shallow groundwater well or a nearby lake. The liquids will be mixed to achieve the optimal pH of the mining solution which is a pH between 1.0 to 2.0.

The mining solution will be pumped underground to the uranium deposit via an injection well and recovered as uranium rich mining solution through a series of recovery wells (Figure 2.1). Once uranium rich mining solution is recovered, it will be pumped from the pumphouses into the processing plant where uranium will be removed from the uranium rich solution. The mining solution will be refortified (Section 2.3.2) with reagents as required and pumped back into the mining chamber via an injection well (Figure 2.3). In this way, it is expected that the mining solution will be reused over and over again throughout the mining process. A small volume of make-up water will be added to the mining solution during operations to replace moisture removed during they yellowcake precipitation and drying processes. This make-up water will be preferentially sourced from site runoff where possible; although the EIA will include options for obtaining make-up water from either a shallow groundwater well or a nearby lake.

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Figure 2.7: Overview of Proposed Project Components

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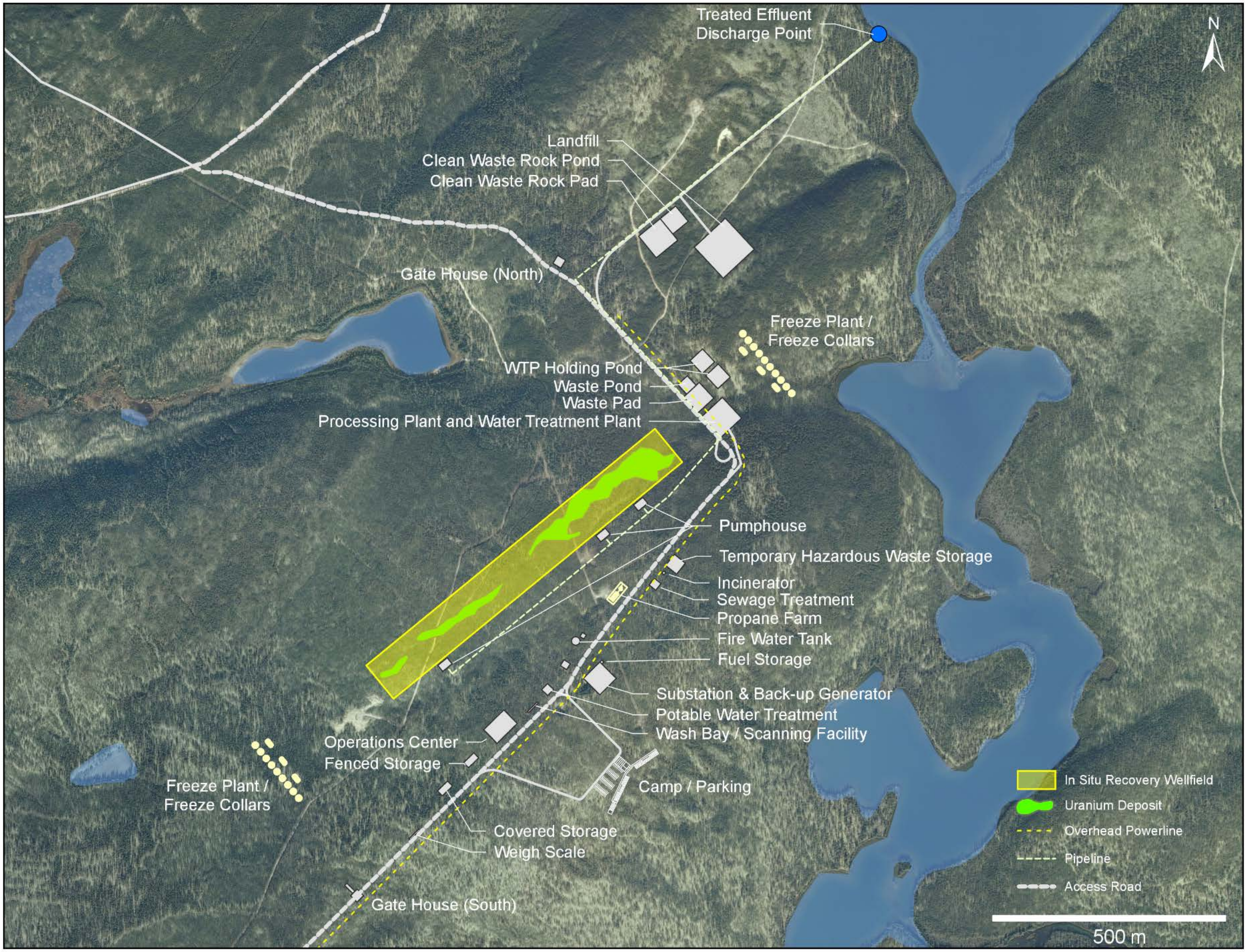


Denison Mines	Wheeler River Project Provincial Technical Proposal and Federal Project Description
Figure 2.8: Details of Proposed Project Components Around the Wellfield, Camp, and Processing Plant	**May 2019**

2.3.1.2 Wellfield

The ISR wellfield is a group of wells, installed and completed in an area of uranium mineralized. The Wheeler wellfield will consist of a combination of injection and recovery wells, potentially in the general arrangement of one recovery well in the centre surrounded by 6-8 injection wells. At surface, the spacing between the recovery well and each injection well is anticipated to be roughly 10 metres apart (Figure 2.1), with certain areas requiring closer spacing (approximately 5 meters) or further spacing (approximately 15 metres).

With these configuration options, the final wellfield for Phoenix is expected to include approximately 310 wells over a 90 m x 900 m area.

A variety of alternative arrangements or patterns of injection and recovery wells may be used; however, and may include other vertical or horizontal arrangements. The final details of the wellfield design (e.g., pattern on surface, distance between wells, orientation of wells, number of pumphouses, etc.) will be developed as Project engineering advances. A schematic of the conceptual wellfield and surface features is provided in Figure 2.2.

Well Design and Installation

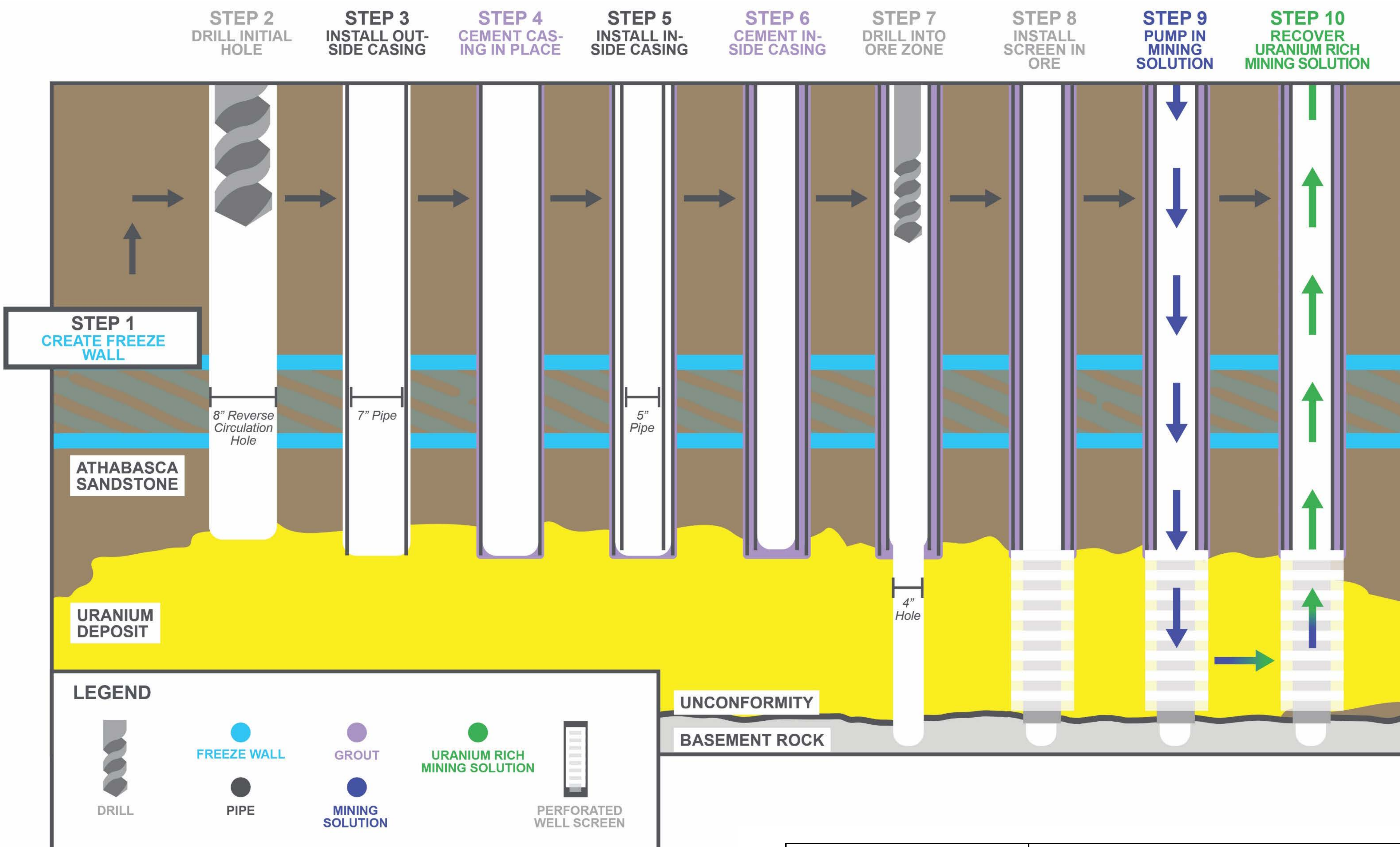
There is no material difference in the design of an injection and a recovery well – both can be used to move mining solution in either direction depending on how pumps direct flow in or out of the ground. Pumping pressures between injection and recovery wells are expected to vary considerably depending on distance and stage of mining.

Injection and recovery wells at Wheeler may be about 4 to 8 inches in diameter at surface, however, other diameters may be used in some instances. Figure 2.9 shows photographs of a typical ISR well at surface and a standard type of well cover.

Figure 2.10 provides an overview of Denison's current conceptual well installation sequence based on prefeasibility level engineering. Specific details may change as the Project advances into feasibility and detailed engineering design stages.

Figure 2.9: Typical In Situ Recovery Well at Surface

Source: Confidential uranium in situ recovery operation in the USA



Schematic represents injection and recovery well installation concept at the prefeasibility stage. Details of well design, installation, and dimensions may be refined. Schematic not drawn to scale.

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Figure 2.10: Proposed Well Installation Sequence

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Pumphouses

Based on the current designs for the Project, approximately three pumphouses will be needed. A pumphouse is a small building or container on surface where pipes from injection and recovery wells are operated and flows of mining solution are monitored. See photos in Figure 2.11 for examples of components inside an operating ISR pumphouse in the USA.

Figure 2.11: Inside a Typical In Situ Recovery Pumphouse

Source: Confidential uranium in situ recovery operation in the USA

Pumphouses will distribute the mining solution to the injection wells, as well as collect the uranium rich mining solution from the recovery wells. Each pumphouse will be connected to two production trunk lines. One of the trunk lines will be used for receiving mining solution from the processing plant, and the other will be used for returning uranium rich mining solution back to the processing plant (Figure 2.1 and Figure 2.8). Each pumphouse will include a manifold, valves, flow meters, pressure meters, and instrumentation, as required, to fully operate, monitor and control the process. Pumphouse control monitoring systems enable operators to individually adjust each recovery or injection well as well as allow for sampling. Operators can also use the master control system in the processing plant to remotely control pumphouse production lines.

Ventilation in the pumphouses will be designed with the ALARA principle (as low as reasonably achievable) in mind to provide sufficient worker protection from potential radon and radon progeny exposure. Monitoring systems will be in place to ensure these mitigation measures are meeting design specifications.

Wellfield Piping System

Pipelines will transport the mining solution to and from the processing plant. The flow rates and pressures of the individual well lines will be monitored in the pumphouses. This data will be transmitted to the processing plant for remote monitoring through a master control system. Through the master control system, operators will be capable of controlling pumphouse production lines remotely.

Double-walled high-density polyethylene (HDPE), or equivalent, piping will be used in the wellfields and will be designed and selected to meet design operating and environmental conditions.

The lines from the processing plant, pumphouses, and individual well lines will be freeze protected and secured to minimize pipe movement.

Monitoring Wells

Groundwater monitoring wells will be installed at various depths and locations in and around the wellfield. The monitoring wells will allow for both groundwater sample collection and measurement of groundwater level.

Mechanical Integrity Testing

After an injection, recovery, or monitoring well has been completed, and before it is made operational, a mechanical integrity testing of the well casing will be completed to ensure the installation has been successful and the well is functioning as designed. Well casings that fail integrity tests will be repaired before the well is placed into service.

2.3.1.3 Freeze Wall

In typical ISR operations, containment is normally achieved through naturally impermeable geological layers (aquitards) or by artificially creating a drawdown of the water table by pumping.

At Wheeler, the very low permeability basement rock below the uranium deposit serves as a natural aquitard; however, the sandstone hosting the uranium deposit is permeable and groundwater can flow across the deposit. To achieve containment at Wheeler, the entire uranium deposit will be isolated from the surrounding sandstone by creating a freeze wall above and on all sides of the uranium deposit – encapsulating the uranium deposit (Figure 2.2).

Ground freezing technology is well established throughout the world. Its use in a mining environment was pioneered in Saskatchewan's potash mining industry and later adapted for use in Saskatchewan's uranium industry. Ground freezing to control and eliminate groundwater from entering the mining areas is a fundamental component of two existing Athabasca Basin underground uranium mines.

The freeze wall will be established by drilling parallel cased holes from surface, starting at both ends of the deposit and travelling horizontally along the long axis of the uranium deposit anchoring into the impermeable basement rock on the opposite end of the deposit. This process is illustrated in Figure 2.12 and is expected to be achievable using existing directional drilling techniques. Once the drill holes have installed, a low temperature brine solution will be circulated through the cased holes to remove heat from the ground, ultimately freezing the natural groundwater and establishing an impermeable, frozen wall to encapsulate the uranium deposit. While the freeze wall is expected to be several metres thick, it will be developed around the uranium deposit, to ensure the uranium deposit itself does not freeze.

The area under the freeze wall is referred to as the mining chamber. The approximate dimensions of the mining chamber are: 100 m wide x 30 m high x 1,300 m long. The volume of the mining chamber is approximately 1.8 million m^3. The mining chamber is similar in shape to London, England's Paddington train station. The volume contained within the mining chamber is approximately the same volume contained in Roger's Centre in Toronto, Ontario as shown in Figure 2.13.

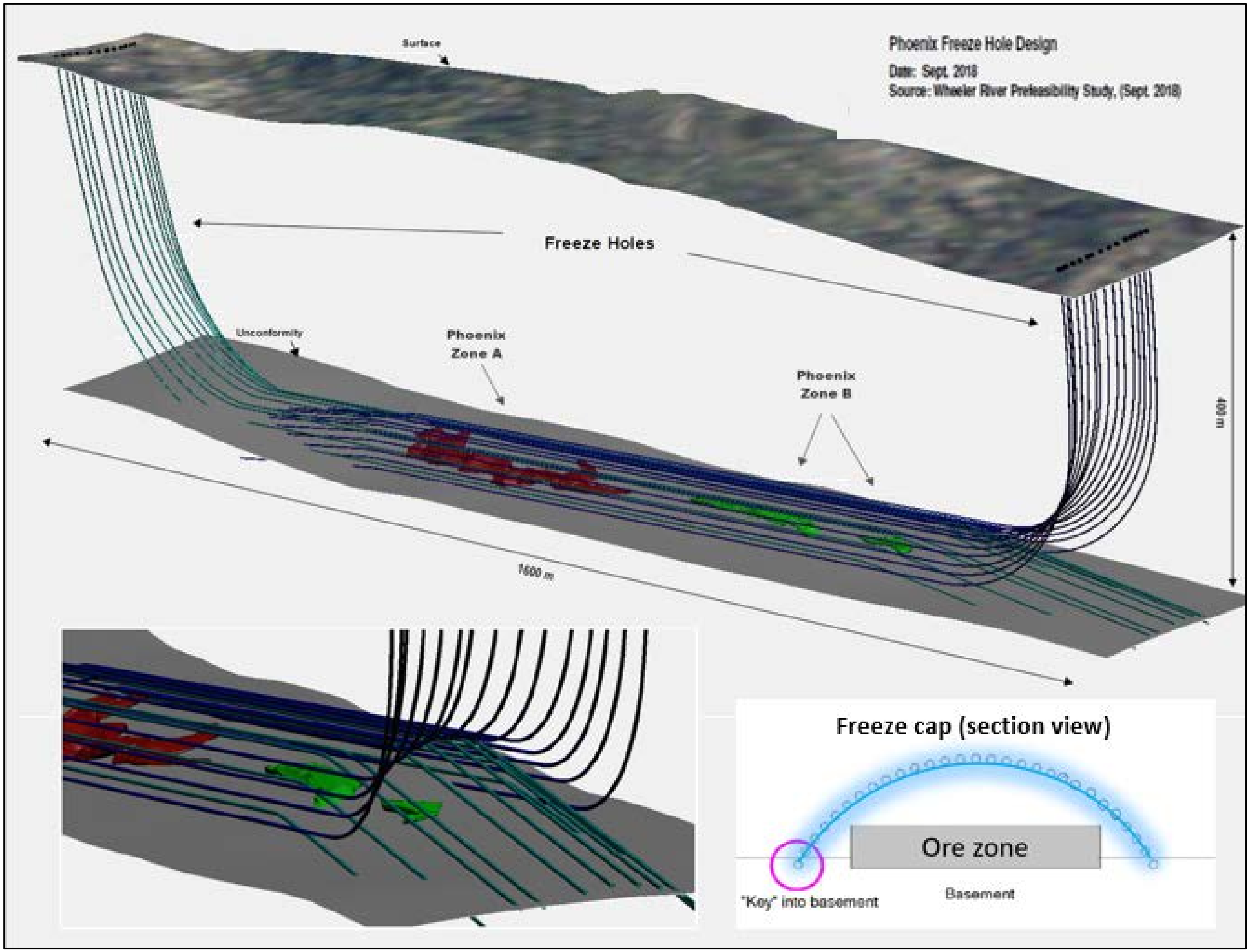

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Figure 2.12: Freeze Wall Design

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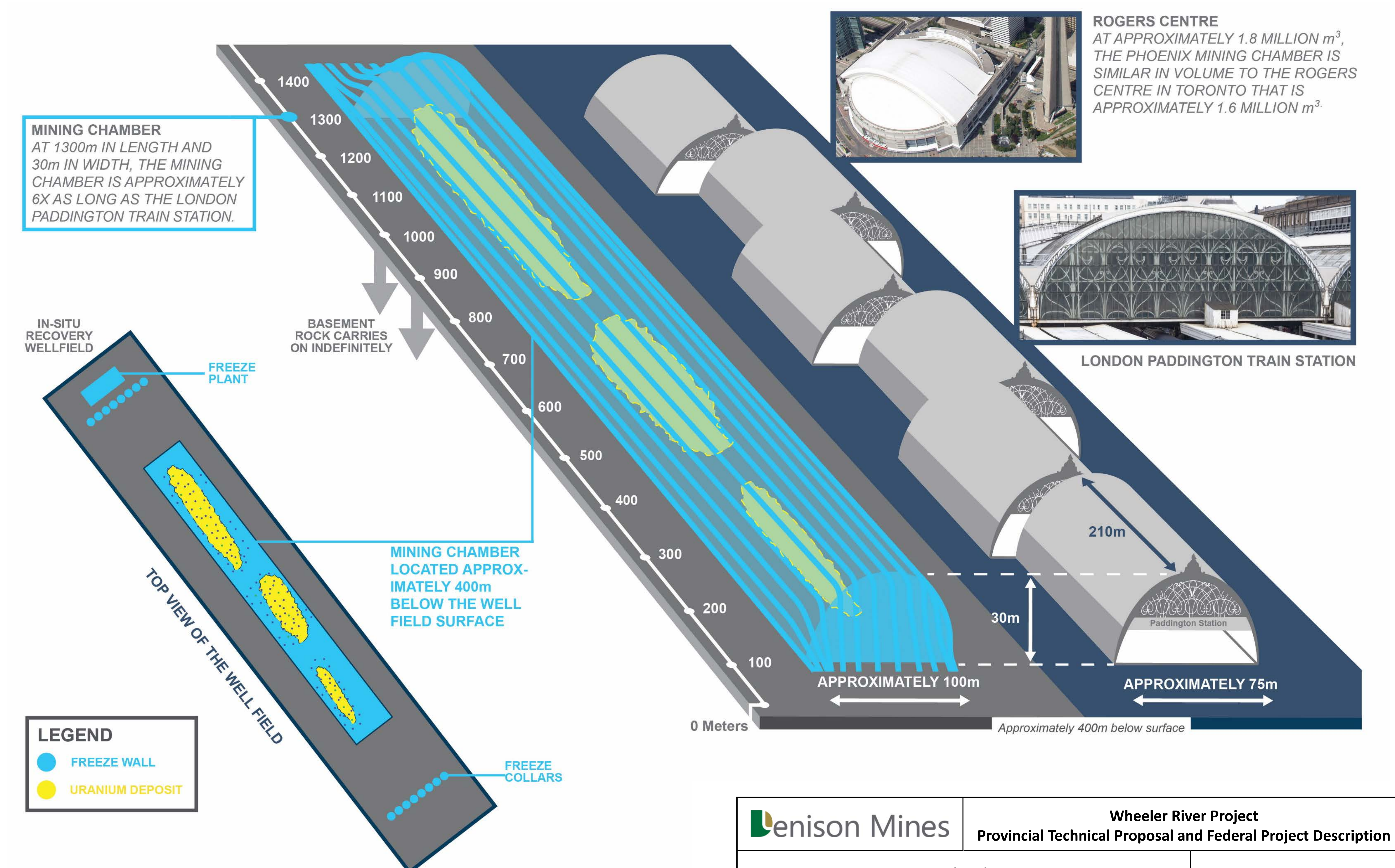

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Figure 2.13: Mining Chamber Size Comparison

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Freeze Plant

Two freeze plants will be required on surface; one at each end of the deposit where the freeze holes are collared (Figure 2.8). The two freeze plants will be constructed on surface based on a modular design for easy installation and operation. The design for each freeze plant includes:

- Six modular freeze plant skids;
- One electrical/control skid;
- Six evaporative condenser skids; and
- One insulated brine tank.

Freeze Wall Timeline

Modelling predicts the freeze wall will require 14 months to be established. The freeze wall will be in place throughout the operations phase.

After decommissioning once the freeze wall is no longer needed and refrigeration is turned off, it will take a minimum of 2 to 3 years for the freeze wall to thaw depending on how long the freeze wall was active and actual ground conditions encountered.

2.3.2 Processing Plant

Refer to Figure 2.3 for an overview of the conceptual design of the processing plant.

The processing plant will house the tanks and equipment to fully process uranium rich mining solution recovered from the ISR wellfield into yellowcake and refortify the mining solution for continued use in the ISR wellfield. The processing plant will also contain filtration systems, bulk chemical storage, process solution storage tanks, and a control room.

The processing plant will be designed with expert consideration of potential environmental and health and safety effects to mitigate interactions to the extent possible. For instance, the floor will be graded as required and sumps will be installed to collect any spills. Ventilation in the processing plant will be designed with the ALARA principle in mind to provide sufficient worker protection and monitoring systems will be in place to ensure worker health and safety. Dust control and good housekeeping practices throughout the processing plant will also form a critical component of the Radiation Protection Management Plan developed for the Project. The processing plant exhaust, mainly from drying and packaging areas, will be directed through a stack and released outside of the building. The stack height will be designed based on results of air dispersion modelling to be an appropriate height for optimal dispersion. Bulk storage tanks for the processing chemicals, such as sulfuric and/or hydrochloric acid, sodium hydroxide, and hydrogen peroxide, will be located outside the processing plant. The storage tanks will sit inside appropriately designed and sized concrete secondary containment basins. The secondary containment basin for each applicable chemical system will be physically separated from the containment basins for other chemical systems.

The plant is anticipated to be approximately 50,000 ft^2 (4,600 m^2) in size, which is about half the size of a CFL football field. The building will be constructed adjacent to the wellfield to minimize piping distances (Figure 2.8).

The uranium bearing solution will be pumped from the wellfield pumphouse(s) to the processing plant and pumped through the following circuits:

- *pH adjustment (not shown in Figure 2.3)* – The pH of the incoming uranium rich mining solution will be monitored and adjusted as required to ensure the uranium is fully dissolved.
- *Impurities Removal Process* – Uranium rich mining solution will be pumped to an impurities removal circuit where the pH of the solution will be adjusted to allow the precipitation of iron hydroxides and other metals. Once the impurities have precipitated out of the uranium rich mining solution, the solution is routed to the yellowcake precipitation circuit. Precipitated impurities removed at this step will be placed into totes and stored on the lined waste pad (Figure 2.8) until final disposal.
- *Uranium Precipitation* – Uranium is recovered from the uranium rich mining solution following the impurities removal process. Reagents are added to the uranium rich mining solution in a series of agitation tanks to precipitate dissolved uranium. If required, there is additional pH adjustment. The solution moves to a thickener that provides time for growth of the uranium oxide crystals. The precipitated uranium will accumulate at the bottom of the thickener and the mining solution, now depleted of uranium, will rise to the top. The mining solution is cleaned through a series of sand filters prior to refortification and re-injection into the wellfield. The precipitated uranium product accumulated at the bottom of the thickener is withdrawn at the underflow of the thickener and pumped through a filter press (*not shown in Figure 2.3*), where excess liquid is removed and circulated back to the thickener.
- *Yellowcake Dewatering/Drying and Packaging* – Entrained solids particles exiting the filter press will be collected for drying and packaged. Fresh water is sprayed on the surface of the cake to reduce the entrainment of contaminants in the dryer. Any remaining moisture is evaporated in the dryer. Any water collected from the drying process will be condensed and reused in the plant for reagents preparation. Once the moisture is removed from the yellowcake product, the yellowcake is packaged into 400 L steel drums via gravity. Denison will evaluate the use of either low temperature dryers or calciners for drying in the processing plant.
- *Mining solution refortification* – The ISR process circulates the mining solution through the uranium deposit over and over, and it is expected that contaminants may accumulate in the continuously recycled solution. Accordingly, it may be required to remove (or 'bleed') a portion of the mining solution to prevent accumulation of contaminants. The bleed solution will be routed to the water treatment plant where the contaminants will be removed from the system and any produced cleaned water will be re-used as process make-up water when possible. This bleed volume in addition to moisture losses in the drying process must be replaced. Reagents will be added to any makeup water (sourced from either surface runoff or fresh water from

groundwater or a lake) and will then be mixed with the recycled mining solution and re-injected into the mining chamber.

The ISR wellfield and processing plant will be designed to efficiently recover uranium and to reduce operating costs by recycling and re-using most of the solutions inside each circuit. Any excess treated water from the WTP will be released to a surface water body or injected into groundwater via deep well injection once acceptable water quality is achieved.

2.3.2.1 Production Capacity

The anticipated production capacity of Wheeler is up to 12 Mlbs/year with a mine life of up to 20 years. This is above the current known reserves at Wheeler and is intended to provide a conservative basis for assessing Project effects in the EIA and operational flexibility.

2.3.3 Roads

Mainland access to the site will be from Highway 914. A seven-kilometer (7 km) section of road will be constructed from the highway to the Wheeler site and a five kilometer (5 km) long road will also be constructed from the Wheeler site to the airstrip (Figure 2.7); the total road length is twelve kilometers (12 km). Additional site roads will include a service loop to the camp and a short service road to the runoff pond and the potential treated effluent discharge point.

Many of the proposed roads will be developed along previously disturbed areas, including roads currently used for exploration activities, thereby minimizing terrestrial habitat disturbance.

Denison anticipates the need for installation of two water crossings along the road from the Wheeler site to the airstrip. The crossings will be designed, constructed and maintained to avoid causing harm to fish and fish habitat.

During the PFS process (Denison 2018), an assessment was completed to evaluate access road alignment options from the highway into the Wheeler site. Several routes were analyzed for key factors including: length, cut and fill quantities, distance from cabins, distance from waterbodies and distance from any water crossings. As outlined in Section 8.2.1.2, a workshop was completed with communities to obtain input from local Indigenous and non-Indigenous communities into the access road routing options. After the engagement process and using community input, the preferred route was selected and incorporated into the current Project design.

2.3.4 Supporting Infrastructure

2.3.4.1 Air Strip and Terminal

As a proposed fly in-fly out operation, Wheeler will require an airstrip to bring personnel to and from the site.

A 1,600 m long airstrip is proposed to be positioned in a natural and relatively flat valley to the NE of the Wheeler site (Figure 2.7). The magnetic headings are 03/21, which is similar to both the

Collins Bay airport and Key Lake airstrip. The runway has been designed to accommodate the aircraft presently used by existing mining operations in northern Saskatchewan to transport personnel into and out of site. An airstrip terminal building and two double-walled Jet A fuel tanks, to provide site service to aircraft as required, will be constructed near the airstrip. The approach line to the airstrip from the SW clears the Wheeler surface facilities by 500 m.

2.3.4.2 Accommodations Facility

Located to the southeast of the wellfield, the proposed accommodations facility is anticipated to be a turnkey building manufactured offsite and assembled and commissioned on-site. The building's design will be sized to accommodate a peak load of about 100-150 individuals during operations; however, due to its modularized design, additional modules can be easily installed should additional beds be required in the future.

The facility will include a central services complex with:

- Kitchen with food preparation area and serving area;
- Dining room;
- Camp office;
- Commissary;
- Recreation area; and
- Exercise facilities.

2.3.4.3 Operations Centre

The operations complex is planned to be a standalone, multi-functional building that will serve the administrative, technical, and maintenance needs of the site.

At the PFS stage, the building is proposed to be a two-story pre-engineered structure with total usable space of 38,000 ft^2: 27,000 ft^2 on the first floor and 11,000 ft^2 on the second floor.

The first floor will house the two-story shops, dry space, and warehouses. The shops will include three full-sized maintenance bays, with one being equipped as a welding bay. Areas of the operations centre will be designed to have containment and sumps as required. Men's and women's change areas (dries) will be provided, with contamination control and suitable wash spaces for each, including laundry facilities. The warehouse has two receiving doors adjacent to the shops. Office spaces will also be provided in these areas for warehouse and procurement staff as well as maintenance supervisors.

The second floor will have administrative space with offices, a boardroom, meeting rooms, lunchroom, and washrooms.

Additional facilities include:

- Medical or nursing station with waiting area;

- Parking space for emergency response vehicles;
- Space for storage of mine rescue/emergency response gear and supplies;
- Laboratory facilities;
- Training room; and
- Mechanical and electrical services rooms.

2.3.4.4 Security Houses and Truck Scales

Access to the property will be controlled by both a north and south security gate (Figure 2.8).

The main, south gate security house will be staffed as required and be equipped with an 80-tonne weigh scale that is hard-wired into the shack. The security and truck scale buildings are planned to be modular, pre-fabricated units that will be manufactured off-site and shipped to site for installation and commissioning. The south gate facilities will have appropriate power and communications capability.

The north gate will be a simple locked gate.

2.3.4.5 Wash Bay and Scanning Facility

A wash bay will be available to clean items, equipment and vehicles that may have been in contact with potential contaminants. Contaminated water from wash bay will be collected in a sump tank and routed to the water treatment plant for treatment and discharge.

Radiological clearance scanning required for any items, equipment and vehicles leaving the site will be conducted in the same building.

2.3.5 Power Needs and Power Supply

Operation of an ISR uranium mine does not require substantial inputs of energy compared to traditional mining methods.

In an effort to further improve Wheeler's energy efficiency, Denison will assess using state of art technology for battery-powered light vehicles and mobile equipment. Similarly, Denison will evaluate the viability of using an AC powered dual rotary drill for ISR wellfield development rather than a traditional diesel-powered unit. Site infrastructure anticipated to draw power from the provincial power grid, includes the camp buildings, operations buildings, the ISR precipitation plant, and the freeze plants.

Primary Power Supply

Electrical service to Wheeler will be provided via an approximate 5 km extension tap from the existing 138 kV overhead transmission line that runs along Highway 914. Optimization of the precise line route will be completed as the Project advances and will likely follow the access road alignment.

Power transmission to the site (e.g., assessment, obtaining necessary permits, and construction) will be led by SaskPower and is not considered as part of this Project (refer to Section 2.6).

Back-up Power Supply

Based on historical data provided by SaskPower, the outage rate of the existing line is approximately six outages per year. To provide electrical service during times of utility outages, emergency diesel generator will be installed in strategic locations to service the site and maintain essential functions.

The generators will be used to maintain power to the processing plant and the accommodations facility, as well as to maintain other essential services as required.

2.3.6 Water Management and Treatment

As part of Denison's approach to sustainable mining at Wheeler, Denison intends to recycle process water to the greatest extent possible, thereby reducing the demand for a fresh water supply. The proposed recycling process design incorporates a closed-loop system within which only limited make-up water is estimated to be required to supplement ISR mining and on-site processing. As a result of the focus on water recycle, the volume of treated effluent requiring discharge is expected to be low.

2.3.6.1 Site Runoff

Water will be collected from the waste pond (which collected runoff from the waste pad) and the processing plant terrace and then directed to the water treatment plant. Runoff for the small clean waste rock pile may be collected into a settling pond to remove total suspended solids if necessary. Other site runoff collection needs will be examined and identified as part of the EIA.

2.3.6.2 Fresh Water Supply and Distribution

A fresh water distribution system will be designed to provide fresh water to the fire water system (fresh water tank, two electric fire water pumps, and a back-up diesel fire water pump for on-site fire suppression needs), the potable WTP, the processing plant, wash bay and temporary batch plant (required during construction phase). Fresh water will be sourced from either a shallow groundwater well or an intake from a nearby surface water body. Estimated fresh water consumption rates are provided in Table 2.1 below.

Table 2.1: Estimated Fresh Water Consumption Rates

Consumer	Flow Rate (L/day)
Processing Plant	2,000
Wash Bay	6,000
Potable WTP	30,000
Temporary Batch Plant (during construction only)	5,000

2.3.6.3 Potable Water Treatment Plant and Distribution

Raw water for the potable WTP will be sourced from either groundwater or a nearby surface water body.

Potable water will be generated on site by a pre-fabricated modularized (40 ft shipping container) potable WTP comprised of a treatment plant, a 2,000 L storage tank, and a bottle filling station. Potable water will be piped to the camp, the operations centre, and the processing plant to provide water for safety showers and eyewash stations. Other locations, such as the airstrip terminal, gate houses and satellite lunch trailers (during construction) will receive bottled water as required.

Ultrafiltration or reverse osmosis with UV filtration are proposed for filtration. Chlorination will be needed prior to distribution. The modular plant will be capable of all necessary processes and will contain required HVAC and lighting. The potable WTP will be placed on a concrete pad and will generate 1.4 m^3/hr (33 m^3) of potable water per day based on 300 L per person per day. Raw water will be pumped to the potable WTP via pipeline from the fire water storage tank and fresh water distribution system.

2.3.6.4 Sewage Treatment Plant

Domestic waste water and sewage will be generated at the camp, processing plant, and the operations centre. Domestic waste was assumed to be generated at the rate of 300 L per person per day. Sewage will either be collected in septic tanks and transported by a vacuum truck or piped directly to the on-site sewage treatment plant. The sewage treatment plant will be a modular facility comprised of two heated and insulated units (likely containers), a holding tank, ancillary filtration, ancillary treatment process equipment, and sludge handling system. Denison may investigate options to dispose of treated sewage underground or through a septic field. Alternatively, the sewage treatment plant will generate effluent suitable for discharge to local surface water. Treated effluent will first be discharged to surface testing ponds where the water quality will be checked to ensure it meets regulatory limits. Reject solids from the treatment process will be collected, dewatered, and stored on the waste pad on site prior to permanent disposal.

2.3.6.5 Water Treatment Plant

The Wheeler WTP will be designed to treat any contaminated water removed from the ISR process (e.g., backwash of sand filters, bleed solution), runoff collected from the waste pad, and any other contact water such as water from the wash bay and process sumps. The WTP will be located inside of the processing plant.

Contaminants will be removed from the system. It is Denison’s intent to incorporate treated water back into the mining water balance as make-up water in the processing plant, to the extent possible. Any excess treated water from the WTP will be pumped to appropriately-sized holding ponds. The holding ponds will be sized to hold effluent for a period of 24 hours for testing before discharge to the environment.

Treated water in the ponds will be monitored prior to release to a surface water body or injected into groundwater via deep well injection. All treated effluent released to surface water will meet federal and provincial regulatory discharge limits. The treated effluent discharge line will be heated and have secondary containment in place.

Details on the proposed treated effluent discharge location, the pipeline, the type of release point, and modelled results of any changes in the aquatic environment will be presented in the EIA.

2.3.7 Waste Management

2.3.7.1 Incinerator

Denison plans to operate an incinerator to incinerate any food waste. This is a best practice to avoid attracting wildlife into the site. It is expected that selection of an appropriate incinerator will have design components to mitigate emissions to air. Correct operation and regular maintenance of the incinerator will be important to achieve the design parameters for minimizing emissions to air and procedures will be in place to achieve this.

2.3.7.2 Landfill

Denison plans to construct, operate, monitor and decommission a domestic landfill on site. A waste management plan will be developed for the Project which will detail how each type of waste generated on site will be managed. In general, only inert non-hazardous wastes such as wood and plastics will be suitable for disposal in the on-site landfill.

2.3.7.3 Waste Pad and Pond

During operations, the waste pad is expected to contain:

- Mineralized drill cuttings from wellfield development;
- solid impurities (mainly iron and/or radium) removed from the uranium rich mining solution during the impurities removal step in the processing plant; and
- dewatered reject solids from the sewage and water treatment processes.

The waste pad will be double lined, with leak detection capabilities and an associated monitoring program to ensure containment. An adjacent pond will be used to collect runoff from the pad and water in the waste pond will be piped to the water treatment plant for treatment. As part of the EIA, Denison will identify options for either on-site disposal of these wastes or off-site disposal at an approved facility.

2.3.7.4 Clean Waste Rock Pad and Pond

Clean waste rock will be generated from the sandstone cuttings from drilling activities. This includes the drilling of the injection and recovery wells to create the ISR wellfield and the drilling of freeze holes to create the freeze wall. It is estimated that a total of 7,100 m^3 of clean waste rock will be generated.

Clean waste rock will be stored on an unlined pad and can be used for road or concrete construction. A pond may be constructed beside the pad to collect runoff if required.

2.3.7.5 Hazardous Substance Storage and Use

Fuel Storage and Dispensing Facility

Since the site's primary power supply will be from the provincial electrical grid, Wheeler fuel consumption at Wheeler may be limited to back-up power supply, auxiliary vehicles (i.e. ATVs and snowmobiles), miscellaneous equipment (i.e. portable pumps), and freight and personnel transportation to site. This will reduce Project fuel consumption and minimize greenhouse gas emissions.

Tanker trucks will deliver diesel and gasoline to the site on an as-needed basis. Fuels will be stored in approved, above-ground, 25,000 L double-walled storage tank(s) equipped with secondary containment in accordance with provincial regulations and standards. Fuel storage and distribution infrastructure will be constructed in accordance with applicable legislation requirements (e.g., *Hazardous Substances and Waste Dangerous Goods Regulations*). Stationary and mobile equipment will be fueled with a fuel-dispensing truck.

Propane Facility

Propane may be used as a primary or backup means to support the camp kitchen, the incinerator, and to heat the buildings. The propane facility will be sized to meet the needs of the site activities and will a feature a storage tank (assumed to be 30,000 uswg), vaporizers, a propane bottle fill station, and a propane bottle weigh station. Propane will be delivered to site on an as needed basis.

Other Hazardous Substances

Sulfuric acid, hydrogen peroxide, sodium hydroxide, barium chloride and flocculants are the main chemicals anticipated to be used in the processing plant and in mining. Bulk storage tanks for the processing chemicals, such as sulfuric and/or hydrochloric acid, sodium hydroxide, and hydrogen peroxide, will be located outside the processing plant. The storage tanks will sit inside appropriately designed and sized concrete secondary containment basins. The secondary containment basin for each applicable chemical system will be physically separated from the containment basins for other chemical systems.

The various lubricants and coolants required for regular maintenance of equipment will be stored on site.

Each one of these materials will be stored, handled, recycled or disposed of in an appropriate manner and meet the requirements of the *Hazardous Substances and Waste Dangerous Goods Regulations*.

No fuels, oils or other hazardous substances will be stored within 100 m of any water body and no equipment maintenance or re-fuelling will be conducted within 100 m of a water body. Denison will maintain an up to date record of the various hazardous substances on site and will maintain Material Safety Data Sheets and appropriate procedures for spill management, handling and clean up in an accessible location.

2.4 Project Activities and Schedule

The following sections describe the main activities to be performed in each Project phase and the proposed schedule for Project development.

2.4.1 Pre-Development and Construction

2.4.1.1 Pilot Demonstration Well Pattern

In order to obtain essential data for detailed engineering, licensing and the environmental assessment, Denison may elect to operate a pilot demonstration well pattern. A separate proposal will be submitted to the appropriate regulatory agencies for review and approval. The pilot demonstration may include well development, circulation of mining solution over a small spatial area and subsequent recovery of the mining solution. Permeability enhancement of the uranium deposit may be included as part of the scope. Monitoring wells will be in place and monitoring will be conducted to ensure the well pattern functions as proposed. It is not anticipated that the pilot demonstration will incorporate the use of a freeze wall.

2.4.1.2 Pre-Development Phase

Following receipt of environmental approvals, the preparatory phase will include initiation of licensing activities, organization of the Project execution team, preparation of key Project documents, and procurement of equipment, materials, and labour. These activities will be initiated during the last stages of the feasibility study should results continue to support advancement of the Project.

2.4.1.3 Construction Phase

Following receipt of licensing approvals, construction activities on site will commence. Construction of Wheeler infrastructure can be divided into several key areas as outlined below.

Site Preparation: Clearing and leveling of the surface facilities will be contracted out to a suitable contractor. The initial earthworks construction will focus on preparing roads into the site, specifically to the ISR plant and the two ends of the wellfield where the freeze wall drilling will occur. These two sites will remain the focus of levelling and grading activities. All of this work will be supported by temporary camps and utilities (and/or the existing exploration camp and utilities) while permanent facilities are established. Temporary security checkpoints will be established early in the site preparation phase.

Wellfield and Freeze Hole Drilling: Denison has been drilling on the property since 2004; this experience and knowledge will be applied to the drilling of the freeze and wellfield holes. Suitably qualified and experienced contractors will be overseen by Denison personnel to complete drilling activities.

Ground freezing requires the establishment of a pattern of freeze wells drilled across the uranium deposit and of refrigeration units and corresponding electrical and mechanical services to each. Freeze well drilling will be initiated as early as possible. The ground freezing units will arrive at site and be physically installed and operating when the appropriate tie-ins to the site power distribution system is completed.

Processing Plant Construction: While the processing plant is likely the most complex construction activity for the Project, it is relatively simple when compared to other full-service uranium mills, as there are a limited number of vessels and minimal piping. Furthermore, due to the degree of isolation of the plant from other site facilities, construction of this facility can be prioritized with minimal impact to other facilities. Most of the equipment and materials inside the plant are small in size, enabling the shipment of tanks and other vessels pre-assembled. Processing plant construction will begin immediately following earthworks at the site. After foundations are completed, the building can start constructed. A short commissioning period begins post-construction prior to first uranium production.

Other Surface Infrastructure: Other surface infrastructure includes camp buildings, the operations centre, the airstrip terminal building, and various other smaller infrastructure. With the exception of the operations centre and processing plant, all other buildings are expected to be pre-fabricated buildings to reduce the costs of construction on site.

The operations center is planned to be completed ahead of commissioning. This will allow the operations team to conduct activities in a suitable building and will create a permanent maintenance facility before operations commence. The permanent camp is completed in a similar time frame, along with basic services such as permanent communications and fire systems.

A temporary batch plant will be used during the construction phase. Concrete will be required for construction of foundations and containment walls in select surface infrastructure.

Electrical infrastructure: A powerline will be constructed from the existing provincial power line adjacent to Highway 914 into site to the main substation. Distribution around site will be completed as required to support the various operations.

Other: The balance of the infrastructure items, such as storage areas, incinerator, and security gates, are planned to be completed at about the time of commissioning and will complete the construction at Wheeler.

Commissioning of the facilities is expected to be supported by engineering and/or supplies vendors along with the assistance of the construction teams. This will ensure constructed facilities adhere to the designs and specifications set forth.

Project and construction management during the capital development phase of the Project will be managed by a small dedicated Project management team. During the construction phase, Denison will provide general and administrative services to operate the site and support the contractors in construction (i.e. room and board, flights, general supplies, freight haulage, etc.). It is expected that a mix of employees, contractors, and engineering service providers will support site construction efforts.

Wheeler construction milestones are summarized in Table 2.2.

Table 2.2: Wheeler Conceptual Development Schedule

Project Activity	Schedule
Environmental Impact Assessment and Licensing	2019-2022
Feasibility Engineering	2019-2021
Detailed Engineering	2021-2022
Construction	2022-2024
Operation	2024-2044
Decommissioning (does not include progressive decommissioning during operations)	2044-2049
Post-decommissioning	2049-2054
Release from licence and transfer back to Crown land or into Provincial Institutional Control Program	2055

2.4.2 Operation

Operation of Wheeler is planned to last up to 20 years. Denison anticipates operating the site with employees and a limited number of external contractors.

The operation phase is generally focused on operating the Project components presented in Section 2.3. As such, the operational activities for Wheeler include but are not limited to:

- Operation of the ISR wellfield;
- Operation of the ISR processing plant and production of uranium concentrate at a production rate of up to 12 Mlbs U_3O_8/year;
- Maintenance activities at the wellfield, processing plant, roads, airstrip and other site facilities;
- Water withdrawal from groundwater or surface water body for potable use, fire suppression system and make-up water in the processing plant;
- Water treatment of potable water, sewage, and waste water;

- Waste management;
- Environmental monitoring as outlined in the Environmental Management System;
- Package and transport of nuclear substances;
- Reporting to regulators;
- Engagement with local Indigenous and non-Indigenous communities; and
- Systems for maintaining site security.

2.4.3 Decommissioning

The five main decommissioning activities include:

- Mining chamber remediation;
- Decontamination;
- Asset removal;
- Demolition and disposal; and
- Reclamation.

Progressive decommissioning will be completed throughout the life of the Project whenever feasible and reported to the regulatory agencies as part of the annual reporting requirements throughout operations. Progressive decommissioning activities will focus on the decontamination, demolition, and disposal of unused buildings and infrastructure, as well as the removal of unused equipment and machinery. Reclamation of inactive areas will take place when these areas become available.

Closure of the entire Project will be completed in accordance with all provincial and federal regulations and guidance documents with the fundamental considerations being to ensure physical and chemical stability of the site in order to protect human health and the environment.

2.4.3.1 Mining Chamber Remediation

Mining chamber remediation will be initiated once mining is completed. The objective will be to restore the water within the confines of the freeze wall (i.e. within the mining chamber) to reach an acceptable decommissioning objective. Details on groundwater quality decommissioning objectives for the mining chamber will be developed as part of the EIA.

To complete mining chamber remediation, water will be injected into the mining chamber via injection wells and then recovered through the recovery wells. Produced water would be processed through the processing plant until non-economic uranium concentrations are observed. Non-economic produced waters will be treated and mixed with fresh water for continued circulation in the mining chamber. This will continue until recovered water reaches acceptable groundwater quality decommissioning objectives.

During groundwater restoration, reagents may be added to the injected water to accelerate groundwater quality recovery.

After remediation has been completed, the freeze wall will be turned off and allowed to thaw. This will allow the eventual re-establishment of the pre-operational groundwater flow regime in the former mining chamber area.

2.4.3.2 Decontamination

Surface facilities and injection, recovery, and monitoring wells will be systematically surveyed and decontaminated as necessary. Surplus chemicals and other hazardous materials will be removed and stored in designated temporary storage facilities. Sumps will be cleaned. All hazardous materials will be disposed of at approved off-site facilities. All radiologically contaminated material will be disposed of on-site in accordance with licence conditions.

Empty tanks will be removed from the sites and sold as scrap or reused. Otherwise, they will be transported to an approved waste management facility. Fuel tanks will be managed by a contractor licenced to handle these types of tanks. Any remaining fuel and tanks will be removed by the contractor from the site. As much waste as possible will be hauled off-site and disposed of at appropriate licenced facilities.

2.4.3.3 Asset Removal

Salvageable machinery, equipment, and other materials will be dismantled, decontaminated, and taken off-site for resale or recycling. Remaining items will either be managed at a facility licenced to manage radioactive wastes or disposed of in an approved facility on-site.

2.4.3.4 Demolition and Disposal

All permanent structures that cannot be removed from the property as an asset will require demolition. Most process equipment and non-supporting structures will be removed from buildings prior to demolition and the buildings will be demolished.

During demolition, dust control will be required. An initial wash may be necessary, in addition to the wetting of demolition debris as structures are disturbed during demolition. The requirement and duration of misting will be determined on a case-by-case basis.

A review prior to the start of demolition will identify areas requiring additional procedures. Where possible, dust generating materials will be removed prior to demolition. Appropriate personal protective equipment and personnel decontamination procedures will be employed.

Valuable recyclable materials will be separated and processed for transport and sale concurrent with demolition. Excavators equipped with grapples will sort the recyclable products from the non-recyclables. Shears will be used to size recyclables for shipping and sale. Cleaning procedures of recyclables will be integrated into demolition, as necessary.

Concrete foundations will be left in place. Any portions of concrete foundations remaining above grade will be levelled and rebar will be cut-off at grade. Large slabs will be perforated on a 2 m grid to permit drainage. Concrete slabs will be covered with 0.5 m of development rock or locally stockpiled till.

The demolition process will produce:

- Saleable recyclable materials (steel, stainless steel, copper, steel sections, and sheet metal);
- Hazardous materials, including contaminated material that cannot be decontaminated;
- Roofing materials and insulation;
- Wood;
- Concrete; and
- Contaminated soils.

Saleable recyclable materials will also be transported off-site as scrap or recycled.

Hazardous materials will be handled and disposed of in accordance with the appropriate regulations and good practice. Where possible, chemicals will be mixed to produce a neutral solution and disposed of in an approved manner at site. Hazardous materials, such as spent chemicals (that cannot be managed on-site), waste oil, and sludges, will be disposed of off-site at licenced facilities.

Non-hazardous waste materials, such as roofing materials, insulation, wood, co-mingled concrete, and light steel (i.e. hand railings), may be disposed of on-site or off-site in a licensed landfill. Soil testing will be conducted in any areas of known contamination and/or potential spills, including areas around chemical, fuel, and explosive storage areas. Testing will be conducted according to industry standard procedures and compared to provincial and federal soil standards.

2.4.3.5 Reclamation

An overview of the reclamation activities that will be completed for the main Project components is provided below. The main Project components that will require reclamation at closure include:

- ISR wellfield and infrastructure;
- Transportation corridors and laydown areas;
- Ancillary infrastructure;
- Waste pad; and
- Water storage ponds.

Closure of the ISR wellfield and associated infrastructure will require the following activities:

- Decommissioning of all injection and recovery wells, following acceptable wellfield restoration;
- Removal, decontamination, and disposal of all surface piping;
- Decontamination and removal of the pumphouses;

- Decontamination, removal, and/or disposal of the processing plant;
- Allowing the freeze wall to thaw and decommissioning of all freeze pipes and freeze plant; and
- Placement of all waste in an approved long-term licenced facility.

Prior to reclamation, the existing wellfield will be used to circulate neutralizing solution and clean water through the mining chamber. The tanks in the processing plant may be repurposed and used for the closure water treatment process.

Transportation corridors will be graded and scarified to promote natural revegetation. Access roads required for post-closure monitoring will be left as is and maintained to permit access. Access to the site will be restricted by gates and/or berms. Laydown areas will be scarified, covered with 0.5 to 1.0 m of stockpiled overburden, and vegetated with native self-sustaining species.

Reclamation of remaining infrastructure components involves the decommissioning and removal of components such as power transmission lines and electrical infrastructure, water pipelines, and water treatment plants. Ponds and lined settling ponds will be decommissioned once they are no longer required for water management. Any contaminated liners will be removed and hauled to an approved landfill. The footprints of ancillary infrastructure will be scarified and vegetated with native self-sustaining species as required.

2.4.4 Post-Decommissioning

The post-decommissioning period will extend from the end of physical decommissioning until transfer of the site into the provincial Institutional Control Program (Government of Saskatchewan 2009) or direct release of the land back to the Crown, is expected to last five years.

Following decommissioning, physical, chemical, and biological monitoring of the site will be conducted to ensure that the site is chemically and physically stable. The monitoring programs will be designed and conducted in accordance with the provincial and federal regulations and licence conditions.

The following is a summary of the anticipated monitoring programs:

- Groundwater quality;
- Physical stability;
- Biological; and
- Surface water quality.

The monitoring programs will be conducted until the site-specific decommissioning and reclamation objectives for the Project are met. Monitoring reports will be developed and submitted to both the provincial and federal regulators, in accordance with licence conditions.

2.5 Project Alternatives

Denison first initiated evaluation of the production potential from Wheeler in 2010. Since that time the Project has undergone significant design and review stages and has naturally evolved into the current state. During this time, several key alternatives and options were evaluated including:

1. Mining methods: Historical work evaluated a total of 32 mining methods to extract uranium from the deposit. Methods were evaluated through an increasingly rigorous process and considered factors such as: safety, environment, production rates, capital costs, operating costs, schedule, operational flexibility, risk, etc. In addition, specific workshops were held in local Indigenous and non-Indigenous communities to capture community input into the selection of a preferred mining method. After several years of study, the ISR mining approach was selected as the best option across the majority of factors.
2. Mineral Processing: In conjunction with the above assessments, historical work evaluated the construction of an on-site conventional mill to process run of mine ore from an underground mine. Factors such as: safety, environment, production rates, capital costs, operating costs, schedule were considered. Ultimately the decision to avoid construction of a conventional mill and tailings facility was made.

   Following the selection of ISR as the mining method, further processing alternatives were evaluated including the use of a toll mill to process the uranium rich mining solution, ion exchange technology (common to international ISR operations) and direct precipitation. Direct precipitation on site scored the highest in all evaluation categories.
3. Site Access Road Routing: The Wheeler site is approximately 4 km from the existing highway 914. An assessment of several routes was completed and considered factors such as: safety, environment (total disturbance), capital costs and risk. In addition, specific workshops were held in the Indigenous and non-Indigenous communities to capture community input into the final route selection.
4. Treated Effluent Discharge Location: After completion of baseline data collection a preliminary evaluation of potential surface water bodies was completed to assess the suitability of the surrounding areas to receive treated effluent from the site. Preliminary modelling identified five surface waterbodies that would likely be able to receive treated effluent without significant adverse environmental impacts. More detailed assessments of these waterbodies were completed and factors such as safety, environment, capital cost, operating costs and risk were considered. In addition, specific workshops were held in Indigenous and non-Indigenous communities to capture community input into the final location selection.
5. Site Infrastructure Layouts: Throughout the design process, several iterations of the site infrastructure and placements were considered. This process is on-going with factors such as safety, environmental disturbance, schedule, capital costs and risk being considered.

2.6 Ancillary Projects

SaskPower will secure permits for and construct the ~5 km powerline extension from along Highway 914 into Wheeler. It is anticipated that the powerline extension will be adjacent to the access road.

Saskatchewan Ministry of Highways has initiated the provincial environmental assessment process for Highway 914 extension and the Key Lake by-pass. As outlined in the project's Terms of Reference (Saskatchewan Ministry of Highways 2016) the Key Lake bypass component includes construction and operation of an approximate 5 km all-weather road by-pass to route traffic around Cameco's Key Lake uranium mill site. The Key Lake by-pass component of the Ministry of Highway's proposed project is considered an ancillary project for Wheeler.

2.7 Socio-Economics

Approximately 300 workers are expected to be required during the two-year construction period. Each component of construction will require workers with different types of skills and training depending on the task (e.g. road construction, wellfield drilling, erection of buildings, connection to services, etc.). During operations, about 150 people will be employed to operate the ISR wellfield and processing plant, as well as provide various supporting activities such as security, camp operations, operation of the water treatment, sewage and potable water plants, environmental monitoring, and maintenance of roads, equipment, and buildings.

The need for goods and services during construction, operations and decommissioning will generate business opportunities throughout the life of Wheeler. Examples of anticipated goods and services may include: catering, housekeeping, food, freight, and bulk materials such as fuel, propane, and reagents.

Employment and procurement opportunities pursued by those from nearby communities will be preferred as outlined in the MOUs executed with nearby communities and Indigenous groups (Section 8). In accordance with the intent of the MOUs, Denison has established an internal procurement approach, which requires the procurement of all goods and services for the Project to first consider businesses based in the communities prior to looking elsewhere in northern Saskatchewan, southern Saskatchewan and/or outside of Saskatchewan.

As a result of Denison's early engagement initiatives, a number of programs and actions focused on producing socio-economic benefits for local Indigenous and non-Indigenous communities have been initiated. Examples of some of the successes to date are described in Section 8.2.1. It is Denison's intent to leverage its early work and existing relationships with local Indigenous and non-Indigenous communities in order to expand upon its existing socio-economic commitments. This will allow Denison to meet or exceed the socio-economic commitments that will be outlined in the Project's Saskatchewan Surface Lease Agreement and the Human Resource Development Agreement to be negotiated between Denison and the province following the successful completion of the environmental impact assessment process.

3 Project Location

The property straddles the boundaries of NTS map sheets 74H-5, 6, 11, and 12. The approximate UTM coordinates of the property are 477,000E and 6,374,000N (NAD83, Zone 13). Wheeler is located within Treaty 10 territory (Figure 3.1).

Wheeler is located in Saskatchewan's Northern Administration District (NAD) as defined in the province's Northern Municipalities Act, but its creation dates back to The Northern Administration Act, 1948, which provided for the administration and development of the northern part of Saskatchewan. The NAD includes approximately half of Saskatchewan's land area, but less than four per cent of the province's population. The NAD's population of roughly 37,000 lives in approximately 45 communities, which include municipalities, First Nations reserves, settlements, and sometimes a combination of each.

There are a number of leases near Wheeler including recreational, traditional land use, and industrial surface leases. Figure 3.2 shows the location of recreational and traditional land use leases issued by the Province of Saskatchewan; it is assumed there are seasonally used cabins on these properties and this will be confirmed as part of the EIA. There are potentially eleven (11) cabins within 22 km of Wheeler (Figure 3.2).

Other nearby surface leases are for industrial sites such as power transmission and mineral exploration (Figure 3.3 and Table 3.1). Industrial surface leases are in place for the Key Lake Operation (a uranium mill) and the McArthur River Operation (an underground uranium mine); milling and mining activities at these sites are currently suspended.

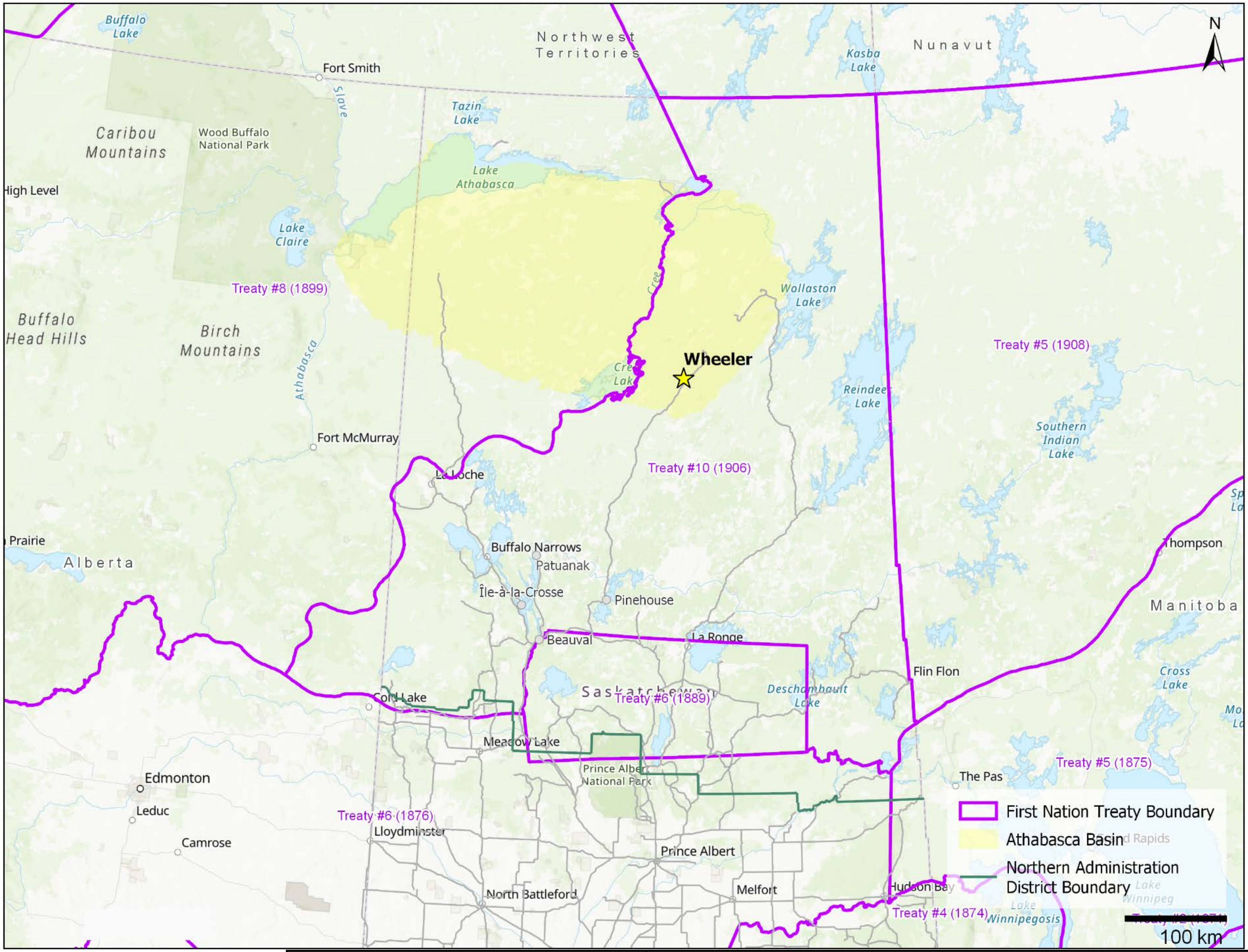

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Figure 3.1: Wheeler Location within the Treaty 10 Boundary

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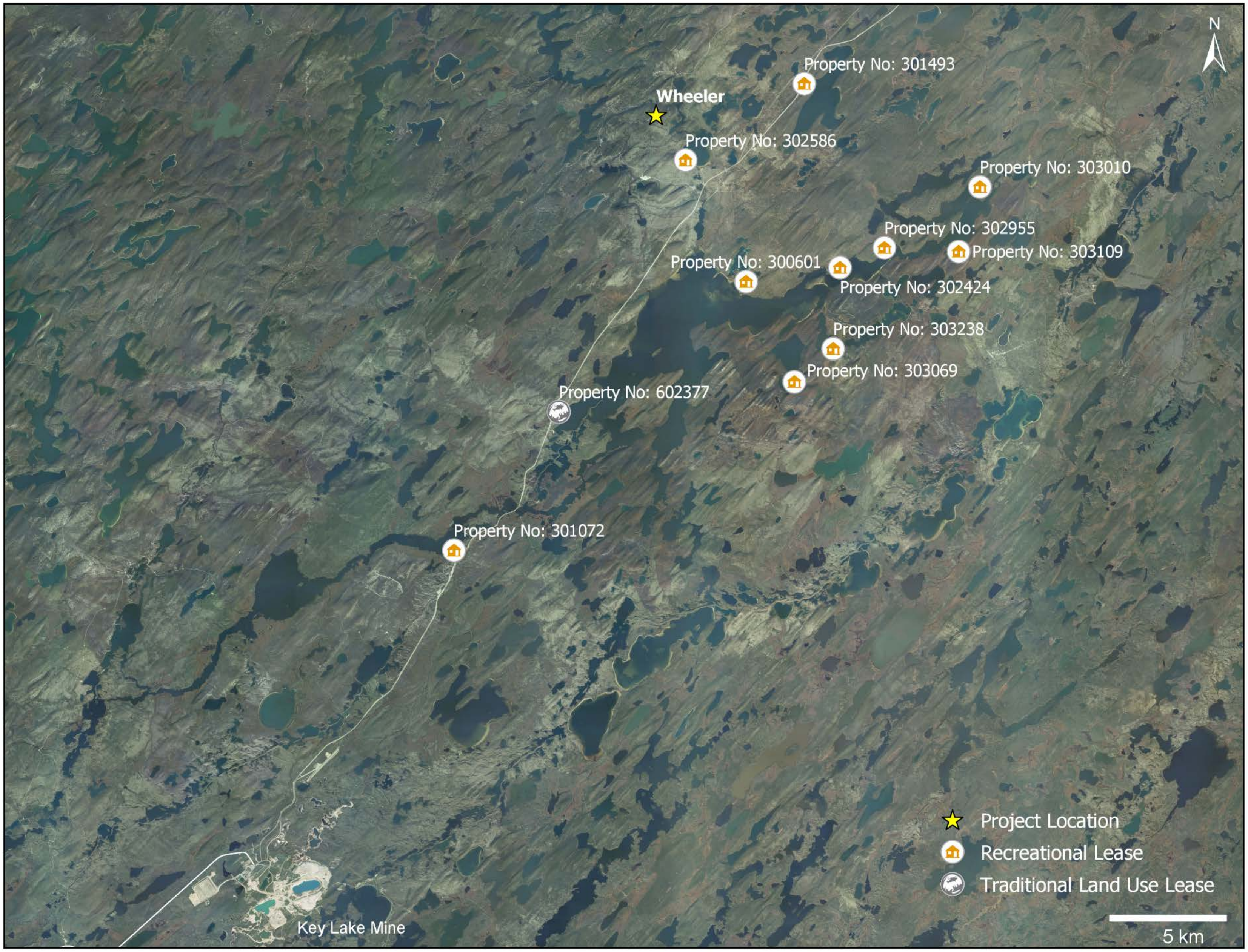

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Figure 3.2: Recreational and Traditional Land Use Leases in Proximity to Wheeler	**May 2019**

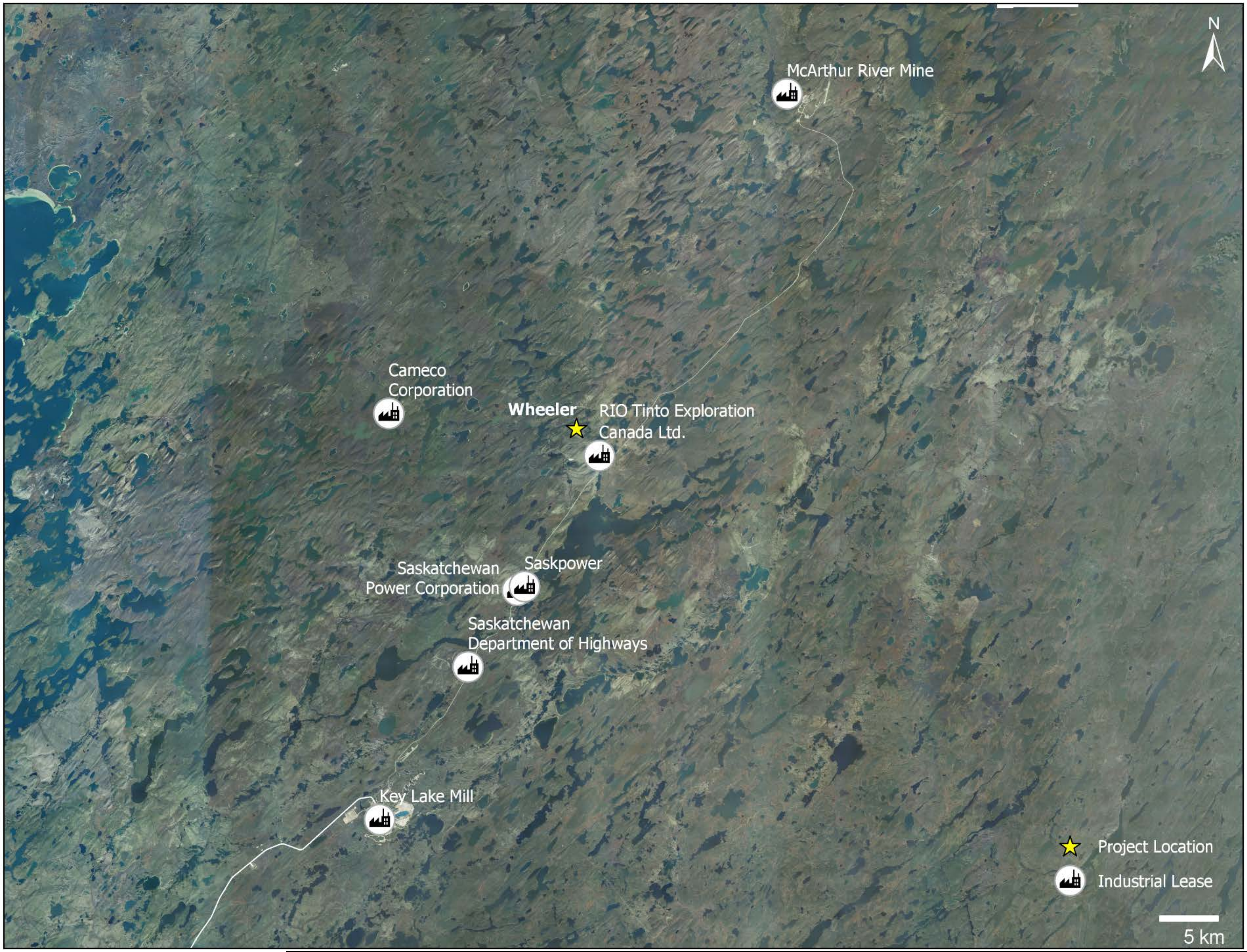

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Figure 3.3: Industrial Land Use Leases in Proximity to Wheeler

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Table 3.1: Leased Properties near Wheeler

Type of Lease	Description	Property Number[1]	Distance from Wheeler (km)
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	302586	2.7
Industrial Land Lease	Rio Tinto Exploration Canada Ltd.	303242	3.4
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	301493	6.3
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	300601	8.6
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	302424	10.5
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	302955	11.5
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	303238	13.0
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	303069	13.3
Traditional Land Use	Operated by a member of the English River First Nation	602377	14.0
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	303010	14.3
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	303109	14.4
Industrial Land Lease	SaskPower (transmission line from Key Lake to Island Falls)	303261	14.9
Industrial Land Lease	Saskatchewan Power Corporation	303329	15.4
Industrial Land Lease	Cameco Corporation	603071	16.3
Recreational Lease	Assumed cabin on lease. Leased to individual(s) – names withheld for privacy.	301072	21.2
Industrial Land Lease	SK Highways gravel pit for road maintenance	500490	23.1

Notes:
[1] Land dispositions from Crown Resource Lands provided by Government of Saskatchewan, Ministry of Environment, Fish, Wildlife and Lands Branch

As a remote site, there are no communities in relatively close proximity to Wheeler (Figure 3.4). Calculated using a straight line, the closest communities are approximately 150 km away in the northern settlement of Wollaston Lake and the neighbouring reserve of Lac La Hache (Table 3.2 and Figure 3.4). Travelling by existing roads the closest community to the Project is Pinehouse which is approximately 260 km away (Table 3.2).

The communities and associated Indigenous groups of Patuanak, Pinehouse, Ile a la Crosse, and Beauval were identified as key through the community selection process; additional details are provided in Section 7 and Section 8.

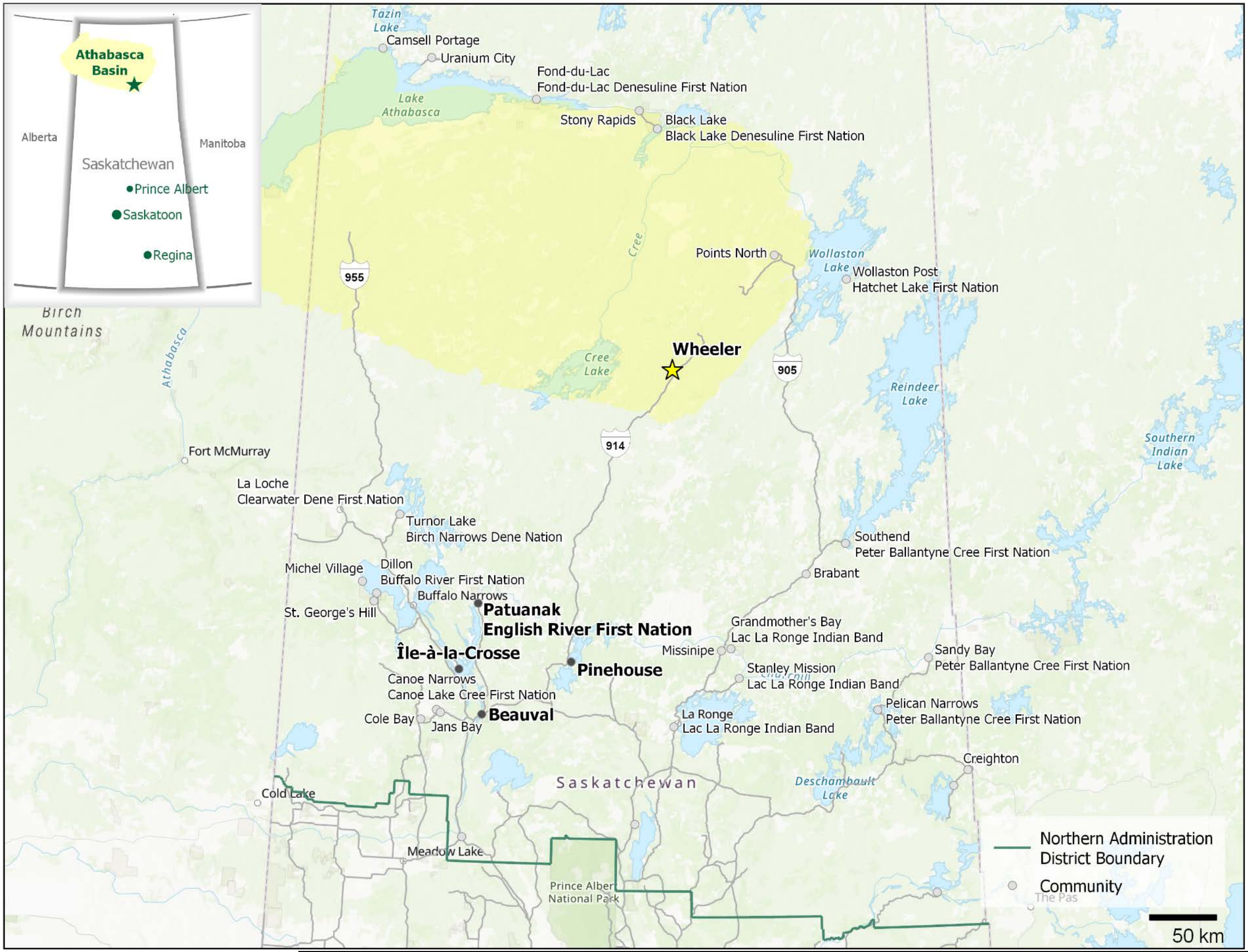
Table 3.2: Communities and Associated Indigenous Groups in Proximity to Wheeler

Community	Status	Population in 2016 Census[1]	Indigenous Groups Affiliated with the Community	Approximate Absolute Distance from Wheeler[2]	Approximate Distance from Wheeler (along roads) [3]
Points North	Camp settlement	Not applicable	Not applicable	115	936
Wollaston Lake	Northern settlement	99	Métis	150	940
	Reserve	1,377	Hatchet Lake First Nation Treaty 10		
Black Lake	Reserve	1,379	Black Lake Denesuline First Nations, Treaty 8	181	1,121
Brabant Lake	Indian Settlement	62	Métis	184	645
Southend	Reserve	1,045	Peter Ballantyne Cree First Nation, Treaty 10	185	694
Stony Rapids	Northern Hamlet	262	Métis	196	1,137
Missinipe	Northern Hamlet	5	Métis	215	552
Grandmother's Bay	Reserve	342	Lac La Ronge Indian Band, Treaty 6	216	556
Fond du Lac	Reserve	903	Fond du lac Denesuline First Nation, Treaty 8	217	1,217
Patuanak	Northern Hamlet	73	Métis	229	454
	Reserve	565	English River First Nation, Treaty 10	228	457
Turnor Lake	Northern Hamlet	149	Métis	232	548
	Reserve	476	Birch Narrows Dene Nation, Treaty 10		
Pinehouse	Northern Village	1,052	Métis	233	264
Stanley Mission	Northern Settlement	95	Métis Band	238	554
	Reserve	1,840	Lac La Ronge Indian Band, Treaty 6		
Buffalo Narrows	Northern Village	1,110	Métis	264	479
La Ronge	Town	2,688	Métis	266	475
	Reserve	2,622	Lac La Ronge Indian Band, Treaty 6		
La Loche	Northern Village	2,372	Métis	269	580
	Reserve	822	Clearwater River Dene First Nation, Treaty 8		
Air Ronge	Northern Village	1,106	Métis	270	471

Community	Status	Population in 2016 Census[1]	Indigenous Groups Affiliated with the Community	Approximate Absolute Distance from Wheeler[2]	Approximate Distance from Wheeler (along roads) [3]
Ile a la Crosse	Northern Village	1,296	Métis	274	453
Black Point	Northern Settlement	43	Métis	278	580
Dillon	Reserve	1,273	Buffalo River First Nation, Treaty 10	279	526
Michel Village	Northern Hamlet	57	Métis	282	543
St. George's Hill	Northern Hamlet	131	Métis	285	
Sandy Bay	Northern Village	697	Métis	290	746
	Reserve	481	Peter Ballantyne Cree Nation, Treaty 10		
Uranium City	Northern Settlement	73	Métis	297	1,320
Beauval	Northern Village	640	Métis	297	367
Pelican Narrows	Northern Village	630	Métis	301	705
	Reserve	1,869	Peter Ballantyne Cree Nation, Treaty 10		
Jans Bay	Northern Hamlet	152	Métis	312	405
	Reserve	912	Canoe Lake Cree First Nation, Treaty 10		
Camsell Portage	Northern Settlement	10	Métis	323	1,357
Cole Bay	Northern Hamlet	170	Métis	325	400
Weyakwin	Northern Hamlet	49	Métis	344	462
Creighton	Town	1,402	Métis	375	726
Denare Beach	Northern Village	779	Métis	375	743
Green Lake	Northern Village	429	Métis	389	470
Cumberland House	Northern Village	671	Métis	441	874
	Reserve	795	Cumberland House Cree Nation, Treaty 5		

Notes:
[1] Statistics Canada (2017)
[2] Approximate absolute distance is in a straight line or 'as the crow flies'
[3] Winter roads are included in some distance calculations

The federal lands close to Wheeler are First Nation Reserves, most of which do not have permanent residences. Figure 3.5 shows the location of reserve land within 150 km of Wheeler and Table 3.3 provides the details about the reserve lands. The closest national park to Wheeler is Prince Albert National Park which is 357 km south.



Note: Communities shown in bold font have been the focus of Denison's local Indigenous and non-Indigenous engagement program

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Figure 3.4: Nearby Communities

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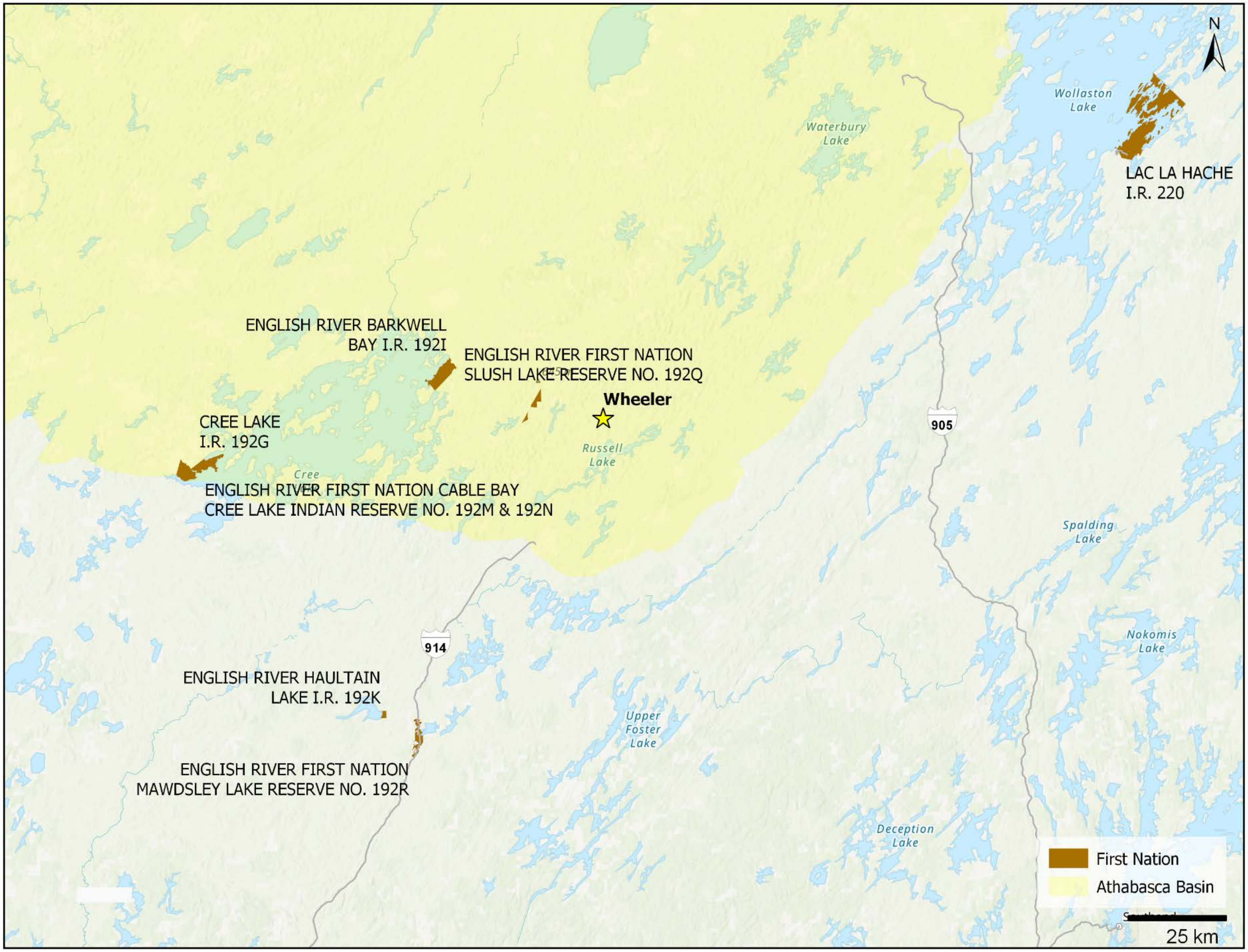

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Figure 3.5: Federal Lands within 150 km of Wheeler	**May 2019**

Table 3.3: Federal Lands within 150 km of Wheeler

Federal Land Type	Name	Distance from Wheeler (km)
First Nation	English River First Nation Slush Lake Reserve No. 192Q	16
First Nation	English River Barkwell Bay Indian Reserve 192I	39
First Nation	English River First Nation Mawdsley Lake Reserve No. 192R	91
First Nation	English River Haultain Lake Indian Reserve 192K	94
First Nation	Cree Lake Indian Reserve 192G	98
First Nation	English River First Nation Cable Bay Cree Lake Indian Reserve No. 192N	105
First Nation	English River First Nation Cable Bay Cree Lake Indian Reserve No. 192M	105
First Nation	Lac La Hache Indian Reserve 220	147

Denison screened the area around Wheeler to check for environmentally sensitive areas. As shown in Figure 3.6, crown land subdivision, ecological reserves, representative areas, special management areas, wildlife refuges and wind turbine avoidance zones are not located near the Project area. In addition to the information provided on Figure 3.6, there are no game preserve, national wildlife areas, migratory bird sanctuaries, conservation easements, Fish and Wildlife development fund lands, Ramsar wetlands, or wildlife habitat protection areas in the area shown.

In terms of management areas, Wheeler is near the centre of the woodland caribou SK1 administrative unit, fur block 18, and the provincial wildlife management zone 75 (Figure 3.7).

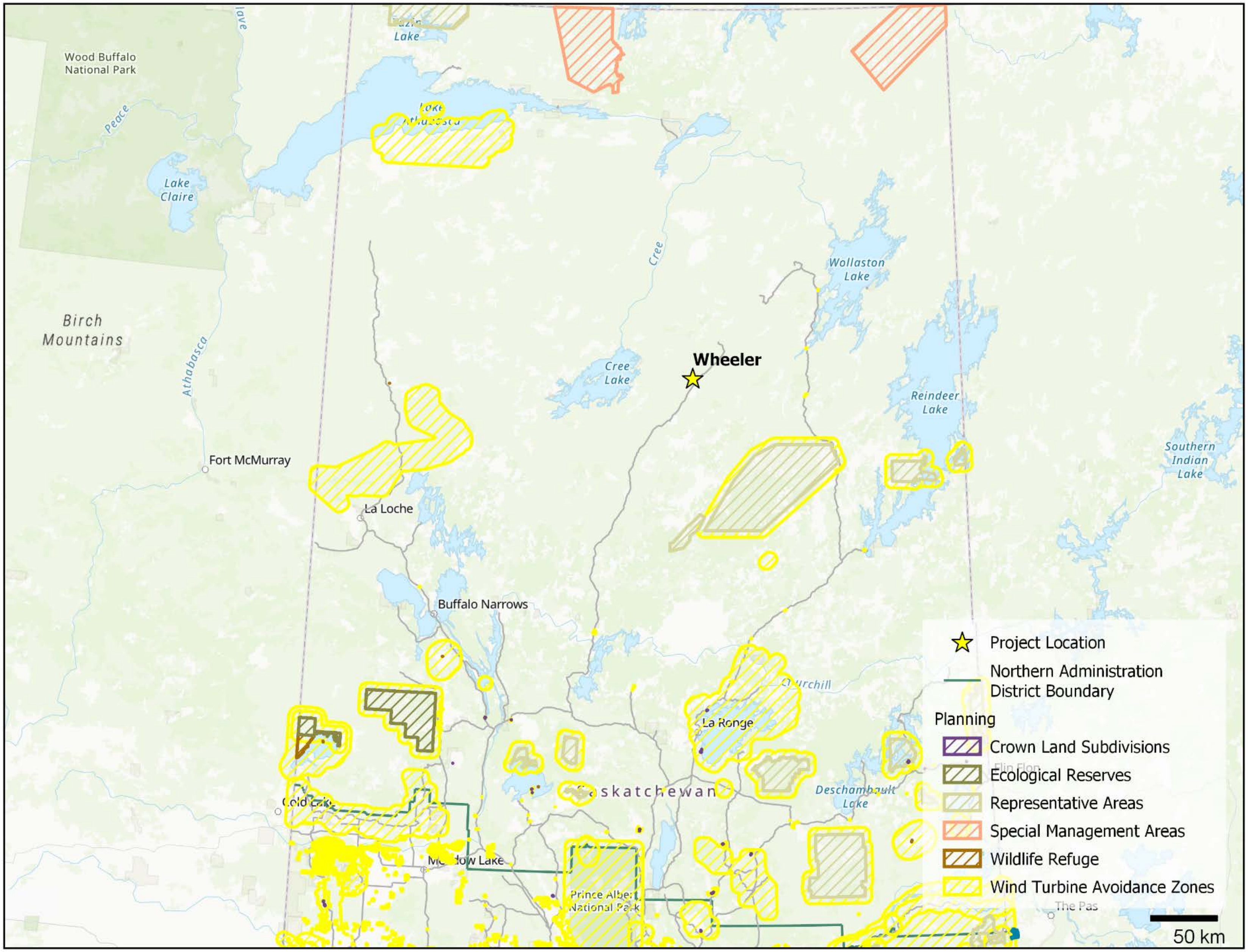

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Figure 3.6: Sensitive Areas and Conservation Areas

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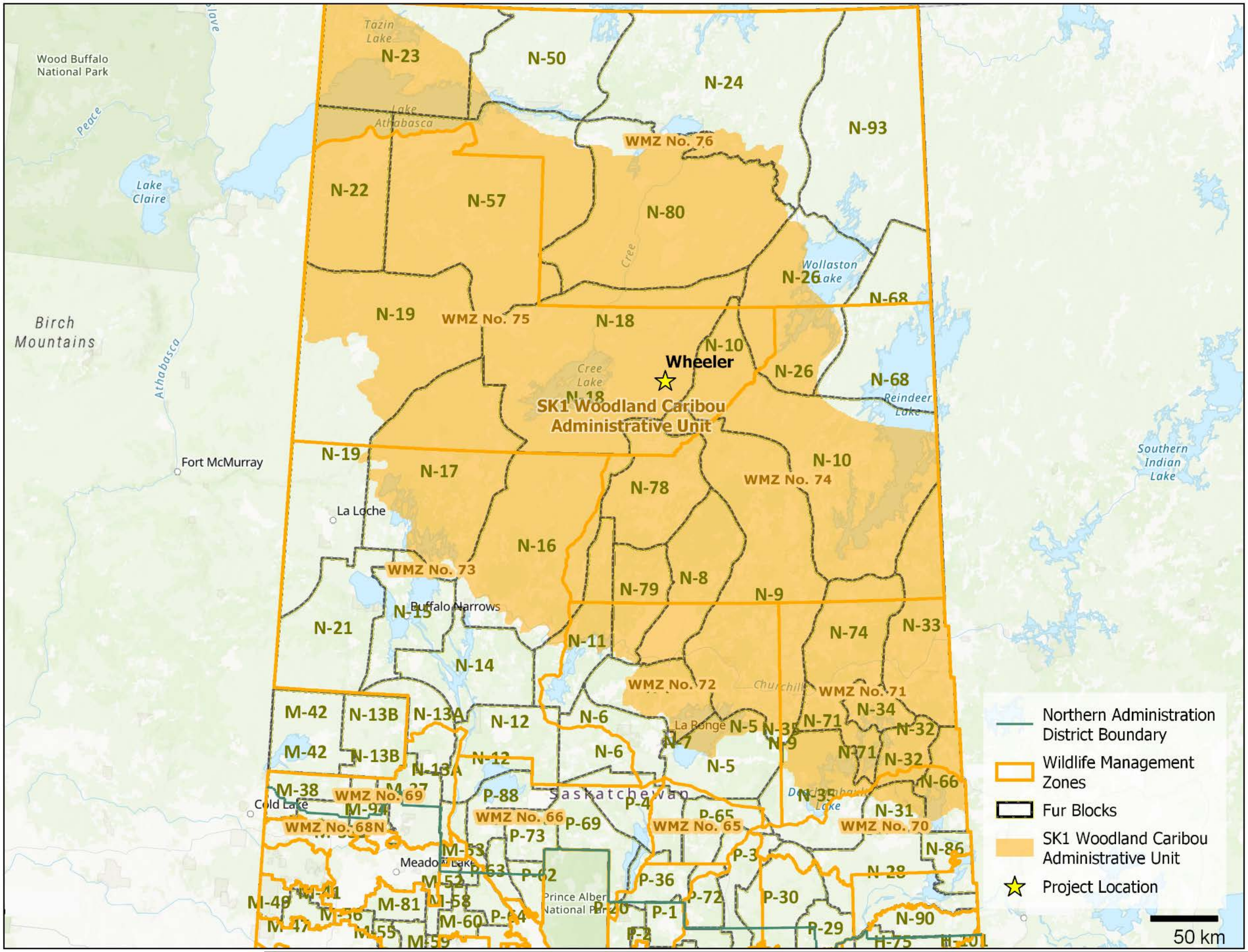

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Figure 3.7: Wildlife and Fur Block Management and Administrative Areas

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4 Federal Involvement

No federal funding or support has been provided to the Project.

Federal lands will not be used for the purpose of carrying out the Project.

5 Existing Environment

5.1 Physiography and Terrain

The property is characterized by a relatively flat till plain with elevations ranging from 477 to 490 metres above sea level (masl). Throughout the area, there is a distinctive north-easterly trend to landforms resulting from the passage of Pleistocene glacial ice from the northeast to the southwest. The topography and vegetation at the property are typical of the taiga forested land common to the Athabasca Basin area of northern Saskatchewan.

The regional area is covered with overburden from 0 to 130 m in thickness; the overburden in the immediate area of the Wheeler uranium deposit is 22 to 30 m in thickness. The terrain is gently rolling and characterized by forested sand and dunes. Vegetation is dominated by black spruce and jack pine, with occasional small stands of white birch occurring in more productive and well-drained areas. Lowlands are generally well drained but can contain some muskeg and poorly drained bog areas with vegetation varying from wet, open, non-treed vistas to variable density stands of primarily black spruce as well as tamarack depending on moisture and soil conditions. Lichen growth is common in this boreal landscape mostly associated with mature coniferous stands and bogs.

5.1.1 Geology

The Property is partially covered by lakes and muskeg which overlies a complex succession of glacial overburden deposits. These include eskers and outwash sand plains, well-developed drumlins, till plains and glaciofluvial plain deposits (Campbell 2007). Glacial overburden is comprised of medium to coarse grained sand and gravel till outwash. The quaternary deposits vary in thickness from zero to approximately 120 metres with the orientation of the drumlins reflecting a southwesterly ice flow. Local outcrops of consolidated paleoproterozoic sandstone of the Athabasca formation also occur in select areas on the Property.

The glacial overburden is underlain by relatively undeformed paleoproterozoic Athabasca Group sandstone that unconformably overlie the crystalline basement rocks and have a considerable range of thickness from 170 metres over the quartzite ridge to at least 560 metres on the western side of the property. The unconformity varies dramatically across the property. From elevations of 160 to 230 metres above sea level along the Property's southeastern edge, the unconformity rises gently to a pronounced north-easterly trending ridge up to 350 metres above sea level, coincident with the subcrop of a quartzite unit in the crystalline basement. The unconformity surface drops steeply westward to as low as 30 metres below sea level. A schematic cross-section of the general property geology is shown in Figure 5.1.

Basement rocks on the Wheeler property are located within the Wollaston Domain of the Trans Hudson-Orogeny and comprise metasedimentary and granitoid gneisses. The metasedimentary rocks belong to the Paleoproterozoic Wollaston Supergroup and include graphitic and non-graphitic pelitic and semipelitic gneisses, felsic and quartz feldspathic gneisses, meta-quartzite and rare calc-silicate gneisses. These metasediments are interpreted to belong to the Daly Lake Group, (Yeo and Delaney, 2007). Pegmatitic segregations and intrusions are common in all units. Garnet, cordierite and sillimanite occur in the pelitic units indicating an upper amphibolite grade of metamorphism. A “Paleoweathered Zone”, generally between three to ten metres thick, is superimposed on the crystalline rocks and occurs immediately below the unconformity.

The Wheeler exploration property is host to the Phoenix uranium deposit discovered in 2008 and Gryphon deposit discovered in 2014 (Figure 2.4) plus additional zones of mineralization and other prospective exploration targets. The details below are focused on the Phoenix deposit although other areas of mineralization suitable for ISR mining at Wheeler are anticipated to be geologically similar.

The quartzite ridge, an interpreted impermeable and structural barrier forming the footwall to the mineralization, dominates the basement geology at the Phoenix deposit. The quartzite unit exhibits variable dips from 45º to 75º to the southeast, averaging 50º, and with an undulating, but generally 055º azimuth. Immediately overlying the quartzite is a garnetiferous pelite, which varies from seven metres to 60 metres in thickness. Overlying the garnetiferous pelite is a graphitic pelite. The graphitic pelite is approximately 5 metres wide in the southwest, increases to approximately 70 m in the central portion of the deposit area and is 50 metres wide at the northeast extremity.

Mineralization at Phoenix generally occurs at the Athabasca unconformity in contact with the underlying basement rocks at depths ranging from 390 to 420 metres. It is interpreted to be structurally controlled by the northeast southwest trending (055º azimuth) WS Fault which dips 55º to the southeast on the east side of the quartzite ridge.

A detailed schematic of the geology at the Phoenix deposit is shown in Figure 5.2. The grades and thickness of the deposit vary along the major structure where typically higher grades and thicker portions of the deposit are associated with larger offsets along the structure where the sandstone contact has been displaced allowing for greater structural disruption and permeability of the deposit area. In general, the deposit is comprised of an exceptionally high-grade core, related to the major structure, and is surrounded by a lower grade shell away from the structure. Both the core and the shell are variably structured and are characterised by sandy clays with portions of the deposit containing ‘islands’ of less permeable though high grade ore within the more permeable and structured areas. The Phoenix deposit appears to be amenable to ISR as it is situated within relatively porous and permeable structured sandstones and underlain by less porous and competent basement rocks.

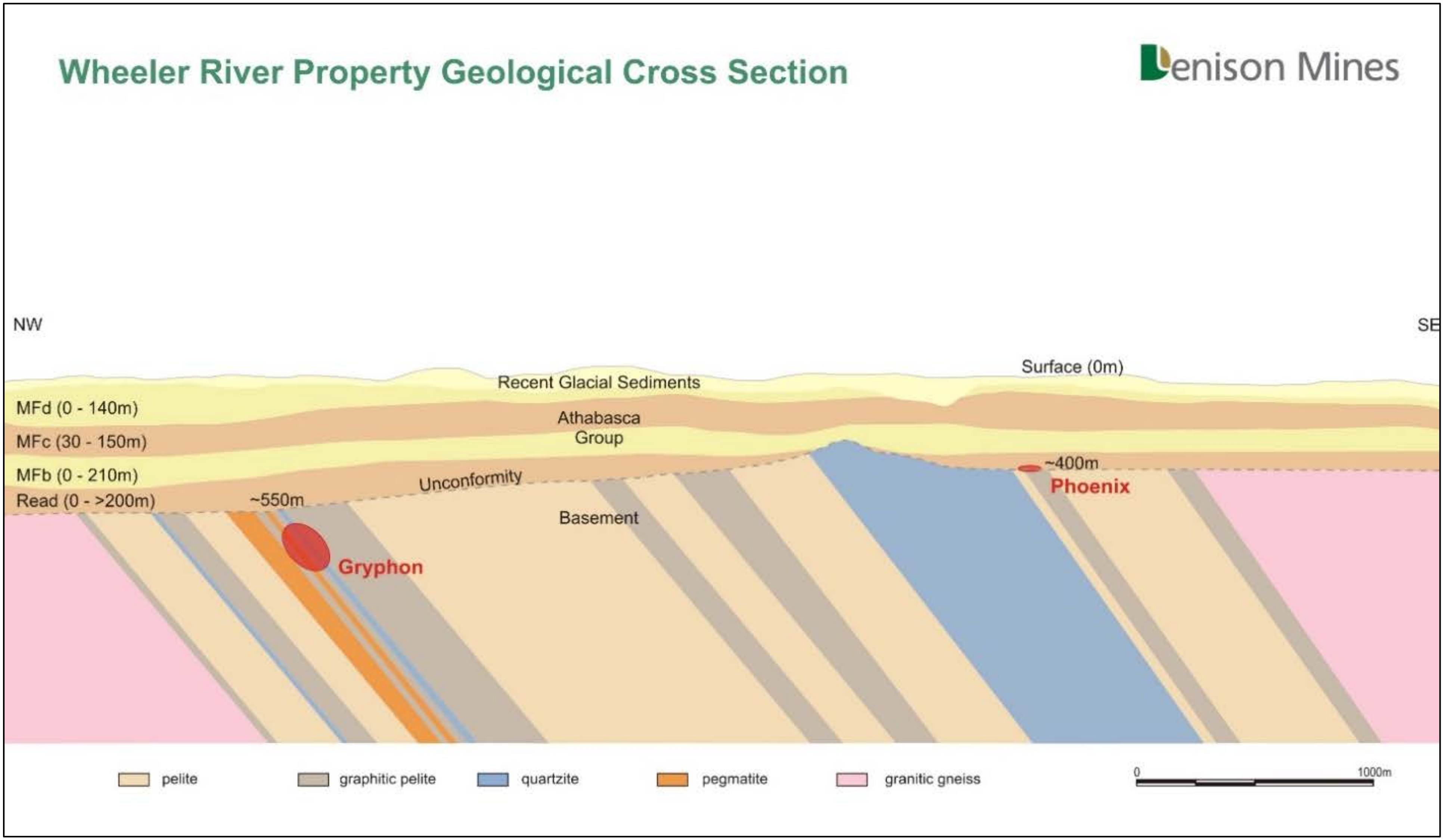

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Figure 5.1: Schematic Cross Section of the Wheeler River Property	**May 2019**

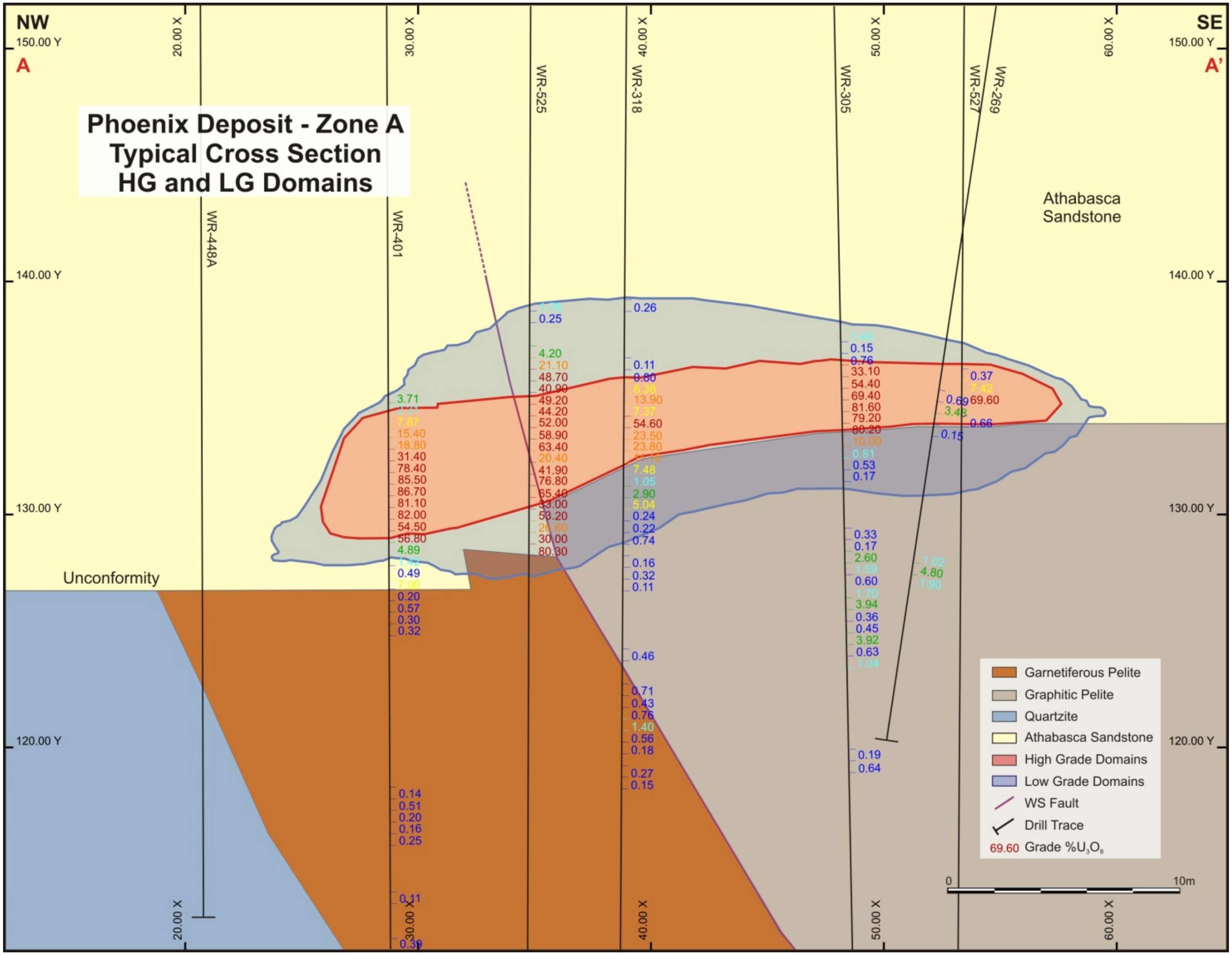

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Figure 5.2: Detailed Schematic Cross Section of Phoenix Deposit Geology

May 2019

5.2 Hydrogeology

Shallow groundwater monitoring wells have been installed in the overburden and upper sandstone in a regional area north of the Phoenix deposit to establish baseline conditions. Monitoring has been ongoing since 2018 and results to date are typical for the Athabasca Basin and the water contains low concentrations of total dissolved solids. The water table in this area is located about 2 to 10 meters below surface.

Baseline groundwater quality samples have been collected from the Athabasca Sandstone in the site study area above the uranium deposit. Results from samples collected from between 280 to 363 m below surface show the groundwater quality has low concentrations of total dissolved solids and nutrients and a relatively neutral pH (between 6.0 and 7.0). Conductivity was 71 µS/cm. When compared to Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME 2017), results exceeded the prescribed criteria for dissolved aluminum, dissolved iron, dissolved copper, dissolved lead, and uranium. Radium-226 was 1.9 Bq/L, exceeding the Saskatchewan Environmental Quality Guideline (SEQG) of 0.11 Bq/L for surface water (Government of Saskatchewan 2017b), while the concentration of lead-210 was 0.80 Bq/L.

Baseline groundwater quality samples have also been collected from sandstone in an area immediately above the uranium deposit (352 to 395 m below surface), providing information on the water quality closer to the uranium deposit. The results from the groundwater sampling indicate a neutral pH (6.9 to 7.5), as anion chemistry was dominated by bicarbonate alkalinity and sulphate, whereas chloride was comparatively low. Cation chemistry was shown to be dominated by sodium, calcium, iron, and aluminum. Conductivity was 216 µS/cm. Dissolved iron concentrations were higher than expected given the pH of the samples, as iron hydroxides have low solubility at neutral pH, and under oxidizing conditions, iron is expected to precipitate. The iron results indicate it is likely that iron is out of equilibrium with surface conditions due to the change in redox conditions (to more oxidizing) produced by removal of the water from depth. When compared to Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME 2017), results exceeded the prescribed criteria for aluminum, dissolved iron, dissolved arsenic, dissolved copper, dissolved lead, and dissolved uranium. Radium-226 was 7.2 Bq/L, exceeding the SEQG of 0.11 Bq/L for surface water (Government of Saskatchewan 2017b), while the concentration of lead-210 was 2.1 Bq/L.

An extensive groundwater quality sampling program will be completed in 2019 to further characterize the baseline hydrogeological conditions in and around the proposed wellfield, as well as at the broader regional area. Collection of groundwater quality and water level data will be ongoing at key locations.

5.3 Atmospheric and Acoustic Environment

5.3.1 Radon

Atmospheric or passive radon monitoring commenced in September 2016 to establish baseline radon levels in the Project area. Passive radon detectors were deployed at 10 select locations in duplicate. On a quarterly basis, each deployed detector is exchanged with a new replacement detector, and each collected detector is sent to an accredited laboratory for analysis.

While there is currently no Canadian regulation that prescribes a radon threshold value in outdoor environments, Health Canada has developed a guideline for radon in indoor air for dwellings of 200 Bq/m^3. This guideline provides Canadians with guidance pertaining to when remedial action should be taken to reduce radon levels. Results to date demonstrate that baseline atmospheric radon levels within the Project area are low, with the average radon concentration not exceeding 10 +/- 3 Bq/m^3 at any location. Baseline radon monitoring will continue as required.

5.3.2 Dustfall

Dustfall monitoring stations were established at six (6) locations around the site in the fall of 2018. Data from these stations is not yet available.

5.3.3 Noise

Noise baseline studies are scheduled to be completed in 2019. It is reasonable to assume the baseline noise levels will be quite low in the Project area since it is located in a relatively isolated area of the boreal forest.

5.3.4 Climate and Meteorology

Regional climate and meteorological data is available from the nearby weather station at Key Lake; the station is approximately 32 km away from Wheeler. Temperature and precipitation data from 1981 to 2010 is provided in Figure 5.3. An on-site metrological station has not yet been established.

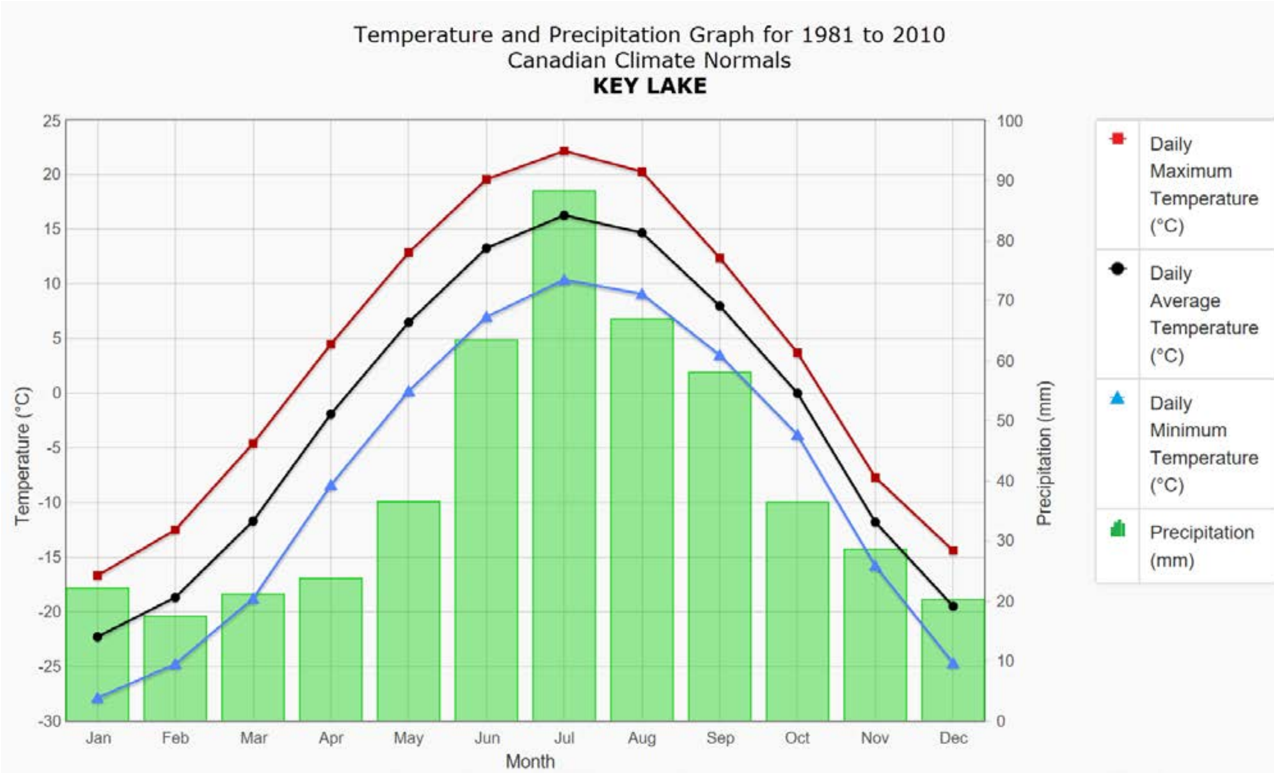

Figure 5.3: Historical Temperature and Precipitation near Wheeler

The climate is typical of the continental sub-arctic region of northern Saskatchewan, with temperatures ranging from +32°C in summer to -45°C in winter. Winters are long and cold, with mean monthly temperatures below freezing for seven months of the year. Winter snow pack averages 70 cm to 90 cm. Freezing of surrounding lakes, in most years, begins in November and break-up occurs around the middle of May. The average frost-free period is approximately 90 days.

Average annual total precipitation for the region is approximately 480 mm, of which 67% falls as rain, with more than half occurring from June to September. Snow may occur in all months but rarely falls in July or August. The prevailing wind direction is from the north-west/west with a mean speed of 12 km/hr.

5.4 Aquatic Environment

Aquatic environment baseline field surveys completed between 2012 and 2018 focused on hydrology, water quality, limnology, sediment quality, aquatic habitat, bathymetry, plankton community, benthic invertebrate community and tissue chemistry, and fish community, spawning, and tissue chemistry.

A summary of data collected in lakes and ponds is provided in Figure 5.4 and a summary of data collected from streams is provided in Figure 5.5.

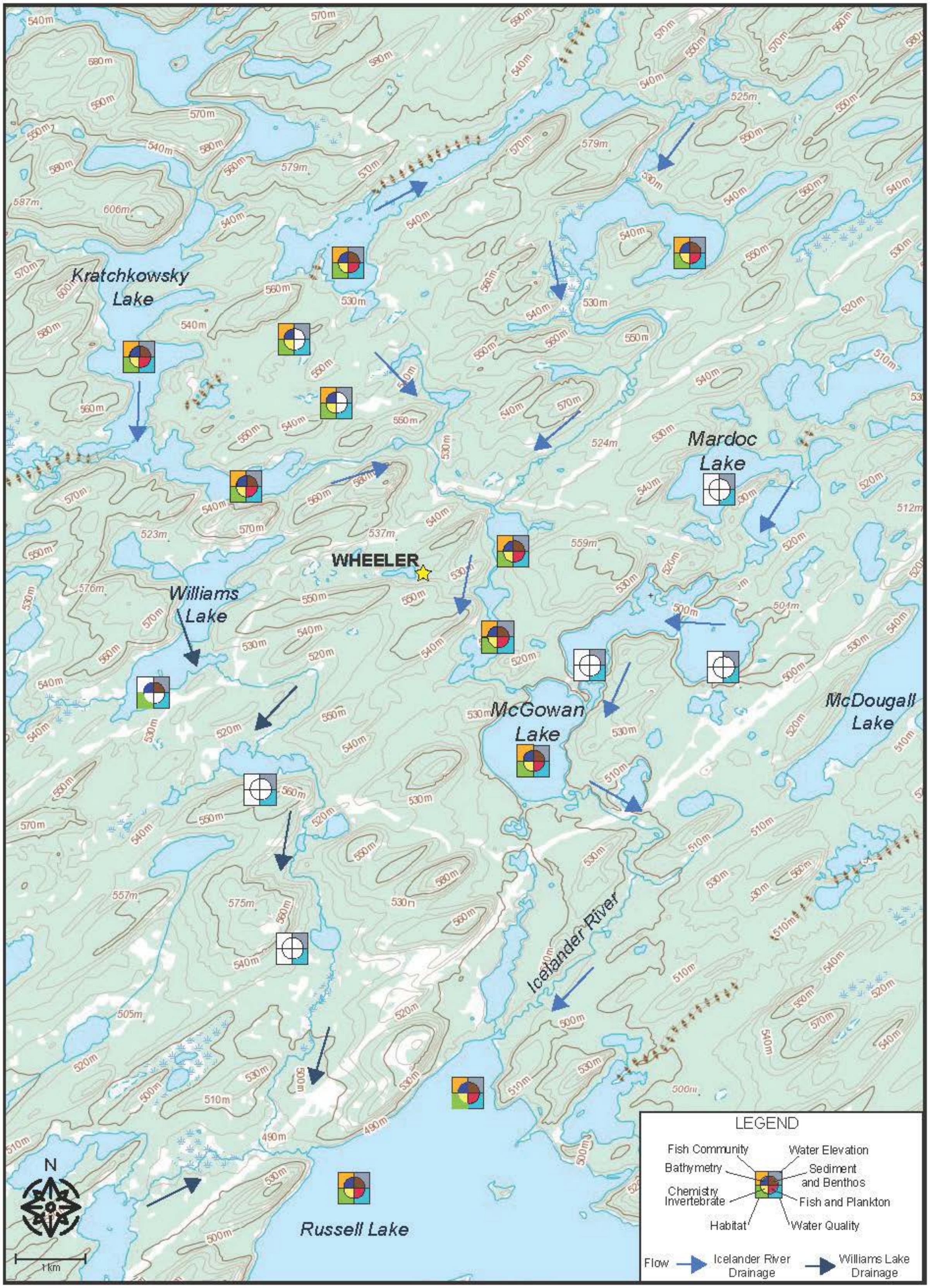

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Figure 5.4: Summary of Aquatic Baseline Data Collected at Pond and Lake Locations

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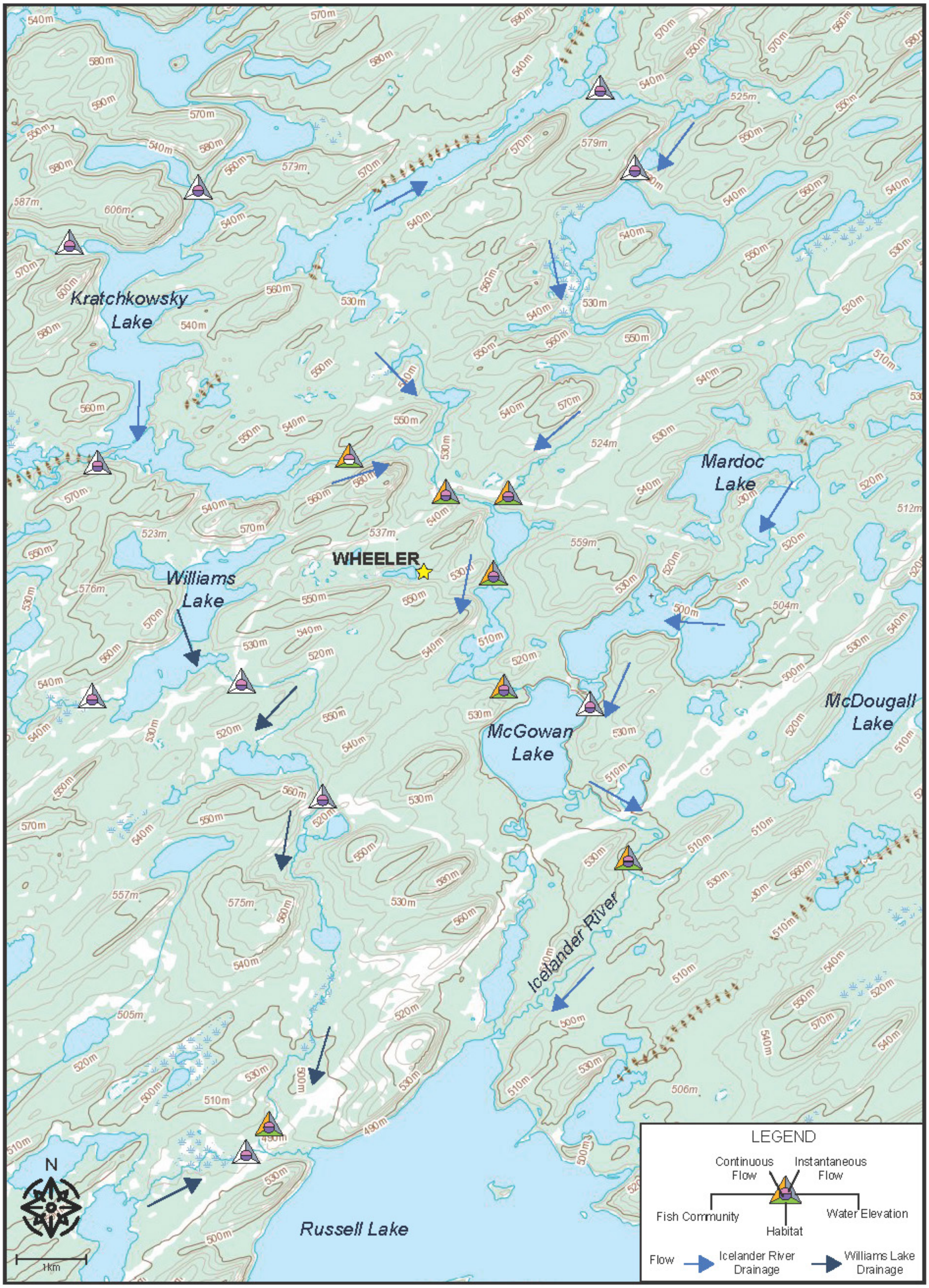

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Figure 5.5: Summary of Aquatic Baseline Data Collected at Stream Locations

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5.4.1 Hydrology

The Project area is located within two distinct sub-drainage areas that drain into Russell Lake, the Wheeler River, and ultimately into Wollaston Lake (via the Geikie River). Extending north and east of the Project area, the Icelander River drainage area drains approximately 371 km^2, while the Williams Lake drainage area is located south of the Project area and drains approximately 78 km^2 (Figure 5.6).

Hydrological baseline studies included manual streamflow measurements, staff gauge and elevation surveys, detailed bathymetric surveys, and continuous water level recording using dataloggers to develop rating curves at select stream locations within the Project area.

The hydrological characteristics of lakes and streams in the Project area were surveyed between 2011 and 2014. Water elevation survey locations were established at nine stream stations and eleven lake stations. Manual flow measurements were performed at each of the nine stream stations, and automated stream elevation instruments (level data loggers) were installed at all stream stations. Rating curves were established for each station based on the manual stream discharge measurements to permit estimation of hydrographic profiles for each location.

Four field programs were completed from fall 2016 to summer 2018 to capture seasonal flow conditions in spring, summer and fall. One winter field program was completed between March 15 and 19, 2018, to assess ice cover in the area and to gain a better understanding of winter baseflow conditions. Continuous monitoring equipment has been installed in seven stream stations and one lake station for continued hydrological data collection.

Project area lake and pond surface water elevations ranged from 520.86 masl at an unnamed headwater lake, to 488.26 masl at Russell Lake. In the Icelander River drainage area, water level elevations at the stream stations ranged from 520.73 masl at the most upstream station, to 492.71 masl at the most downstream station. Stream flow measurements were recorded at 2.34 cm/s at the most downstream location of the Icelander River drainage area.

In the Williams Lake drainage area, water levels at stream stations ranged from 518.33 masl at the most upstream station, to 488.55 masl at the most downstream station. Stream flow measurements recorded during this time were recorded at 0.64 cm/s at the most downstream location of the Williams Lake drainage area.

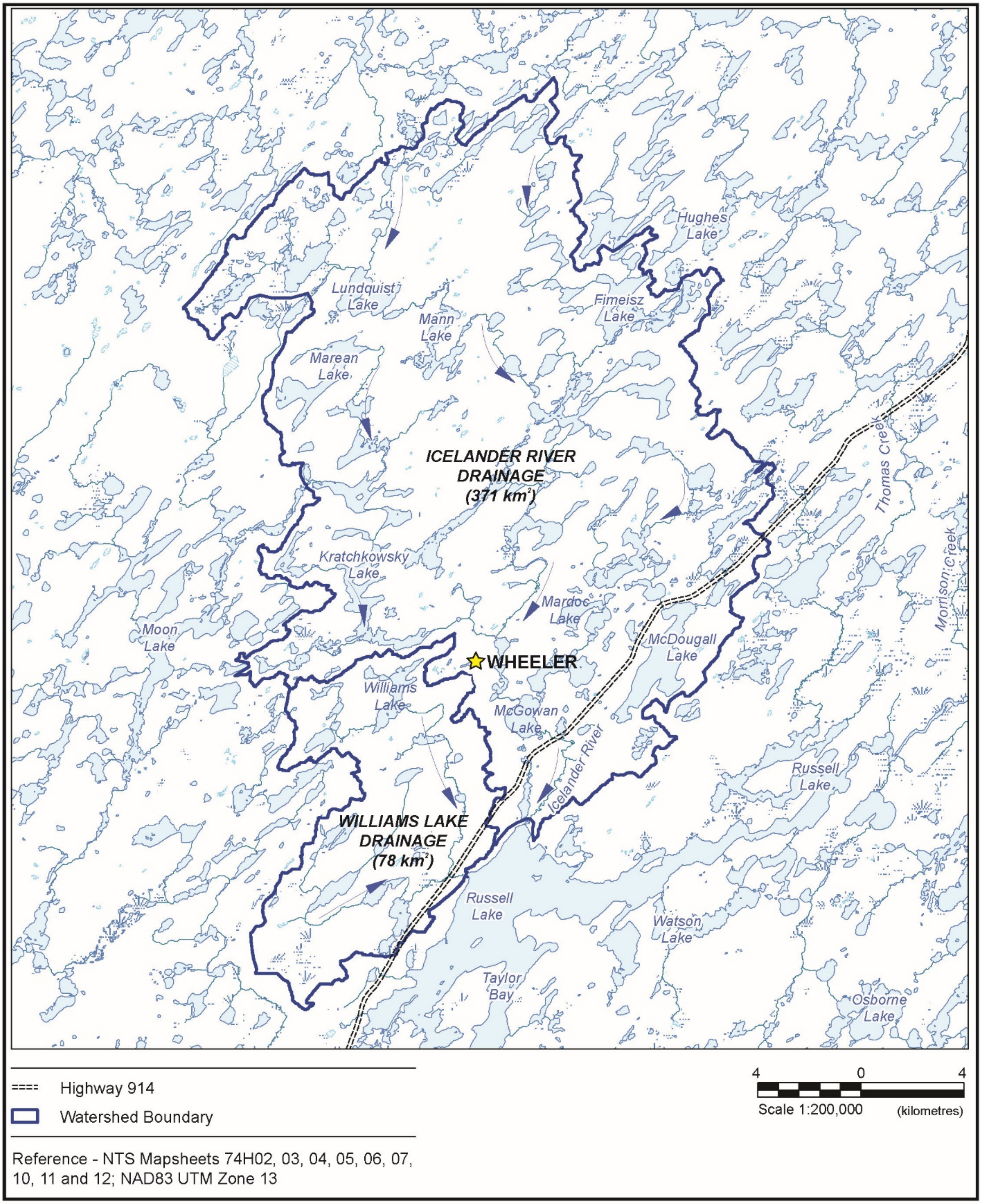

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Figure 5.6: Drainage Areas around Wheeler

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5.4.2 Surface Water Quality and Limnology

Baseline surface water quality was assessed at seventeen (17) lentic locations and eleven (11) lotic stations within the Project area. Water quality data were compiled for the years 2012, 2014, 2016, 2017, and 2018 by measuring physical and chemical constituents obtained in situ, as well as by accredited laboratory analyses. Surface waters within the Project area were found to be comparable to other lakes in the region, which are classified as being soft with typically low levels of alkalinity, nutrients (nitrate and phosphorus), total dissolved solids, and total suspended solids. The pH of surface waters within the study area are slightly acidic to neutral.

In general, the concentrations of metals and metalloids were similar throughout the study area. Radionuclide concentrations were low, with the majority of measurements lower than their respective laboratory detection limits. For parameters with Saskatchewan Surface Water Quality Objectives (SSWQO) or Canadian Water Quality Guidelines (CWQG), most were below their respective guideline limits. Aluminum, cadmium, and lead concentrations exceeded guideline values at some locations; however, this appears to be a natural occurrence as demonstrated in surface water throughout the Project area. Elevated concentrations of iron and mercury were measured near the lake bottom in lakes that exhibited thermal stratification at the time they were sampled.

Radionuclide concentrations measured in surface water are low within the study area, and generally below the laboratory detection limits of 0.02 Bq/L for lead-210, 0.005 Bq/L for polonium-210, 0.005 Bq/L for radium-226, and 0.01 Bq/L for thorium-228, thorium-230, and thorium-232.

Limnology profiles were recorded at the deepest location in each lake, measuring conductivity, pH, temperature, and dissolved oxygen. Thermal stratification of the water column was infrequently observed in the Project area lakes.

5.4.3 Sediment Quality

Sediment samples were collected from the depositional areas of selected lakes for analysis of metals, radionuclides, total organic carbon, and particle size during the 2016 field study. Lake sediments within the Project area were found to be generally silty-clay or sandy-silt with total organic carbon present at approximately 16%. For parameters with prescribed sediment quality guidelines, all constituent concentrations were found to be at, or below, their respective threshold values.

5.4.4 Benthic Invertebrate Community and Tissue Chemistry

Benthic invertebrate community samples were collected at select lakes in September 2016. Benthic invertebrates were identified to family and consideration was also given to functional feeding group. Results were analyzed for abundance, relative abundance, and community metrics such as density, richness, Simpson's Diversity Index, Simpson's Evenness Index, and Bray-Curtis dissimilarity index. Thirty-eight (38) major taxonomic groups (families) present in Project area waterbodies.

Total invertebrate density ranged from 671 to over 10,000 individuals per m^2. A total of 78 taxa were identified in the study area and mean invertebrate richness ranged from 7 to 24 taxa per sample. Simpson's Diversity Index values suggested that the benthic communities were relatively diverse at all locations; mean Simpson's Diversity Index values ranged from 0.65 at 0.85. Simpson's Evenness Index values ranged from 0.18 to 0.4 and overall few taxa comprised a large proportion of total invertebrate density at any given sampling location.

Thirty-eight major taxonomic groups (Families) were present in the study area. Chironomids were the most prevalent, comprising between 16 to 85% of the total benthic invertebrate density at each location. Furthermore, chironomids were the most numerically dominant taxon at all but two locations where Chydoridae family of water fleas (Cladocera) were the most numerically dominant. Other major taxonomic groups with respect to total benthic invertebrate density were detritus worms (Naididae), pill clams (Pisidiidae), water fleas from the families Holopedidae and Macrothricidae, phantom midges (Chaoboridae), seed shrimps (Ostracoda) and cyclopoid copepods.

Benthic macroinvertebrates from the following functional feeding groups were present at all locations sampled in the study area: scrapers, shredders, collector-gatherers, collector-filterers, and predators.

Benthic invertebrates (dragonfly nymphs and caddisfly larvae) were collected from selected Project area lakes, including Russell Lake and Kratchkowsky Lake, and analyzed for metals and radionuclides. The results of the analyses identified that radionuclide levels were generally below the laboratory method detection limit, with the exception of Po-210 and Ra-226. While metal concentrations observed in benthic invertebrate tissues collected from Project area lakes were generally consistent across all locations, cobalt and nickel concentrations were observed to be more variable. Benthic invertebrate tissues collected from Russell Lake had higher concentrations of some metals, including aluminum, cobalt, and uranium, than other lakes in the Project area.

5.4.5 Plankton Community

Lake phytoplankton and zooplankton samples were collected in September 2016 at six locations.

The biovolume of phytoplankton ranged from 0.69 to 14.0 mm^3/m^3 water at the locations sampled. In total, 55 phytoplankton taxa were identified from seven classes and at least six classes were identified in each of the waterbodies sampled. Diatoms (Bacilliarophyceae) were dominant at all locations, representing approximately 25% to 90% of the total biovolume at each location.

The biovolume for zooplankton ranged from approximately 10 to 2,211 mm^3/m^3 water at lakes sampled. A total of 32 taxa belonging to 10 classes were identified. Branchiopods (Branchiopoda) were dominant at all locations representing approximately 33% to 94% of zooplankton biovolume at each location.

At all locations, chlorophyll-a concentrations were below the laboratory method detection limit (< 0.60 µg/L). This is a reflection of the typically low primary productivity of oligotrophic lakes in the Project study area.

5.4.6 Fish Community, Spawning, and Fish Tissue Chemistry

Baseline field surveys were conducted to assess aquatic habitats throughout seasonal fluctuations in fish movements and spawning activities. Fish community surveys were undertaken in various habitat types in selected Project area waterbodies to characterize fish species presence and community diversity. A total of 13 species of fish were collected within the Project area during baseline surveys in September 2016 and May 2017. All waterbodies sampled, except one headwater pond, supported fish.

Eleven fish species were collected within study area lakes: lake chub, spottail shiner, longnose sucker, white sucker, lake whitefish, lake trout, northern pike, burbot, ninespine stickleback, yellow perch, and walleye.

Eleven fish species were also collected at stream sampling areas: lake chub, spottail shiner, longnose sucker, white sucker, arctic grayling, northern pike, burbot, ninespine stickleback, slimy sculpin, yellow perch and walleye.

Large-bodied fish spawning surveys were conducted in the fall of 2016 and spring of 2017 at selected lake and stream locations to determine the utilization of these areas for spawning. Fall spawning species present within the study area include lake whitefish and lake trout, and potential spawning habitats for these species were identified in several Project area lakes, including Kratchkowsky Lake. Spring spawning species present within the study area include walleye, northern pike, arctic grayling, white sucker, longnose sucker, and yellow perch. Spawning habitats for walleye and suckers were observed at most stream stations. Northern pike spawning habitats were present in nearly all study area lakes, as well as most stream stations. Burbot spawn during late winter in streams or lake shallows under ice. No specific spawning surveys targeted burbot, however potential spawning habitat occurs within the study area.

Tissue samples (muscle and bone) collected in 2016 and 2017 from northern pike and white sucker were submitted for chemical and radiological analyses. Northern pike represents a predator species whereas white sucker represents a forage species. Mercury concentrations in both northern pike and white sucker tissue were below the Health Canada (2007) standard of 0.5 µg/g wet weight for commercially sold fish. Selenium concentrations in both northern pike and white sucker tissue were below the British Columbia Ministry of Environment (2014) guideline of 4 µg/g dry weight and the United States Environmental Protection Agency (2016) criterion of 11.3 µg/g dry weight for fish muscle.

5.5 Terrestrial Environment

Terrestrial baseline studies were initiated in 2016 to characterize the existing environment in the Wheeler area.

5.5.1 Predictive Ecosite, Anthropogenic, and Fire Mapping

In order to develop baseline disturbance and vegetation cover/fire mapping, as well as provide an accurate characterization of the vegetation cover for future monitoring and/or impact assessment purposes, predictive ecosite mapping was obtained from the Saskatchewan Technical Branch and enhanced to increase accuracy for site, local and regional study areas.

The predictive ecosite mapping identified that there are 22 different ecosite classifications located throughout the Project area, with the most abundant being jack pine/blueberry/lichen (70%), waterbodies (13%), and jack pine/black spruce/feathermoss (5%). The results also identified that the broader regional study area was comprised of the same ecosite classifications, however differing slightly in their proportions (jack pine/blueberry/lichen (52%), waterbodies (21%), and jack pine/black spruce/feathermoss (13%)).

The results of the baseline anthropogenic map of the Project study area identified that the total amount of anthropogenic disturbance in the Project local study area is 2.9% (1.4 km^2), and 1.5% (5.8 km^2) identified in the broader regional study area.

Historical fire data was obtained from the Saskatchewan Ministry of Environment, Wildfire Management Branch to characterize the proportion of the Project and regional study areas which have been disturbed by past fires. The results of the fire mapping survey identified that 43% percent of the Project area landscape has burned within the last 30-50 years, and the remaining 57% of the landscape has forests aged 70 years and older.

5.5.2 Ecosite Characterization, Plant Structural Diversity, and Species Richness

Detailed vegetation and wildlife habitat characterization field surveys were undertaken in 2017 to describe and quantify the ecological and botanical conditions within recurring mapped ecosite types and regeneration forests. Sample site locations were widely distributed throughout the Project area. One hundred and ninety-four (194) species and/or genus of species were recorded during the vegetation field survey.

5.5.3 Vegetation and Soil Chemistry

The vegetation and soil sampling program was undertaken between August 2 and 7, 2017. Blueberry stems, leaves, fruit (currents year's growth), terrestrial lichen, and soil samples were collected to determine baseline conditions of physical properties, inorganic ions, metals, and radionuclides in vegetation (blueberry and lichen) and soil samples, as well as to support future monitoring, mitigation, and impact assessments.

Lichen and blueberry radionuclide levels were relatively consistent across the Project study area. Metal parameters were variable but relatively consistent, aside from elevated levels of aluminum, chromium, iron, lead, titanium, and vanadium observed at one location.

Radionuclide levels in soil were also variable but relatively consistent, with the exception of one sample site located northeast of Russell Lake where higher levels of lead-210 and polonium-210 were observed compared to other sample sites. Elevated levels of calcium, copper, lead, and manganese were also observed at this location compared to other sample sites.

5.5.4 Winter-Active Wildlife Identification and Abundance

Winter tracking surveys were completed to determine the presence of winter-active animals, determine the relative abundance of winter-active animals, enhance the Project specific area understanding of species-ecosite affiliations, and provide a robust baseline for potential follow-up and monitoring requirements. Winter tracking surveys were completed between January 25 and February 3, 2017, February 1 and 3, 2018 and March 2 and 12, 2018. Methodology was developed with guidance from the provincial snow track survey protocols (Government of Saskatchewan 2014b) and long-term monitoring techniques originating in Finland (Linden *et al.* 1996) and adopted by the Alberta Biodiversity Monitoring Program (Shank and Farr 1999). Tracks from the following species were observed in the Project area during the winter track count surveys:

- Snowshoe hare;
- Red squirrel;
- Grouse;
- Fisher;
- Moose;
- Microtine (voles and muskrats);
- Marten;
- Canada lynx;
- Otter;
- Ermine;
- Woodland caribou;
- Mink; and
- Red fox.

5.5.5 Ungulate Pellet Group/Browse Availability

Pellet group/browse availability transects were completed between June 9 and 20, 2017, and June 6 and 12, 2018 to collect baseline data on the presence and relative abundance of ungulates (moose and woodland caribou), carnivores, and game birds (grouse/ptarmigan species). The transects were also used to determine the frequency of occurrence and abundance of terrestrial and arboreal lichen, as this species is vital to the woodland caribou population.

Pellets or scats of the following seven species were detected during the pellet group/browse availability surveys:

- Grouse/ptarmigan;
- Moose;
- Woodland caribou;
- Black bear;
- Red fox;
- Mink; and
- Martin.

The pellet group/browse availability surveys will provide baseline data to support future impact assessments and to allow for potential future follow-up and monitoring requirements.

Terrestrial lichen was observed in all ecosite/vegetation cover types sampled, except in areas where black spruce/balsam poplar/river alder swamp and willow shrubby rich fen covers were most prominent. Frequency of occurrence was the highest (greater than 99%) in areas covered by jack pine/blueberry/lichen.

Arboreal lichen occurred in 79% of ecosites/vegetation cover types surveyed throughout the Project area and were observed to be most abundant in areas covered by jack pine/blueberry/lichen.

5.5.6 Woodland Caribou Aerial Survey

In 2018, Denison submitted a permit application for an aerial survey to collect local-regional wildlife (most specifically woodland caribou and moose) data to present regional comparison values (occurrence/relative density) and habitat affiliations of species in the region, and provide context for results recorded in the Project area to date. The aerial survey permit application was denied by Saskatchewan Ministry of the Environment (SK MOE). SK MOE advised that a Project-specific aerial survey was unnecessary; SK MOE advised that in the EIA, Denison should assume presence of woodland caribou in the Project area and reference available regional data on distribution, density and movement. Although regional woodland caribou data is available in an interim, summarized form (i.e., McLoughlin et al. 2016), raw data is currently unavailable to Denison.

5.5.7 Small Mammal Identification, Abundance, and Tissue Chemistry

A small mammal trapping program was completed between September 24 and October 2, 2016 to determine the species composition and relative abundance of voles, mice, and shrews, as well as to collect specimens for baseline metal and radionuclide tissue analyses.

With an overall capture rate of 7.7 captures per 100 trap nights, a total of 197 individual small mammals from the following three species were captured during the program: red-backed voles, meadow voles, and dusky shrews.

The small mammal trap lines were stratified by three general areas: Gryphon deposit, Phoenix deposit, and a reference location. A total of 124 red-backed vole specimens were submitted for metals and radionuclide analysis. Samples collected at the Phoenix deposit indicated elevated levels of aluminum, titanium, uranium, and radium-226 in comparison to other sites surveyed.

5.5.8 Amphibian Nocturnal Call and Visual Identification Surveys

Amphibian surveys were completed to establish the presence/not-absence and relative abundance of amphibian species within the local and regional study areas. Amphibian auditory surveys were completed between June 16 and 20, 2017 and June 6 and 9, 2018. The provincial species detection protocol for amphibian auditory surveys (Government of Saskatchewan 2014c) was used to establish methodology for the amphibian nocturnal call survey.

Visual search surveys were completed between June 7 and 14, 2018. The provincial species detection protocol for amphibian visual surveys (Government of Saskatchewan 2014d) was used to establish methodology for the amphibian visual search surveys.

Wood frogs and boreal chorus frogs were detected.

5.5.9 Breeding Songbird Identification and Abundance

Breeding songbird point count surveys were undertaken in June 2017 to document the diversity and relative abundance of breeding songbirds within the Project study area, as well as to determine the presence of known or potential avian species at risk. The breeding songbird point count call survey methodology was developed with guidance from the Saskatchewan Ministry of Environments species detection survey protocol for forest bird surveys (Government of Saskatchewan 2014e). Three hundred and nineteen indicated pairs were observed in the Project study area. The highest number of breeding songbird pairs were detected in jack pine/white birch/feathermoss cover. The following list provides the ten most common species detected:

- Ruby-crowned kinglet;
- Dark-eyed junco;
- Gray jay;
- Yellow-rumped warbler;
- Swainson’s thrush;
- Hermit thrush;
- Lincoln sparrow;
- Chipping sparrow;

- Fox sparrow; and
- American robin.

5.5.10 Semi-Aquatic Furbearer Abundance

Semi-aquatic furbearer shoreline surveys were conducted along shorelines of select creeks, lakes, and ponds between September 29 and October 3, 2016 to provide quantitative data on the occurrence and relative abundance of semi-aquatic furbearing mammals (muskrat, mink, beaver, and otter) and to collect spatial data on the distribution within the Project and regional study areas. Signs of three target species, namely muskrat, beaver, and river otter, were observed during the survey.

5.5.11 Aerial Waterfowl and Raptor Identification and Abundance

The aerial waterfowl and raptor stick nest survey was completed across 33 survey sections containing 353 water bodies on June 15 and 16, 2017 to document the presence, diversity, and abundance of breeding waterfowl (including species at risk), as well as to identify the occurrence of active, inactive, and old raptor nests (i.e. bald eagle, osprey, and red-tailed hawk). The survey recorded 20 confirmed unique species and six species groups, for a total of 681 individual waterfowl/raptor(s). The ten most commonly observed species were:

- Ring-necked duck;
- Common merganser;
- Common loon;
- Mallard;
- White-headed gull;
- Bald eagle;
- Canada goose;
- Lesser scaup;
- Yellow legs spp; and
- Bufflehead.

A total of 24 active (currently occupied), inactive (not currently occupied), and old (dilapidated) nests were observed in the Project area during the survey. Eleven nests were active including four bald eagle nests, four osprey nests, one raven nest, one herring gull nest, and one common loon nest, as well as one mew gull colony of 12-15 nests.

5.6 Species at Risk and Sensitive Species

Wildlife resources in the regional area of the Project have been identified as being important due to their contributions to biodiversity, social and economic value, and importance to local culture. A literature review of available wildlife information identified a number of past inventory and habitat mapping studies within the local and regional study areas, many of which contribute to understanding local animal behaviour, habitat use, and anthropogenic and biological influences.

5.6.1 Wildlife Species

The Saskatchewan Conservation Data Centre (SKCDC) were consulted to identify wildlife species that may occur in the Project area. A total of five amphibians, 219 birds, and 41 mammals potentially occur within the Project area. Of the list of vertebrates known, or with potential to occur in the Project area, thirteen sensitive or federally/provincially listed species at risk were observed. Five are listed as “threatened” or “special concern” under the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and four are listed as Schedule 1 under *Species at Risk Act* (SARA).

Table 5.1 presents the list of sensitive or federally/provincially listed species at risk observed within the Wheeler area, along with setback distances.

5.6.2 Aquatic Species

There are no observations of aquatic species (meaning wildlife that is a fish as defined in section 2 of the *Fisheries Act*) in the Project area with the status of threatened, endangered or special concern under SARA or COSEWIC.

Table 5.1: Vertebrate Sensitive or Species at Risk Observations in the Wheeler River Project Area

Common Name	Scientific Name	Observation Source	Observation Type	Observations Per Type	Total Observations*	SK Status [1]	COSEWIC Status [2]	SARA Status [3]	SARGSS [4]	Setback Distance (high disturbance) [5]
Common loon	Gavia immer	Field Survey	Auditory and/or Visual	77	106	S5B, SUN,S5M	Not at Risk		Breeding Bird May 15-July 15	200 m
		Incidental	Auditory and/or Visual	28						
		Incidental	Nest	1						
Woodland caribou	Rangifer tarandus caribou	Field Survey	Track	72	94	S3	Threatened	Threatened		
		Field Survey	Pellet	4						
		Incidental	Track/Browse	5						
		Field Survey	Crater	13						
Bald eagle	Haliaeetus leucocephalus	Field Survey	Visual	47	53	S5B, S5N,S4M	Not at Risk		Nest Site Mar. 15-July 15	1,000 m
		Incidental	Visual	3						
		Incidental	Nest	3						
Common nighthawk	Chordeiles minor	Incidental	Auditory and/or Visual	26	33	S4B, S4M	Threatened	Threatened	Breeding Bird May 1-Aug. 31	200 m
		Incidental	Nest	2						
		SCDC	Visual	5						
Mew gull	Larus canus	Field Survey	Auditory and/or Visual	16	29	S4B, S4M			Nesting Colony May 1-July 15	400 m
		Field Survey	Nest	13						
Osprey	Pandion haliaetus	Field Survey	Visual	8	15	S2B, S2M			Nest Site May 1-Aug. 15	1,000 m
		Field Survey	Nest	5						
		Incidental	Visual	2						
Olive-sided flycatcher	Contopus cooperi	Field Survey	Auditory and/or Visual	8	14	S4B, S4M	Threatened	Threatened	Breeding Bird May 1-Aug. 31	300 m
		Incidental	Auditory and/or Visual	6						
River otter	Lontra canadensis	Field Survey	Track	10	11	S3				
		Incidental	Visual	1						
Bonaparte's gull	Chroicocephalus philadelphia	Field Survey	Visual	10	11	S4B, S4M			Nesting Colony May 1-July 15	400 m
		Incidental	Visual	1						
Herring gull	Larus argentatus	Field Survey	Auditory and/or Visual	6	7	S5B, S5M			Nesting Colony May 1-July 15	400 m
		Field Survey	Nest	1						
Barn swallow	Hirundo rustica	Field Survey	Auditory and/or Visual	4	4	S5B, S5M	Threatened			
Horned grebe	Podiceps auritus	Incidental	Visual	1	1	S5B, S5M	Special Concern	Special Concern		
Common tern	Sterna hirundo	Field Survey	Visual	1	1	S5B, S5M	Not at Risk		Nesting Colony May 1-July 15	400 m

* Species detections included visual/auditory observations, scat/pellet groups, winter tracking trails and general sign during 2017 and 2018 surveys

[1] SKCDC Rankings:
- 2 = Imperiled/Very rare
- 3 = Vulnerable/Rare to uncommon
- 4 = Apparently Secure
- 5 = Secure/Common
- M = for a migratory species, rank applies to the transient (migrant) population
- B = for a migratory species, applies to the breeding population in the province
- N = for a migratory species, applies to the non-breeding population in the province
- U = status is uncertain in Saskatchewan because of limited or conflicting information (unrankable)

[2] Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and its recommendations for listing, go to: http://www.cosewic.gc.ca

[3] *Species at Risk Act* (SARA) and its registry of protected species go to: http://www.sararegistry.gc.ca

[4] SARGSS: Saskatchewan Activity Restriction Guidelines for Sensitive Species (Government of Saskatchewan 2017c)

5.6.3 Plant Species

Rare vascular plant surveys were completed to identify rare vascular plant occurrence(s) within the Project local and regional study areas, as well as to provide a scientifically defensible baseline for potential follow-up/monitoring requirements. The rare plant survey was completed according to the Government of Saskatchewan (2017d) Rare Vascular Plant Survey Protocol. Alaskan clubmoss (*Diphasiastrum sitchense*), ranked as imperiled/ very rare (SK2), and three-seeded sedge (*Carex trisperma*), ranked as vulnerable/ rare to uncommon (SK3), were observed in the Project area.

5.7 Human Environment

5.7.1 Socio-Economic Context

The following is a summary of social and economic conditions, land use, communities, surface leases, disturbances, and existing infrastructure around the Project area.

The economy in northern Saskatchewan is dominated either directly or indirectly by natural resources. Economic activity is generated through commercial fishing, tourism, harvesting and sale of country foods such as mushrooms, wild rice and berries. The forestry industry is also a significant contributor to the region's economic base. That being said mineral exploration and the mining industry are by far the most dominant contributors to northern Saskatchewan's economy through direct employment, contracting of northern based businesses and the procurement of a multitude of supplies and services. The recent suspension of an operating uranium mine and mill in northern Saskatchewan resulted with layoffs of approximately 550 employees of which approximately half of those individuals were registered as northern residents.

As a remote site, there are no communities in relatively close proximity to Wheeler (Figure 3.4). Calculated using a straight line, the closest communities are approximately 150 km away in the northern settlement of Wollaston Lake and the neighbouring reserve of Lac La Hache (Table 3.2 and Figure 3.4). Travelling by existing roads the closest community to the Project is Pinehouse which is approximately 260 km away (Table 3.2).

A number of recreational leases are held, and it is assumed that cabins are used by both non-Indigenous and Indigenous people (Table 3.1). There are ten (10) recreational leases within 22 km of Wheeler. The federal lands within 150 km of Wheeler are reserve lands (Figure 3.5 and Table 3.3), none of which have permanent residences.

Ground access to Wheeler is along Highway 914; access to the highway north of Key Lake is controlled at the Cameco Key Lake gatehouse. Existing infrastructure in the area includes Highway 914, the provincial power line which is adjacent to the highway, infrastructure for Key Lake Operation, and infrastructure for McArthur River Operation (Figure 1.2). Existing disturbances are from exploration activities such as line cutting drilling and access routes.

Industrial leases in proximity to Wheeler are held for mineral exploration, power supply and road maintenance (Figure 3.2 and Table 3.1).

5.7.2 Heritage Resources

The Project footprints from the preliminary economic assessment stage were submitted to the Heritage Conservation Branch (HCB), Saskatchewan Ministry of Parks, Culture and Sport for heritage screening in 2017. It was identified that portions of the proposed infrastructure and access road options could impact hilly terrain and prominent uplands located within heritage sensitive areas. Accordingly, a Heritage Resource Impact Assessment requirement was attached to the Project, pursuant to Section 63 of *Heritage Property Act*.

A heritage resources baseline study was initiated on July 5, 2017 under Archaeological Resource Investigation, Permit 17-091. Heritage sensitive areas were assessed through a combination of pedestrian reconnaissance and visual inspection field programs, complimented by the excavation of 258 shovel probes and 5 shovel tests. The assessment identified an Artifact Find site (HiNi-6) of an unknown precontact cultural affiliation located on the western terrace of a lake adjacent to the Phoenix 2 access road option. The find was a large, grey quartzite secondary flake. At this stage in the Project design, the Phoenix 2 access road option is no longer being considered.

Upon completion of the Heritage Resources Impact Assessment, it was submitted to the HCB for review. The HCB determined that the new site was small, consisting of a single artifact so it was considered to have limited interpretative value. The HCB determined that the regulatory requirements were satisfactorily completed, and the office had no concerns regarding development occurring within the areas surveyed. An approval letter was issued to Denison by the HCB on December 14, 2017.

Denison recognizes that Project footprints (location, size) assessed in 2017 may change as the Project advances through the EIA and licensing phases. Additional heritage resource baseline studies will be undertaken, and approval will be received prior to executing future land disturbances, as required.

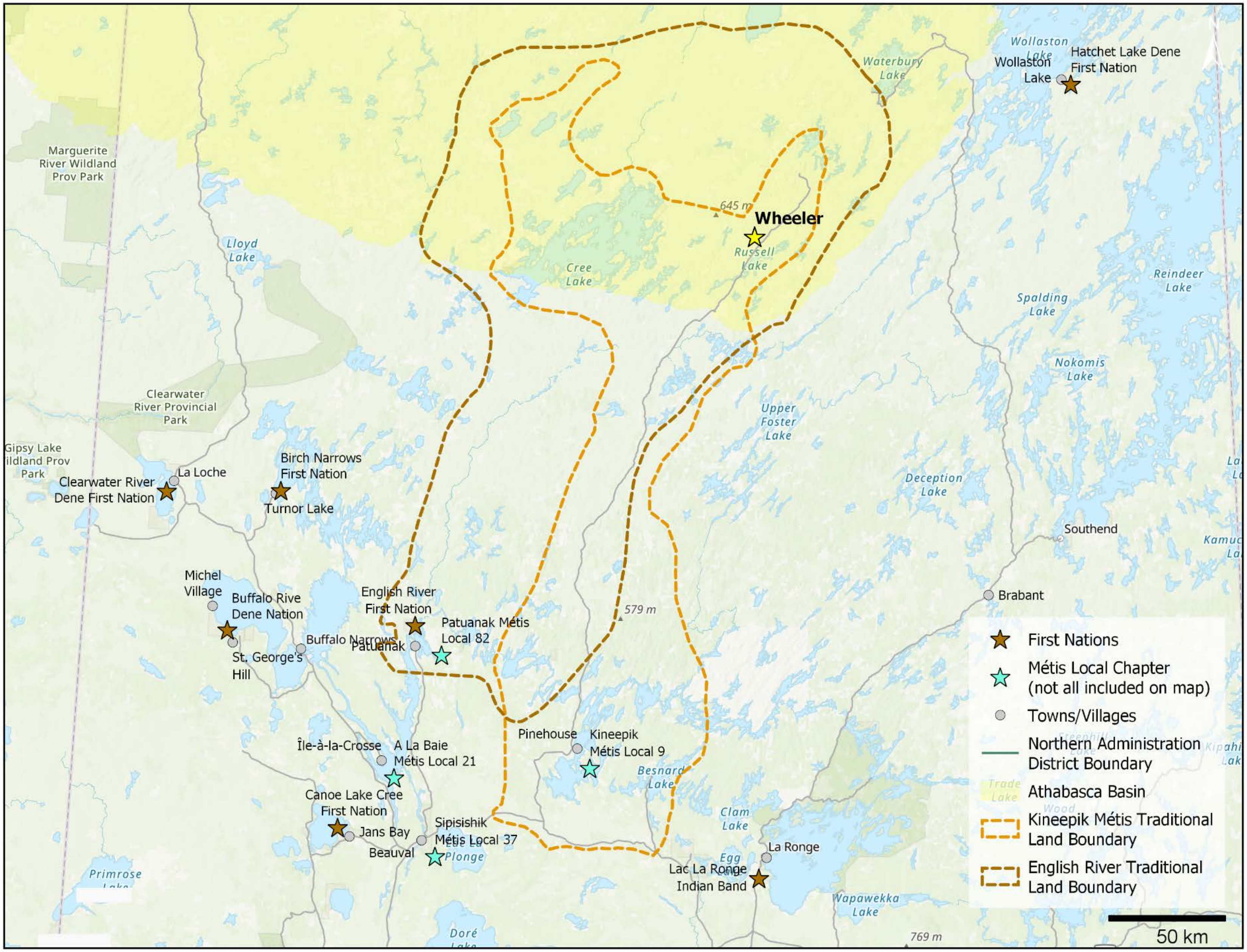
5.7.3 Current Traditional Land Use by Indigenous Communities

Wheeler is located in the Treaty 10 area (Figure 3.1) and the local and regional area surrounding the proposed Project has been claimed by four distinct Indigenous communities as partially or entirely falling within their traditional territories, where traditional land use activities have been historically or are currently practiced. These groups consist of the English River First Nation and the Kineepik, Sipishik and A La Baie Métis locals of the communities of Pinehouse, Beauval and Ile a la Crosse, respectively. Traditional territory boundaries from English River First Nation and Pinehouse Kineepik Métis are provided in Figure 5.7. These traditional land use maps were provided to Denison along with permission to use the maps.

The traditional activities practiced within the immediate and regional area of the Project consist of subsistence hunting and fishing. The immediate area also falls within the trapping block of N18, which is operated by a member of the English River First Nation (Figure 3.2 and Table 3.1).

Seasonal harvesting of native plants for food and medicinal purposes is also common throughout the regional area.

During the open water season the rivers and lakes in the area serve as transportation routes to and from areas of harvest of plants and game as well as preferred campsites and/or cabins. During the winter months the frozen lakes, river banks and muskegs are used as transportation routes to cabins, trap lines and/or preferred hunting areas.



Note: Not all Indigenous traditional territories are included on the map

Denison Mines

Wheeler River Project
Provincial Technical Proposal and Federal Project Description

Figure 5.7: Traditional Territory Boundaries Provided by English River First Nation and Pinehouse Kineepik Métis

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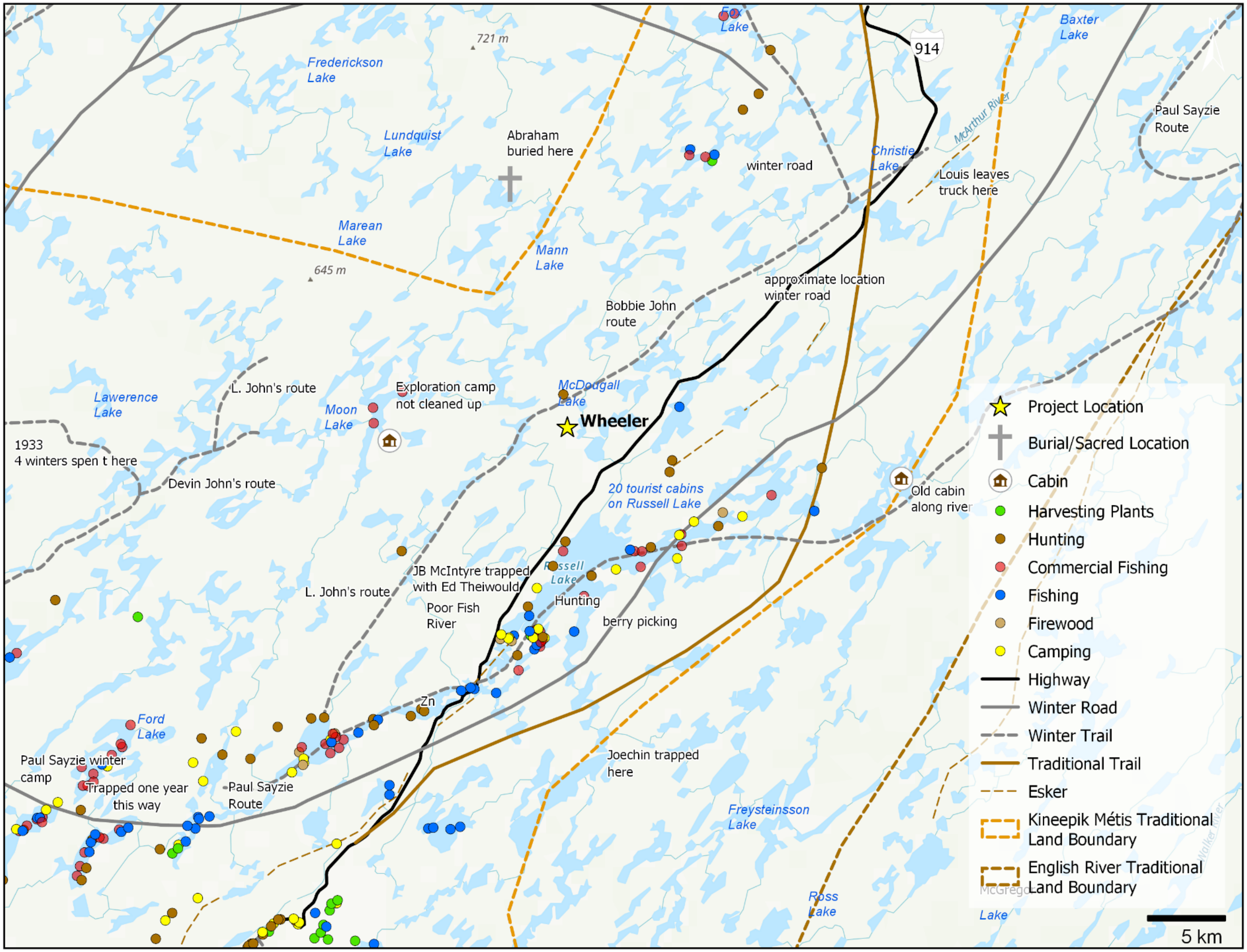

Note: Traditional territory boundaries provided by English River First Nation and Pinehouse Kineepik Métis

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Wheeler River Project
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Figure 5.8: Available Traditional Land Use Data around Wheeler

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6 Environmental Effects

6.1 Overview of Potential Project Effects and Mitigation Measures

This section provides a brief description of changes that may be caused by the Wheeler Project and the proposed mitigations. It includes a high-level summary of potential effects during the construction, operation, decommissioning and post-decommissioning phases under normal operating conditions and potential accidents and malfunctions scenarios. General mitigation measures to minimize or eliminate potential effects are presented for the biophysical or human environment component discussed below. This evaluation is not comprehensive or final; potential effects of the Project at the site, local and regional assessment areas will be rigorously and transparently assessed and presented in the EIA following the general approach of:

- Identifying component- or activity-specific characteristics and site-specific environmental characteristics;
- Identifying both positive and negative interactions between those characteristics (Project-environment interactions) through Project pathways;
- Identifying robust mitigation measures; and
- Assessing the likelihood and significance of these interactions following application of the mitigation measures, the acceptability of these residual risks, if any, and the resulting potential effects they may have on biophysical and human environment valued components (VCs).

In addition to predictions made, monitoring programs will be developed based on results of the environmental assessment and implemented as part of the plan, do, check, act model (Section 6.3).

6.1.1 Biophysical Environment

6.1.1.1 Terrain and Geology

Changes in terrain are expected to be minor as both the footprint and volume of earthworks required for construction of the Project components are minimal. Earthworks are expected for construction of surface infrastructure such as roads, building, and the airstrip. Large volumes for cut and fill are not anticipated, and detailed designs will be tailored to minimize and balance the cut and fill needs of the Project footprint.

Due to the depth of the deposit (~400m below surface), low vertical profile of the deposit (~6-8 m on average) and the fact that the mining only removes uranium from the ground leaving virtually all other material in place, surface ground subsidence is not expected. Ground subsidence may be experienced directly above the deposit, but those effects will be localized are expected to dissipate in a short distance. To be conservative the potential for any ground subsistence at surface during the post-decommissioning phase as a result of allowing the freeze wall to thaw will be evaluated in the EIA.

General mitigation measures to minimize or eliminate potential effects to terrain and geology:

- Design Project to minimize footprint, and incrementally reclaim where possible;
- Design Project to minimize cut and fill volumes for surface facilities;
- Include freeze wall to provide geotechnical stability during mining;
- Assess the potential for subsistence post-mining and monitor the geochemical and geotechnical conditions within the mine chamber during the decommissioning phase; and
- Evaluate options to backfill the mining area if subsidence during the post-decommissioning is identified.

6.1.1.2 Hydrogeology

Groundwater quality within the mining chamber is expected to change as a result of direct contact with the mining solution during operations. This effect will be localized and groundwater in the mining chamber will be remediated during decommissioning before the freeze wall is allowed to thaw.

Mining solution and uranium rich mining solution may enter groundwater outside of the mining chamber via accidents or malfunctions. Examples of types of accidents and malfunctions could be: well damage and release outside of the mining chamber, groundwater contamination from surface through spills at the pumphouses or leaks along the pipelines. However, all flows within the ISR mining system from the processing plant to the mining chamber are metered and monitored for pressure losses which will allow for early identification of leaks in wells and along pipelines throughout the entire closed circuit. Wells and pipelines will be designed with secondary containment (or equivalent protections) and leak detection monitors. The monitoring and safeguards put in pace will allow for the stoppage of any leaks quickly by turning off wells or reversing flows at select wells within the wellfield, thereby minimizing any effects on groundwater quality. If required, Denison will be able to drill additional wells into any potentially contaminated areas for recovery of the mining solution back to surface. Denison will develop emergency response plans to prevent and clean-up surface spills. In addition, groundwater monitoring wells will be established at key locations within and outside of the wellfield to monitor for any changes in groundwater quality.

Groundwater quality may be changed by discharge of treated effluent into the groundwater environment. Options and potential effects associated with potential discharge of treated effluent into groundwater via deep well injection will be thoroughly examined in the EIA.

Groundwater quality may also be changed by accidents and malfunctions related to: spills or leaks from waste pads and ponds, spills of hazardous substances including reagents and fuels, leaks from water treatment plant ponds, and leaching from the landfill. During normal operating conditions, Denison expects these interactions will be fully mitigated through appropriate Project design (e.g., waste pad will be double lined with leak detection capabilities; hazardous substances stored in approved storage areas with secondary containment as required) and implementation of management plans (e.g. material sorting for items destined for onsite landfill, hazardous waste handling and storage). Groundwater monitoring wells will be established near the processing plant terrace, landfill, and fuel and hazardous waste storage area to allow for detection of any changes in groundwater quality.

While the freeze wall is in place, groundwater flow will be changed at the site level (e.g., immediately surrounding the mining chamber) as groundwater within and outside of the freeze wall will not be able to interact. This will be reversed post-decommissioning once the mining chamber has been remediated and the freeze wall is allowed to thaw. Potential changes in site and local groundwater flow regime will be evaluated as part of the hydrogeological model in the EIA.

Given our understanding of the extent of the hydrogeological environment in the site, local and regional Project areas we do not expect any aspect of the Project will influence groundwater quantity. However, the influence of the wellfield and the in situ recovery mining method on groundwater quantity will be examined and assessed as part of the hydrogeological assessment in the EIA. The assessment will include the potential for localized drawdown in groundwater outside of the mining chamber. Groundwater withdrawal for the fresh water distribution system (fire water system, the potable WTP, the processing plant and the wash bay) will also be evaluated for any potential changes on groundwater quantity. Groundwater monitoring wells will be established at key locations within and outside of the wellfield to monitor any changes in groundwater levels.

General mitigation measures to minimize or eliminate potential effects to the hydrogeological environment:

- Establish freeze wall before mining operations to create the mining chamber, effectively isolating the area with mining solution (area inside the mining chamber) from the surrounding groundwater environment;
- Design injection and recovery wells to have secondary containment, or adequate containment (e.g. cementing the annulus of injection and recovery wells);
- Recognize option to drill additional wells in order to recover mining solution excursions;
- Design pipelines to have secondary containment or catchment;
- Have leak detection in place for wells and pipelines;
- Remediate groundwater in mining chamber as part of decommissioning;
- Have appropriately designed and monitored storage areas for waste, reagents, and hazardous substances; and
- Design processing plant to allow for collection of any spills.

6.1.1.3 Atmospheric and Acoustic Environment

There is potential for radon and radon progeny degassing from uranium rich mining solution in the wellfield components (i.e., injection and recovery wells, pumphouses, pipelines) and in the processing plant. Ventilation will be designed to provide sufficient worker protection and monitoring systems will be in place to ensure worker health and safety. Discharge into atmosphere should provide sufficient dilution, although modelling for EIA will indicate if other mitigations are required.

The processing plant exhaust, mainly from drying and packaging areas, will be directed through a stack and released outside of the building. The stack height will be designed based on results of air dispersion modelling to be an appropriate height for optimal dispersion. If the modelling suggests the need, scrubbers will be installed to control atmospheric emissions. Best available technology, with respect to workplace cleanliness will be implemented inside the processing plant in order to reduce radiological exposures. Denison anticipates stack monitoring, ambient radon monitoring and high-volume air to confirm EIA predictions with respect to calculated source terms and dispersion modelling results.

Fugitive dust from access roads, the airstrip and the clean waste rock pile have potential to locally impact vegetation and soil and therefore wildlife habitat. This will be considered as a physical effect of clean dust in the terrestrial environment section of the EIA; elevated metal and radionuclides are not expected at either roads due to the mining method selected or the clean waste rock pile due to sorting of drill cuttings during wellfield development. The need for dust control will be evaluated based on results of modelling predictions results documented in the EIA. These predictions will be calibrated with dustfall or high-volume monitoring during operations and if necessary additional mitigations measures will be implemented.

Dust from material on the waste pad has the potential to contain metals and radionuclides. The pile will be managed to minimize dust and fugitive dust leaving the pad will be monitored. If necessary, dust control mitigation will be implemented. The current plan is to pack precipitate waste or impurities from the processing plant in tote bags that are then placed on the pad, providing an additional level of containment, eliminating dust from this source and reducing potential volumes of contaminated contact water. Options for disposal of the material on the waste pad (mineralized waste rock, precipitates, and water treatment plant solids) will be evaluated in the EIA.

By tying into the provincial power grid and the nearby Island Falls hydroelectric station, greenhouse gases (GHGs) emissions associated with the Project will be minimized. GHGs are expected from operation of back-up diesel generators, vehicles, drill rigs, and exhaust from propane use in the kitchen and camp for heating. Selection of high-quality, low emissions equipment and regular maintenance will help reduce emissions of GHGs. Denison will examine options to further reduce GHG emissions by using alternate emergency generators, electric vehicles, an electric drill rig for wellfield development, and electrical heat in buildings. Denison will assess greenhouse gas emissions and evaluate their significance in the EIA. This will include evaluating whether the Project is a large GHG emitter, or not. Emissions of NOx, SOx, and particulate matter will be evaluated in the EIA as a potential input into the human health and ecological risk assessment (HHERA).

Denison plans to operate an incinerator to dispose of food waste. It is expected that selection of an appropriate incinerator will have design components to mitigate emissions to air. Correct operation and regular maintenance of the incinerator will be important to achieve the design parameters and procedures will be in place to achieve this. If required, the exhaust from the incinerator will be examined as part to the air dispersion modelling.

Compared to traditional uranium mining operations in Canada, the Wheeler noise levels are expected to be low. The main sources of noise will be related to transport of people and goods to and from the site via air and land, drilling of holes for the freeze wall and wellfield, operation of the batch plant, operation of the processing plant, and operation of the pumphouses. Selection of high-quality, low sound emission equipment and regular maintenance will help reduce noise associated with Project activities. Denison will examine options to further reduce noise emissions by using electric vehicles and an electric drill rig for wellfield development. Sensory disturbances to wildlife will be examined as required in the terrestrial section of the EIA.

Overall, Denison anticipates that air emissions and noise from Project activities will dissipate very rapidly to background levels within a few hundred metres from the source.

General mitigation measures to minimize or eliminate potential effects to the atmospheric and acoustic environments:

- Implement a waste rock segregation plan;
- Provide dust control along roads and at the airstrip as required;
- Install scrubbers in stacks and incinerator, as necessary;
- Tie into provincial power grid and hydroelectric station at Island Falls as the main way to minimize GHG emissions;
- Evaluate electric vehicles, electric drill rigs and electric heating in buildings to further minimize greenhouse gas emissions;
- Select and purchase equipment to minimize emissions to air and noise generation;
- Follow operating procedures for equipment;
- Conduct regular maintenance of equipment;
- Develop methods for minimizing radon exposure from the venting of wells, pumphouses or anywhere that there is a potential for the degassing of radon in the system; and
- Evaluate options to reduce noise emissions by using electric vehicles and an electric drill rig for wellfield development.

6.1.1.4 Aquatic Environment

Changes in water quality will be examined through various pathways including: discharge of treated effluent, discharge from the clean waste rock pond, potential for contaminated groundwater to affect surface water bodies, construction and maintenance of water crossings, and any on land activities near water bodies. Changes in water quality have the potential to affect other components of the aquatic environment including sediment, benthic invertebrates, plankton, and fish. The discharge of treated effluent to a surface water body is expected to be the main Project interaction with water, sediment, and aquatic biota.

The Project may be subject to the Metal and Diamond Mining Effluent Regulations (depending on the volume of treated effluent discharge) which outline requirements for effluent monitoring, effluent discharge limits, and biological effects monitoring program in the receiving environment. Details on expected treated effluent quality and volumes will be presented in the EIA. Based on the current Project design with a focus on water recycle in the processing plant and the minimal discharge volumes to surface water, downstream impacts are considered unlikely outside of the local study area. This includes water and sediment quality, changes in benthic invertebrate, plankton, and fish communities, and benthic invertebrate tissue chemistry and fish tissue chemistry. A thorough evaluation of the potential effects of treated effluent in the receiving environment will be completed as part of fate and transport modelling in the EIA. This is an exercise to predict water and sediment quality at locations downstream of the treated effluent discharge point. The results of the water and sediment modelling will be used to predict effects on benthic invertebrates, plankton, fish, semi-aquatic VCs, terrestrial VCs and humans as part of the HHERA.

Changes in certain components of the aquatic environment (e.g., surface water quality, benthic invertebrate communities, fish populations, etc.) may result from accidents and malfunctions related to spills or leaks from pipelines, processing plant, waste pads, ponds, and hazardous substance storage area. During normal operating conditions, Denison expects these interactions will be fully mitigated through integration of best available technology in the Project design (e.g., leak detection and secondary containment along pipelines; hazardous substances stored in approved storage areas with secondary containment as required) and implementation of various management programs, standard operating procedures and monitoring plans (e.g. material sorting for items destined for onsite landfill, hazardous waste handling and storage).

Potential changes in water quantity as measured by water level and flows will be examined through various pathways including: discharge of treated effluent, discharge from the clean waste rock pond, withdrawals for the fresh water distribution system (fire water system, the potable WTP, the processing plant and the wash bay), recharge of groundwater to surface water bodies, possible drawdown from mining activities, and construction and maintenance of water crossings. All interactions are anticipated to be minor as water intake and output volumes are low relative to the baseline flows in the Project drainage areas. Any changes in local drainage around the site due to infrastructure are expected to be minimal and have negligible effects on site and local study are flows and water levels. Flows are not expected to change at the proposed water crossings as the crossing types will be selected, designed and constructed to avoid causing harm to fish and fish habitat. All potential changes in water levels and flow will be examined as part of the hydrological assessment in the EIA.

Potential effects on fish and fish habitat from in-water works and activities near water are expected to be minor and may be managed by following the Department of Fisheries and Oceans Canada's (DFO's) measures to avoid and mitigate impacts to fish and fish habitat into Project planning and implementation. Two water crossings will be required along the road from the site to the airstrip. The crossing types will be selected and designed to avoid causing harm to fish and fish habitat. Installation of a water intake and a treated effluent discharge pipeline will require in-water works which will be done following best management practices and incorporate measures to avoid causing harm to fish and fish habitat. The water intake will be screened to prevent entrainment of fish and the treated effluent release point will be designed to reduce erosion. A 100 m buffer zone will be established along the shoreline of fish bearing water bodies for working near water, where possible, and best management practices such as erosion and sediment control measures will be implemented. Denison does not expect any Project activities will require a *Fisheries Act* Authorization from DFO. As such, Project review for effects to fish and fish habitat will be conducted by the CNSC as per the MOU between the CNSC and DFO (dated December 16, 2013).

General mitigation measures to minimize or eliminate potential effects to the aquatic environment:

- Minimize volume of treated effluent discharge to the environment by recycling mining solution in the processing plant;
- Design water treatment plant to produce treated effluent which meets or is lower than regulatory discharge requirements;
- Design water intake to avoid fish entrainment;
- Design treated effluent release point to reduce erosion;
- Design and monitor storage areas for waste and hazardous substances;
- Design pipelines to have secondary containment or catchment;
- Design surface facilities to allow for the collection of spills;
- Design and construct water crossings to avoid causing harm to fish and fish habitat;
- Follow best management practices for working in and near water; and
- Develop a robust emergency response plan to minimize the impacts of accidents and malfunctions.

6.1.1.5 Terrestrial Environment

Site preparation and construction will involve ground clearing for all facilities including the roads, processing plant area, wellfield, waste pads and ponds, water treatment plant ponds, and support building such as the camp and operations centre. Best management practices will be followed such as completing all site preparation activities outside of the breeding bird season (and or pre-clearing the area outside of breeding periods), maintaining set-backs from water and saving brush for reclamation. Some of the site and local study areas to be cleared have already been disturbed and/or cleared as a result of exploration activities which will help minimize new disturbance.

Construction and operation of the Project will result in a small loss of soil, vegetation and wildlife habitat in the site and local study areas. However, following decommissioning and reclamation, soil, vegetation and wildlife habitat are expected to recover to baseline conditions. During operations progressive reclamation activities will be completed where possible and the progress and success of these activities will be assessed annually.

Project interactions with wildlife may include direct effects (i.e., potential for wildlife-vehicle collisions) and indirect effects such as changes in movement in response to activity and noise. Woodland caribou are of particular interest due to their conservation status (COSEWIC and SARA status of threatened). Mitigation measures to reduce Project footprints, minimize habitat disturbance, and minimize noise will contribute to reducing potential effects of the Project on woodland caribou in the site, local and regional study areas. A Woodland Caribou Management Plan consistent with the management goals of SK-1 zone will be developed as part of the EIA and will assess the needs for habitat offsets.

Migratory birds are present in the Project area. The main potential interaction of the Project with migratory birds is expected to be site clearing activities (primarily during construction) with breeding times for migratory birds. The Project will be designed and planned to avoid disruption of migratory birds' nests and eggs.

The primary pathways for contaminants to interact with terrestrial wildlife includes release of treated effluent and release of contaminated dust. The potential for radiological and non-radiological contaminants to affect the health of terrestrial wildlife will be evaluated in the EIA as part of the HHERA.

Changes in certain components of the terrestrial environment such as soil quality and vegetation quality may result from accidents and malfunctions related to spills or leaks from pipelines, processing plant, waste pad, ponds, and hazardous substances. During normal operating conditions, Denison expects these interactions will be fully mitigated through appropriate Project design (e.g., leak detection and secondary containment along pipelines; hazardous substances stored in approved storage areas with secondary containment as required) and implementation of various management programs and plans (e.g. material sorting for items destined for onsite landfill, hazardous waste handling and storage, a site emergency response plan).

General mitigation measures to minimize or eliminate potential effects to the terrestrial environment:

- Design Project to minimize disturbance of terrestrial habitat;
- Stockpile brush when possible to use in reclamation;
- Complete ongoing decommissioning when possible;
- Design surface pipelines to have secondary containment or catchment;
- Have leak detection systems in place at key locations;

- Develop a caribou management plan and evaluate the need for caribou habitat offsets in the EIA; and
- Design and plan Project activities to avoid disruption of migratory birds' nests and eggs.

6.1.2 Human Environment

6.1.2.1 Worker Health and Safety

Worker health and safety will be evaluated for both conventional health and safety and radiological health and safety. Worker exposure to non-radiological and radiological elements will be evaluated as part of the HHERA in the EIA.

The main conventional health and safety concerns will be working with hazardous substances such as reagents used throughout the ISR mining and uranium extraction processes as well as fuels, lubricants and greases common to an industrial operation. Denison will have a comprehensive health and safety program in place that meets the requirements of both the federal and provincial governments in order to protect workers and to minimize the potential for conventional health and safety incidents.

With respect to radiation protection, there is the potential for worker exposure to radon and radon progeny degassing from uranium rich mining solution in the wellfield components and in the processing plant. Ventilation will be designed with the ALARA principle (as low as reasonably achievable) in mind to provide sufficient worker protection. Monitoring systems will be in place to ensure these mitigation measures are meeting design specifications. Dust control and good housekeeping practices throughout the plant will also form a critical component of the Radiation Protection Management Plan developed for the Project. Radiological exposures will stay under regulatory limits and keeping with the ALARA principal every effort will be made to maintain all exposures below all licenced action levels. The EIA will present an assessment of potential worker dose and quantify the likely range of doses.

The proposed location for the camp facilities was selected to be upwind of the processing plant, waste pile, and other main sources of contaminants to air.

General mitigation measures to minimize or eliminate potential effects to Worker Health and Safety:

- A radiation protection program derived from a robust radiation exposure assessment;
- An occupational health and safety program;
- Programs for any area deemed critical to safety or in the core CNSC safety assessment areas;
- Clear separation of clean and potentially contaminated areas on site for equipment and personnel;
- Appropriate monitoring and reporting;
- Design pumphouses and processing plant to have proper ventilation; and
- Design Project layout to have office and camp upwind of processing plant.

6.1.2.2 Traditional Land Use

The construction and operation phases of Wheeler may positively of negatively change access for any Indigenous or other resource users in the site and local study areas. There are no potential effects expected from the Project at the regional study area. Denison has integrated traditional knowledge provided by several Indigenous groups practicing traditional land use in the regional and local areas in the early design stages of the Project (refer to Section 8.2.1.2). This practice will continue throughout the EIA and all components of the Project will be assessed in an effort to limit or eliminate effects of the Project on traditional land use. One of the principle decommissioning and reclamation objectives will be to reclaim the site and local study areas to a self-sustaining natural environment capable of supporting pre-mining land use. Successfully meeting this decommissioning and reclamation objective will allow for traditional land use in the site, local and regional study area to continue throughout the post decommissioning and reclamation phase of the Project.

General mitigation measures to minimize or eliminate potential effects to Traditional Land Use:

- Continue engagement with Indigenous groups currently practicing traditional land use activities in the Project area throughout the EIA, feasibility and detailed design stages;
- Identify and incorporate any mitigation or accommodation measures obtained during engagement with Indigenous groups currently practicing traditional land use activities in the Project area;
- Implement Caribou and other Wildlife Management Plans, which will limit or eliminate harvesting of fish and game throughout the construction, operation and decommissioning and reclamation phases of the Project by Project staff;
- Ensure the design and construction of all water crossings over navigable waters are constructed in a manner that does not impede the use of these water courses as a means of transportation for traditional users;
- Ensure the implementation of monitoring programs for all three study areas and present the results of these monitoring programs to key Indigenous groups on regular intervals, demonstrating the environmental protection management plans being implemented are meeting their objectives;
- Design and implement a decommissioning and reclamation plan that incorporates best management practices; and
- Design Project with minimal footprint.

6.1.2.3 Heritage Resources

It is expected that effects on heritage resources will be mitigated through the completion of heritage resource impact assessments and avoidance of any known heritage resources. Procedures will be in place to appropriately respond to any unanticipated heritage resource encounters. These unanticipated encounters would primarily be expected during site clearing and construction activities.

General mitigation measures to minimize or eliminate potential effects to heritage resources:

- Complete heritage surveys and avoid areas with known resources;
- Submit results of heritage resource impact assessments to Heritage Conservation Branch for review;
- Develop and implement a Heritage Resource Management Plan for the construction and operating phases of Wheeler in accordance with Saskatchewan's *Heritage Property Act*;
- Obtain Indigenous feedback on and incorporate feedback into the Heritage Resource Management Plan; and
- Design Project with minimal footprint.

6.1.2.4 Members of the Public

Exposure to non-radiological and radiological elements for members of the public will be evaluated as part of the HHERA in the EIA. Based on the Project design, Denison anticipated any effects on members of the public will be fully mitigated.

Releases to the environment will be controlled and monitored by the effluent, emissions and environmental monitoring program. Results of these monitoring and control activities will be used to validate results of the HHERA for dose and exposure to members of the public.

6.1.2.5 Socio-Economics

It is expected that the Project will provide a net positive socio-economic effect. This effect will be realized at national, provincial and local northern community levels. All of these socio-economic benefits will be assessed as part of the EIA.

Briefly, the Project will contribute to the national and provincial economies through taxes and royalties as well as through out of province employment generated through downstream processing and transportation requirements of the Wheeler final product. In addition, socially the Project will contribute a significant supply of GHG free energy, in a GHG friendly manner, supporting Canada and Saskatchewan's commitment to addressing global climate change.

The Project itself will generate significant employment and business opportunities throughout all four phases of the operation: construction, operation, decommissioning and post-decommissioning.

In line with Denison's MOUs, direct and indirect employment opportunities as well as business development opportunities will preferentially target individuals and businesses residing in and based in northern Saskatchewan, respectively. Denison is also committed to support education and training opportunities as well as community investment within local northern and Indigenous communities. Progress on all of these commitments is currently being realized in northern and Indigenous communities and will continue throughout all phases of the Project. The existing commitments and future commitments will be evaluated as part of the EIA.

Denison is an equal opportunity employer and has established strong policies against harassment in the workplace and unlawful discrimination. Denison will continue to work with regulatory agencies, government and communities to reduce employment barriers for all people.

There is currently no tourism land use documented on the site or local study area. However, there is tourism use documented within the regional study area. There are no effects anticipated from the Project that would impact tourism in the regional study area. However, this will be assessed as part of the EIA under the socio-economic aspects of the Project.

General mitigation measures to minimize or eliminate potential negative effects and continue the growth of socio-economic benefits associated with the Project:

- Continue Denison's Indigenous and non-Indigenous engagement program;
- Continue to fulfill commitments outlined in Denison's existing MOUs with Indigenous groups and communities;
- Continue employment practices and efforts to reduce employment barriers for all people;
- Involve and inform representatives of the tourism industry active in the regional study area as part of the ongoing implementation of the engagement program;
- Ensure the implementation of monitoring programs for site, local and regional study areas and present the results of these monitoring programs to regulatory agencies, Indigenous groups and members of the public on regular intervals, demonstrating the environmental protection management plans being implemented are meeting their objectives; and
- Design Project with minimal footprint.

6.1.2.6 Indigenous Peoples

It is anticipated that Wheeler will have a net positive effect on the Indigenous peoples of northern Saskatchewan. Many of these effects have been discussed above, in Sections 6.1.2.1 through Section 6.1.2.5. However, Denison believes they have an additional obligation to the Indigenous peoples who assert claim of the site, local and regional study area as being part of their traditional territory.

The ongoing implementation of the Indigenous engagement program (Section 8.2) will help to identify programs that can be developed within the spirit of the objectives of Denison's existing MOUs with northern and Indigenous groups. These programs will be included as part of the socio-economic aspects of the Project's EIA.

Denison has already engaged with Indigenous peoples to obtain and incorporate feedback directly into the Project designs (refer to Section 8.2.1.2). Denison intends to continue this process to help minimize impacts through design. Denison intends to continue to engage Indigenous groups on any of the Project's potential impacts to their potential or established Indigenous and/or treaty rights. Engagement efforts will continue as the Project advances and additional conversations will be held once potential Project effects are more thoroughly understood and assessed as part of the EIA process.

As part of ongoing engagement and the EIA process, Denison can review cultural programs in place at other mine sites and brainstorm with Indigenous groups to identify effective cultural support programs that could be implemented at Wheeler.

Examples of additional programs that could be assessed as part of the EIA are:

- Employ Elders at site throughout the construction, operation and decommissioning phases of the program to provide cultural support to Indigenous employees;
- Initiate cultural awareness training for employees periodically throughout the construction and operational phases of the Project; and
- Work with Saskatchewan's northern medical health office to initiate additional programs that may not be currently easily accessed in remote communities. These programs could be made available at site to the Project's work force to encourage wellness and healthy lifestyle choices.

6.1.3 Summary of Environmental Effects under CEAA 2012

This section provides a summary of information presented in Section 6.1.1 and Section 6.1.2 in order to clearly address the requirements of CEAA 2012, s. 5(1).

6.1.3.1 Fish and Fish Habitat

There is potential for contaminants in water to affect fish health and fish communities. The two main pathways for contaminants to enter fish bearing water bodies are anticipated to be 1) release of treated effluent and 2) spills or leaks of hazardous substances.

The volume of treated effluent (if any) is expected to be minimal with maximum water recycle in the processing plant. In addition, the quality of the effluent will meet or be lower than regulatory limits designed to protect the aquatic environment. This will be fully evaluated as part of the HHERA in the EIA.

Through Project design, best management practices, monitoring, and development of a robust emergency response plan, it is anticipated that the potential for accidents and malfunctions will be minimized.

Potential effects on fish and fish habitat from in-water works and activities near water are expected to be minor and can be mitigated by following the Department of Fisheries and Oceans Canada's (DFO's) measures to avoid and mitigate impacts to fish and fish habitat. The design and installation of any in-water Project components such as water crossings, a water intake, and a treated effluent discharge pipeline and release point will incorporate measures to avoid causing harm to fish and fish habitat. Work near the shoreline of fish bearing water bodies will be avoided where possible and all work will follow best management practices such as erosion and sediment control.

Denison does not expect any Project activities will require a *Fisheries Act* Authorization from DFO. As such, Project review for effects to fish and fish habitat will be conducted by the CNSC as per the MOU between the CNSC and DFO (dated December 16, 2013).

Based on the above, no significant impacts to fish or fish habitat (as defined in subsection 2(1) of the *Fisheries Act*) are expected from Project activities.

6.1.3.2 Aquatic Species

There are no observations of aquatic species (meaning wildlife that is a fish as defined in section 2 of the *Fisheries Act*) in the Project area with the status of threatened, endangered or special concern under SARA or COSEWIC.

6.1.3.3 Migratory Birds

Migratory birds as defined in the Migratory Birds Convention Act are present in the Project area. The main potential interaction of the Project with migratory birds is expected to be site clearing activities (primarily during construction) with breeding times for migratory birds. The Project will be designed and executed to avoid disruption of migratory birds' nests and eggs. This may involve pre-clearing Project footprints outside of breeding periods.

6.1.3.4 Changes to the Environment on Federal Lands, in a Province other than Saskatchewan, or outside Canada

Denison does not anticipate any changes to the environment on federal lands, in a province other than Saskatchewan, or outside Canada as a result of construction, operation and decommissioning of Wheeler. Potential effects of the Project are expected to the limited to the VC-specific local study areas. No impacts outside of the province of Saskatchewan are expected.

The nearest federal land is 16 km away (Table 3.3 and Figure 3.5). This is reserve land registered to English River First Nation which currently and has no permanent residences.

Any potential changes to the environment on federal lands, outside of Saskatchewan or Canada will be fully evaluated in the EIA.

6.1.3.5 Effects on Indigenous People

Health and Socio-economic Conditions

Exposure to non-radiological and radiological elements for members of the public will be evaluated as part of the HHERA in the EIA. Based on the Project design, Denison anticipated any effects on members of the public will be fully mitigated.

Denison anticipates a net positive socio-economic effect on Indigenous peoples. In line with Denison's MOUs with Indigenous groups, direct and indirect employment opportunities as well as business development opportunities will preferentially target individuals and businesses residing in and based in northern Saskatchewan, respectively. Denison is also committed to support education and training opportunities as well as community investment within local northern and Indigenous communities.

Physical and Cultural Heritage

Based on traditional knowledge shared with Denison to date, physical areas of cultural importance have not been identified in the Project local study area. Protection of cultural heritage will be incorporated into potential initiatives such as cultural awareness training to employees and employing Elders at site throughout the construction, operation and decommissioning phases of the Project to provide cultural support to Indigenous employees.

Current use of lands and resources for traditional purposes:

Denison has integrated Indigenous knowledge provided by several Indigenous groups practicing traditional land use in the regional area in the early design stages of the Project (refer to Section 8.2.1.2). This practice will continue throughout the EIA and all components of the Project will be assessed in an effort to limit or eliminate effects of the Project on traditional land use.

Traditional land users in the Project area could be affected by restricted access to the site for hunting and fishing during construction and operation; however, following decommissioning, access to the site and resources harvesting will be fully restored. Denison intends to continue to engage Indigenous groups on any of the Project's potential impacts to their potential or established Indigenous and/or treaty rights. Denison will also identify and incorporate any mitigation or accommodation measures obtained from engagement activities. Engagement efforts will continue as the Project advances and additional conversations will be held once potential Project effects are more thoroughly understood and assessed as part of the EIA process.

Any structure, site or thing that is of historical, archaeological, paleontological or architectural significance:

Based on knowledge of the existing environment, Project effects on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance are not expected.

Denison is committed to completing heritage surveys for all Project footprints and avoiding areas with known resources. Denison will also develop and implement a Heritage Resource Management Plan which will outline steps to be taken should an unexpected artifact be encountered. Denison is committed to obtaining Indigenous feedback on and participation with the Heritage Resource Management Plan.

6.1.4 Conclusions

The selection of ISR results in a uranium mining and milling Project with no tailings, a relatively small footprint, minimal volumes of clean waste rock, minimal volumes of waste rock, minimal generation of other contaminated wastes, and limited water treatment and discharge. Wheeler will be designed to contain potential contaminants and careful consideration will be taken to ensure contaminated areas are kept separate from non-contaminated areas.

Groundwater quality will be a main focus in the EIA in order to fully describe the potential range of effects of any leaks or spills of mining solution to the area outside of the mining chamber. Planning for mining chamber restoration at the end of operations provides confidence that protection of groundwater quality will be a primary focus for decommissioning. Denison anticipates that air emissions and noise from Project activities will dissipate very rapidly to background levels within a few hundred metres from the source. Aquatic effects are expected to be low as the Project will minimize volumes of treated effluent through water recycling in the processing plant. Effects on fish and fish habitat are expected to be avoided and mitigated and it is anticipated that a *Fisheries Act* Authorization will not be required. Disturbance of terrestrial habitat will be minimized to the extent possible; progressive reclamation will be practiced throughout operations and a robust decommissioning and reclamation plan will be implemented following the operations phase of the Project. Potential Project effects on woodland caribou will be carefully considered in the EIA. A Caribou Management Plan will be developed and the need for any caribou habitat offsets will be presented in the EIA. Worker health and safety is of the upmost importance and effects on members of the public are not expected. Any effects on traditional land use will be limited to the site and local study areas and these effects will be short term limited to the construction and operating phase of the Project. No effects on traditional land use will occur in the regional study area. Wheeler is expected to provide a net positive effect on socio-economics throughout all levels of the Canadian economy with the most significant positive impact being realized by the Project's local Indigenous and non-Indigenous communities through direct employment and business opportunities. Wheeler can be decommissioned and reclaimed to meet decommissioning objectives resulting in a site that is safe and stable where traditional land use activities may be freely conducted. The site is expected to be accepted into the provincial Institutional Control Program or possibly released back into the Crown land inventory within five years following final decommissioning and reclamation.

In the EIA Denison will demonstrate that the Wheeler Project can be constructed, operated, and decommissioned with no significant adverse effects on the biophysical and human environments. An HHERA will be performed as part of the EIA to demonstrate the overall low impacts of the Project. The preliminary EIA results will be provided for discussion and feedback with local Indigenous and non-Indigenous communities as part of Denison's ongoing engagement activities.

6.2 Cumulative Effects

For the purposes of a cumulative effects assessment, the Project's net environmental effects (i.e. after mitigation) are assessed in combination with the environmental effects of past activities, existing projects and projects or activities that can be reasonable predicted to occur in the region. A cumulative effects assessment is required in both the federal and provincial environmental assessment processes. Denison commits to including an assessment of how other developments or activities in the area may impact the proposed development, its potential impacts on Valued Components (VCs), and whether they contribute to any cumulative environmental impacts. This will take the form of a cumulative environmental effects assessment as part of the description of Project impacts and mitigations that describes the net cumulative impact of the Project. The assessment would also include an assessment of potential impacts due to reasonable emergency or upset conditions.

Potential cumulative impacts will be identified in the assessment of potential Project impacts during baseline environmental work, subsequent analysis and pathways modelling. This will include an examination of any potential cumulative effects identified in the consultation and engagement processes. The potential impacts will be assessed against proposed mitigations to determine if there is any residual risk. Should the residual risk remain high, different mitigations may be necessary.

Wheeler lies within the eastern Athabasca Basin between two existing uranium operations; Cameco's McArthur River mine, and the Key Lake mill and tailings management facility where ore from the McArthur River mine is processed. The Project would also utilize the existing Highway 914, which includes the haul road between McArthur River and Key Lake. There are considerable amounts of information available for use in a cumulative effects assessment, including, but not limited to:

1. Existing site baseline and monitoring data, including any modelling;
2. Baseline and project information from previous EIAs;
3. Government monitoring information;
4. Monitoring data available from uranium projects in the area (i.e. annual monitoring reports; Environmental Performance Reports);
5. Regional monitoring studies, such as the Northern Mines Monitoring Secretariat program with the Northern Saskatchewan Environmental Quality Committee;
6. Eastern Athabasca Regional Monitoring Program;
7. Community monitoring programs in the Athabasca funded by the companies; and
8. State of the Environment reports and CNSC independent third-party reviews of environmental performance at existing uranium operations.

This information combined with the Project specific baseline and pathways modelling should allow for a sufficient cumulative effects assessment. The main areas with potential to generate cumulative effects are due to:

1. Any effluent discharge, as Wheeler will share a watershed with the Key Lake Operation, and possibly Millennium project;

2. Overlap of air emissions with other projects;
3. Vehicle traffic to and from the site. This will include shipments of supplies, construction materials, reagents and fuel to the site, and shipments of uranium and recyclables from the site to the south;
4. Habitat disturbance for operations and ancillary facilities, including any access road. This may have an impact on caribou habitat that will have to be assessed through the site's Caribou Management Plan;
5. Emergency or upset conditions;
6. Requirements for employees from northern communities in competition with other operations;
7. Traditional use and harvesting; and
8. Requirements for services from northern businesses.

At Wheeler, the potential for the development of the Gryphon deposit is a reasonably foreseeable project, and it would be included as part of the cumulative effects assessment.

Cameco's proposed Millennium uranium mining project, although currently withdrawn from the federal regulatory process, is the only project that might reasonably be expected to proceed during the life of the Wheeler Project. While that is the only project currently identified, any project subsequently identified during the environmental assessment process with a reasonable chance of affecting the cumulative effects assessment would be added. Other projects that have potential for consideration for inclusion include UEX's West Bear cobalt/nickel deposit, but there are few details at this time.

Although largely covered in other sections of the EIS, the cumulative effects assessment will also require an examination of any potential to impact traditional Indigenous use of lands and resources, or on communities in a cumulative sense. There is an expectation of meaningful public and Indigenous participation in environmental assessments, and that the discussion of cumulative effects is included in consultations as part of the Wheeler engagement program with feedback recorded and included in the environmental assessment.

6.3 Monitoring

An effective monitoring program is important in a modern mining operation as it provides the proof that the Project is operating legally and within the bounds of its permissions. Both the federal and provincial regulators require comprehensive monitoring programs and reporting. While the focus here is on the federal requirements due to the broader scope of those requirements, the provincial requirements are no less important.

The CNSC has defined several safety and control areas, and all of these require monitoring and reporting as part of the ongoing performance assessment, improvement and management review within the respective management systems. The CNSC's safety and control areas are:

- Management
  - Management systems
  - Human performance management
  - Operational performance
- Facilities and Equipment
  - Safety analysis
  - Physical design
  - Fitness for service
- Core Controls and Processes
  - Radiation Protection
  - Human health and safety
  - Environmental Protection
  - Emergency management and fire protection
  - Waste management
  - Security
- Safeguards and Non-proliferation
- Packaging and Transport

All these areas will require a structured program that demonstrates effective management and control, usually within an ISO/CSA plan-do-check-act style system (PDCA). While all the safety and control areas will have monitoring, the environmental program is further described here as an example.

Environmental monitoring is performed to demonstrate the Project's environmental and safety performance, and to provide the necessary feedback to manage that performance in the areas of:

- Gaseous and liquid discharges;
- The transport of nuclear and hazardous substances within the environment;
- Public exposure and dose;
- Exposure and effects on terrestrial and aquatic biota; and
- Any changes in habitat and effects on species that rely on that habitat.

Through the baseline program and environmental risk assessment, predictions on the Project's performance will be made in the above areas and monitoring is essential in tracking and managing that performance. Denison will incorporate the results of the EIA predictions into the Environmental Management System (EMS), including the effluent and environmental monitoring plans (CNSC 2017). The EIA predictions for physical disturbances and releases, and the associated environmental responses and potential effects, will be measured and tested using site-specific monitoring data during construction, operation, decommissioning and post-decommissioning phases. As such, a comprehensive monitoring program will be required as part of the Project's ISO/CSA 14001-2015 compliant EMS, providing the necessary feedback to:

1. Demonstrate compliance with applicable laws and permit conditions;
2. Inform the required follow-up program(s), especially within the EMS;
3. Demonstrate continual improvement;
4. Provide process feedback to operations and to management;
5. Provide warning of process changes or upsets;
6. Provide data for maintaining up to date site models; and
7. Information to Indigenous groups, regulatory agencies, and the public.

The EMS will be based on the ISO/CSA PDCA methodology with monitoring playing a critical role in the check process, providing the necessary information for management to act, if necessary, to implement changes in performance. The Canadian Standards Association, as a natural offshoot of its ISO/CSA EMS requirements (e.g. ISO 14001-2015) has been working with the nuclear industry in Canada and have issued standards for Environmental Risk Assessment (CSA N288.6), which lead directly to effluent monitoring (CSA N288.5), environmental monitoring (CSA N288.4), and supplementary studies. The CSA standards are specifically referenced within the CNSC's REGDOC 2.9.1 (CNSC 2017) as functioning parts of the overall EMS.

For radiation, the offsite monitoring is included in the environmental monitoring program while the on-site worker radiation safety program and monitoring activities are subject to a stand-alone Radiation Safety Management program with its own management plan, structure and reporting.

While there are discharge limits for mining in the Saskatchewan Mineral Industry Environmental Protection Regulations, 1996, and the federal Metal and Diamond Mining Effluent Regulations (MDMER), the expectation of the federal regulator will be that a modern uranium mine will have effluent concentrations protective of the environment and well below the values in the above regulations. The MDMER in addition to defining discharge limits also defines a biological effects monitoring program to ensure that discharges remain with limits that are protective of the environment.

Monitoring for potential impacts on traditional use or northern communities may be done through several mechanisms such as surface leases conditions, licence conditions, commitments in the EIA, agreements directly with potentially affected parties, etc. This monitoring would become part of the Project's monitoring and reporting program.

Monitoring is not done in isolation by the company as both the federal and provincial governments will undertake inspections of the operations, including side-by-side sampling to verify compliance. The CNSC will also periodically contract independent third-party consultants to undertake an assessment of an operation's environmental performance. In addition, there are other independent groups that provide monitoring such as the Northern Saskatchewan Environmental Quality Committee (NSEQC), which is composed of members from communities across northern Saskatchewan who meet to review monitoring data and tour the operations to monitor performance, providing feedback and recommendations to regulators and proponents.

7 Stakeholder Engagement

Denison recognizes the importance of engaging with local and Indigenous communities, residents, businesses, organizations, land users and the various regulatory authorities, collectively referred to as 'Stakeholders.' Since 2016 Denison had been engaging with Stakeholders in ongoing efforts to build positive relationships with all parties. Broadly speaking, Denison has categorized the Stakeholders into three categories:

- Regulatory agencies;
- The general public; and
- Indigenous communities.

Further details regarding engagement with specific Indigenous communities can be found in Section 8.

In accordance with Denison's Environmental and Social Management System, a Stakeholder engagement program has been developed to capture all Stakeholder groups within the categories identified above. The design and considerations associated with stakeholder engagement activities for the Project are in compliance with provincial (Government of Saskatchewan 2014f), federal (CNSC 2016a; Canadian Environmental Assessment Agency 2015a) and international guidance (International Finance Corporation 2012) for stakeholder engagement.

Denison is committed to operating Wheeler in a fully sustainable manner, giving consideration to not only maintaining high standards of safety, and environmental compliance, but also financial discipline.

Generally speaking, stakeholder engagement is an exercise of building and maintaining relationships with groups, communities and individuals who are potentially affected by, interested in and/or may be in a position to influence the direction of the Project throughout its entire life cycle. To that end, the following six key principles of stakeholder engagement apply:

1. Provide meaningful, relevant information in a culturally appropriate format and language that is easily understandable by each specific stakeholder group.
2. Conduct all stakeholder engagement in a manner that respects local traditions, culture, timeframes, and the decision-making processes of each stakeholder group.
3. Conduct stakeholder engagement in a variety of ways, venues and make every effort to identify and include all stakeholders.
4. Where relevant, complete stakeholder engagement activities in advance of final decisions, allowing for the consideration and inclusion of comments and recommendations received to be incorporated into Project decisions.
5. Provide frequent feedback, including the results of meetings, incoming suggestions, requests and key recommendations.

6. Provide frequent monitoring and evaluation of the effectiveness of the Plans during and after each engagement session and adjust the engagement program as required and/or suggested by the participating stakeholders in order to improve follow up engagement sessions.

7.1 Engagement with Regulatory Agencies

The Project will undergo a joint provincial- federal environmental assessment process which will be led by Saskatchewan Ministry of Environment's Environmental Assessment and Stewardship branch and the CNSC. The CNSC will be the federal responsible authority for Wheeler's environmental assessment under CEAA 2012. Wheeler will be subject to a number of provincial and federal acts and regulations (Section 1.3.1) and Denison anticipates involvement of other federal and provincial departments once the Wheeler EIS has been submitted and is under review.

With respect to the schedule for engagement with regulatory agencies Denison believes that engagement will largely be initiated in conjunction with the initiation of Wheeler's environmental impact assessment process. In an effort to be proactive and in accordance with existing guidance documents, engagement with CNSC staff and SK MOE staff was initiated during the completion of the prefeasibility engineering and early collection of the environmental baseline data (Table 7.1). The purpose of the engagement meetings in early 2018 was to provide the regulatory agencies with an update on Wheeler with respect to: the technical/engineering aspects, the environmental baseline collection programs, the Indigenous engagement activities and how the selection of these communities were made, as well as an update on the socio-economic activities resulting from these early engagement activities. The more recent meetings in late 2018 were intended to serve as pre-engagement meetings i.e., prior to submission of this document. Denison provided a Project overview, sought guidance and addressed questions before submission of the Technical Proposal and Project Description.

7.2 Engagement with General Public

Members of the public may have an interest in the development of Wheeler. Denison has identified nearby cabin owners, commercial lodges and the villages of Patuanak, Pinehouse, Ile a la Crosse and Beauval as potentially interested in the Project.

Non-Indigenous people who reside near or within one of the four local communities (Patuanak, Pinehouse, Ile a la Crosse and Beauval) were included and invited to participate in the engagement sessions scheduled in those communities along with their Indigenous neighbours (Table 7.1). In addition, Denison has engaged with mayors, council and economic development entities in the local communities (Table 7.1).

As part of Denison's early engagement activities, one of the existing recreational cabin owners located within the Project area requested an update on the status of the Project via a telephone call to a Denison representative. The cabin owner indicated that he has a positive existing relationship with Denison employees given the proximity of his cabin to the existing Wheeler exploration camp and was hopeful that this relationship could continue.

Table 7.1 Summary of In-Person Stakeholder Engagement (Excluding Indigenous Communities)

Group	Organization or Individual	Date	Summary of Engagement
Regulatory Agencies	Canadian Nuclear Safety Commission, Uranium Mines and Mills Division	February 14, 2018	Introduced Denison and the Wheeler River Project; provided an overview of the Project from the Preliminary Economic Assessment and scope for the Prefeasibility Study which is underway; discussion and Q&A.
	Saskatchewan Ministry of Environment, Mining Industry and Audit Environmental Protection Branch	March 1, 2018	Introduced Denison and the Wheeler River Project; provided an overview of the Project from the Preliminary Economic Assessment and scope for the Prefeasibility Study which is underway; discussion and Q&A.
	Canadian Nuclear Safety Commission, Uranium Mines and Mills Division and Environmental Assessment Division	April 25, 2018	Introduced Denison and the Wheeler River Project; provided an overview of the Project from the Preliminary Economic Assessment and scope for the Prefeasibility Study which is underway; discussion and Q&A.
	Canadian Nuclear Safety Commission, Uranium Mines and Mills Division and Environmental Assessment Division	November 13, 2018	Denison provided a Project update including an overview of the Prefeasibility Study and the Project scope for the Project Description. Answered any questions about the Project. Denison advised on plans to submit a Project Description in 2019 and the group discussed plans for regulatory process moving forward.
	Saskatchewan Ministry of Environment, Environmental Assessment Branch and Uranium and Northern Operations branch	November 21, 2018	Denison provided a Project update including an overview of the Prefeasibility Study and the Project scope for the Technical Proposal. Denison advised on plans to submit a Technical Proposal in 2019 and the group discussed plans for regulatory process moving forward.
	Saskatchewan Ministry of Environment, Uranium and Northern Operations	December 3, 2018	Denison provided a Project update including an overview of the Prefeasibility Study and the Project scope for the Technical Proposal. Denison advised on plans to submit a Technical Proposal in 2019 and the group discussed plans for regulatory process moving forward.

Group	Organization or Individual	Date	Summary of Engagement
General Public	Local community members (Patuanak)	July 27, 2016	Following a community meal, introductory presentations on Denison Mines, the company and its Wheeler River Project were given to those in attendance. The presentations were followed by a Question and Answer session.
	Mayor, Councillors, community members and the leadership team of Pinehouse Business North (Pinehouse Lake)	September 7, 2016	Following a community meal, introductory presentations on Denison Mines, the company and its Wheeler River Project were provided to those in attendance. These presentations were followed by a Question and Answer session. This session was followed by a presentation to Denison from Pinehouse Business North focused on their current capacity.
	Mayor, Councillors, Co-management board, Métis local community members (Beauval)	December 6, 2016	Following a community meal, introductory presentations on Denison Mines, the company and its Wheeler River Project were provided to those in attendance. These presentations were followed by a Question and Answer session.
	Mayor, Councilors, Co-management Board, Métis Honorable Member of the Legislature (Athabasca riding) and other local community members (Ile a la Crosse)	December 7, 2016	Following a coffee and snacks, introductory presentations on Denison Mines, the company and its Wheeler River Project were provided to those in attendance. These presentations were followed by a Question and Answer session.
	Local community members (Pinehouse)	January 16, 2018	Held a community workshop in Pinehouse. A workshop was completed with participants at the meeting to help identify (1) the most effective mine access route from the existing public highway to the project, (2) the pros and/or cons with respect to which lake would be the most appropriate lake to select in terms of discharging treated effluent once the mine was operational and, (3) the pros and/or cons the community saw with respect to the mining methods under evaluation at the time.
	Local community members (Beauval)	January 18, 2018	Held a community workshop in Beauval. A workshop was completed with participants at the meeting to help identify (1) the most effective mine access route from the existing public highway to the project, (2) the pros and/or cons with respect to which lake would be the most appropriate lake to select in terms of discharging treated effluent once the mine was operational and, (3) the pros and/or cons the community saw with respect to the mining methods under evaluation at the time.

Group	Organization or Individual	Date	Summary of Engagement
General Public	Local community members (Patuanak)	May 3, 2018	Denison representatives traveled to Patuanak to provide a Project update. A workshop was completed with participants at the meeting to help identify (1) the most effective mine access route from the existing public highway to the project, (2) the pros and/or cons with respect to which lake would be the most appropriate lake to select in terms of discharging treated effluent once the mine was operational and, (3) the pros and/or cons the community saw with respect to the mining methods under evaluation at the time.
	Local community members (Ile a la Crosse)	January 17, 2018	Held a community workshop in Ile a La Crosse. A workshop was completed with participants at the meeting to help identify (1) the most effective mine access route from the existing public highway to the project, (2) the pros and/or cons with respect to which lake would be the most appropriate lake to select in terms of discharging treated effluent once the mine was operational and, (3) the pros and/or cons the community saw with respect to the mining methods under evaluation at the time.
	Mayor, Business Development Corporation (Ile a la Crosse)	January 18, 2019	Provide an update to leadership regarding: the finalization of the Project Description for submission to the CNSC and the Province of Saskatchewan to initiate the environmental assessment of the Wheeler River Project; provide an overview of the details of the pending environmental assessment submission
	Business Develop Corporation (English River First Nation)	January 31, 2019	Provide an update to leadership regarding: the finalization of the Project Description for submission to the CNSC and the Province of Saskatchewan to initiate the environmental assessment of the Wheeler River Project; provide an overview of the details of the pending environmental assessment submission; discuss future opportunities
	Business Development Corporation (Pinehouse)	February 1, 2019	Provide an update to leadership regarding: the finalization of the Project Description for submission to the CNSC and the Province of Saskatchewan to initiate the environmental assessment of the Wheeler River Project; provide an overview of the details of the pending environmental assessment submission
	Mayor (Beauval)	February 1, 2019	Provide an update to leadership regarding: the finalization of the Project Description for submission to the CNSC and the Province of Saskatchewan to initiate the environmental assessment of the Wheeler River Project; provide an overview of the details of the pending environmental assessment submission
	Northern Saskatchewan Environmental Quality Committee	November 28, 2018	General overview of the Project, including the ISR methodology.

Note: Since 2016, additional engagement has been completed via letters, emails, and phone calls.

7.3 Planned Engagement Activities with Regulatory Agencies and the General Public

Denison is committed to continued engagement via various methods of engagement for all groups including regulatory agencies and the general public. Denison is also prepared to engage with any representative of these groups on an as-needed basis should any specific requests to do so be received. Denison will ensure the CNSC and the SK MOE are kept up-to-date on scheduling and the scope of future engagement activities so they have the opportunity to be included in the planning and ultimately participate when desired.

It is anticipated interest from these groups will largely be expressed as part of the formal environmental impact assessment process once this process has been initiated.

Records of these engagements will continue to be documented and meeting notes will be created to maintain a record of the discussions, questions, concerns and answers provided. All of these written records will be added to the Stakeholder engagement section of the Wheeler EIS.

7.4 Socio-Economics

The early engagement activities completed to date have developed the foundations of genuine relationships between Denison and the Indigenous and non-Indigenous groups local to the Project. These relationships have precipitated follow up meetings and discussions with the economic development divisions of these groups and communities who are expressing a strong interest in continuing an open dialogue with Denison in order to afford them access to socio-economic opportunities associated with the Project. Denison has committed to continue to support these discussions.

8 Engagement with Indigenous Communities

Denison is committed to continuing meaningful engagement with Indigenous communities potentially affected by the Project, and to maintaining relationships with these communities throughout all phases of the Project. The approach to engagement has considered relevant guidance, specifically CNSC's REGDOC-3.2.2 Aboriginal Engagement (CNSC 2016a), the Government of Saskatchewan's guidelines for Consultation with First Nations and Métis in Saskatchewan Environmental Impact Assessment (2014f), the Canadian Environmental Assessment Agency's reference guide on considering Aboriginal traditional knowledge in environmental assessments (2015b) and the IFC Performance Standards on Environmental and Social Sustainability (2012).

The following information outlines the list of Indigenous communities identified for engagement activities, including the rationale for inclusion / exclusion; a summary of the activities conducted to date; and an outline of planned activities and associated milestones. Indigenous engagement activities will be adapted, modified and reported on at various points during the associated regulatory process for the Project.

General Guiding Principles

Indigenous peoples' have a unique and important relationship with the environment, and importantly, Indigenous and Treaty Rights which must be fully respected during the process of project development, construction, operation and decommissioning. To this end, Denison's objectives with respect to Indigenous engagement associated with the Project are as follows:

- Build and maintain authentic relationships built on trust and transparency;
- Create a respectful dialogue process that promotes communication between Denison and Indigenous communities, in a timely and accurate fashion; and
- Understand how the proposed development of the Project may adversely impact Indigenous' peoples ability to exercise collective Indigenous and/or treaty rights.

8.1 Identified Communities and Supporting Criteria

The Northern Administration District (NAD) of Saskatchewan (northern Saskatchewan) includes approximately half of Saskatchewan's land area, but less than four per cent of the province's population. Northern Saskatchewan is approximately 250,000 square kilometres, or about 44% of Saskatchewan's area and is home to about 38,000 people (Statistics Canada 2017) living in approximately 45 communities which include incorporated municipalities (such as towns, villages, hamlets and settlements – most of which self-identify as Métis communities), First Nation reserves, and unincorporated areas. More than 80% of people who live in northern Saskatchewan self-identify as Indigenous. Within the NAD, the communities are roughly divided between three regions: the Athabasca Basin region, the North Central region, and the West Side region

(Figure 8.1). The NAD, while sparsely populated, celebrates a diversity amongst Indigenous communities that requires a unique approach to engagement activities.

Consistent with the history associated with other uranium mining projects located within the NAD, Denison recognizes that all of the communities within the NAD typically have an interest in uranium activities, but that an approach based on appropriate criteria to determine those included in the Program is required.

It is important to note that, as a remote site, there are no communities in relatively close proximity to Wheeler. Calculated using a straight line, the closest communities are approximately 150 km from the site (Table 3.2). Travelling by existing roads, the closest community to the Project is approximately 260 km away.

The following criteria have been used to appropriately evaluate the significant number of communities located in the NAD to those Indigenous communities that will be engaged by Denison.

- Treaty 10 signatory (Treaty in which the Project is located);
- Potential or established Indigenous and/or treaty rights within the Project area;
- Geographic proximity of community and / or reserve land to the Project site;
- Known traditional territory in and around the Project site, including travel routes;
- History of relationship with operating companies, the CNSC, and the Province, in relation to other projects located near the Project (McArthur River, Key Lake, Millennium); and
- The potential for collective exercising of Indigenous and/or treaty rights in proximity to the Project

The results of the initial assessment against the above criteria determined that English River First Nation, the Kineepik Métis Local 9, the Sipisishik Métis Local 37, and the A La Baie Métis Local 21 would form part of Denison's initial focus for Indigenous engagement activities (Table 8.1). Upon further evaluation and identified through various engagement activities, Denison also recognizes that the Patuanak Métis Local 82 should be included as part of the Indigenous engagement program.

It is also important to note that the communities of Ile a la Crosse, Beauval, and Pinehouse, and most of the community-members residing in these communities self-identify as Métis communities and members. Denison recognizes and follows the Métis Nation of Saskatchewan's approach to formal consultation, which occurs with the elected Métis representation; however, it is noted that there is often overlap in engagement activities when, for example, community meetings occur. More often than not, the elected officials of Métis locals are also elected members of the municipality and therefore represent both their Indigenous community as well as their municipality, and rarely acknowledge a separation between the two entities.

The following outlines the criteria used to support the inclusion of the above Indigenous communities into the Program.

Table 8.1: Indigenous Communities

Indigenous Stakeholder Group	Brief Description
English River First Nation	• Treaty 10 signatory • Potential or established Indigenous and/or treaty rights within the Project area • Geographic proximity of community and / or reserve land to the Project site (Slush Lake reserve approximately 16 km away; Barkwell Bay reserve 39 km away; community of Patuanak 229 km away); • Known traditional territory in and around the Project site, including travel routes (see Figure 5.7and Figure 5.8); • History of relationship with operating companies, the CNSC and the Province in relation to other projects located near the Project (McArthur River, Key Lake, Millennium); • The potential for collective exercising of Indigenous and/or treaty rights in proximity to the Project
Kineepik Métis Local 9	• Potential or established Indigenous Rights within the Project area • Geographic proximity of community and / or reserve land to the Project site (233 km away); • Known traditional territory in and around the Project site, including travel routes (see Figure 5.7 and Figure 5.8); • History of relationship with operating companies, the CNSC and the Province in relation to other projects located near the Project (McArthur River, Key Lake, Millennium); • The potential for collective exercising of Indigenous rights in proximity to the Project
Sipisishik Métis Local 37	• Potential or established Indigenous Rights within the Project area • Known traditional territory in and around the Project site, including travel routes; • Familial ties through the ERFN Membership and La Plonge reserve (immediately adjacent to Beauval) • The potential for collective exercising of Indigenous rights in proximity to the Project
A La Baie Métis Local 21	• Potential or established Indigenous Rights within the Project area • Known traditional territory in and around the Project site, including travel routes; • Familial ties through the ERFN Membership • the provision of 'script' to Métis residents during the signing of Treaty 10 • The potential for collective exercising of Indigenous rights in proximity to the Project
Patuanak Métis 82	• Potential or established Indigenous Rights within the Project area • Known traditional territory in and around the Project site, including travel routes; • Familial ties through the ERFN Membership and Wapachewunak 192D reserve (immediately adjacent to Patuanak) • The potential for collective exercising of Indigenous rights in proximity to the Project

Indigenous Organizations

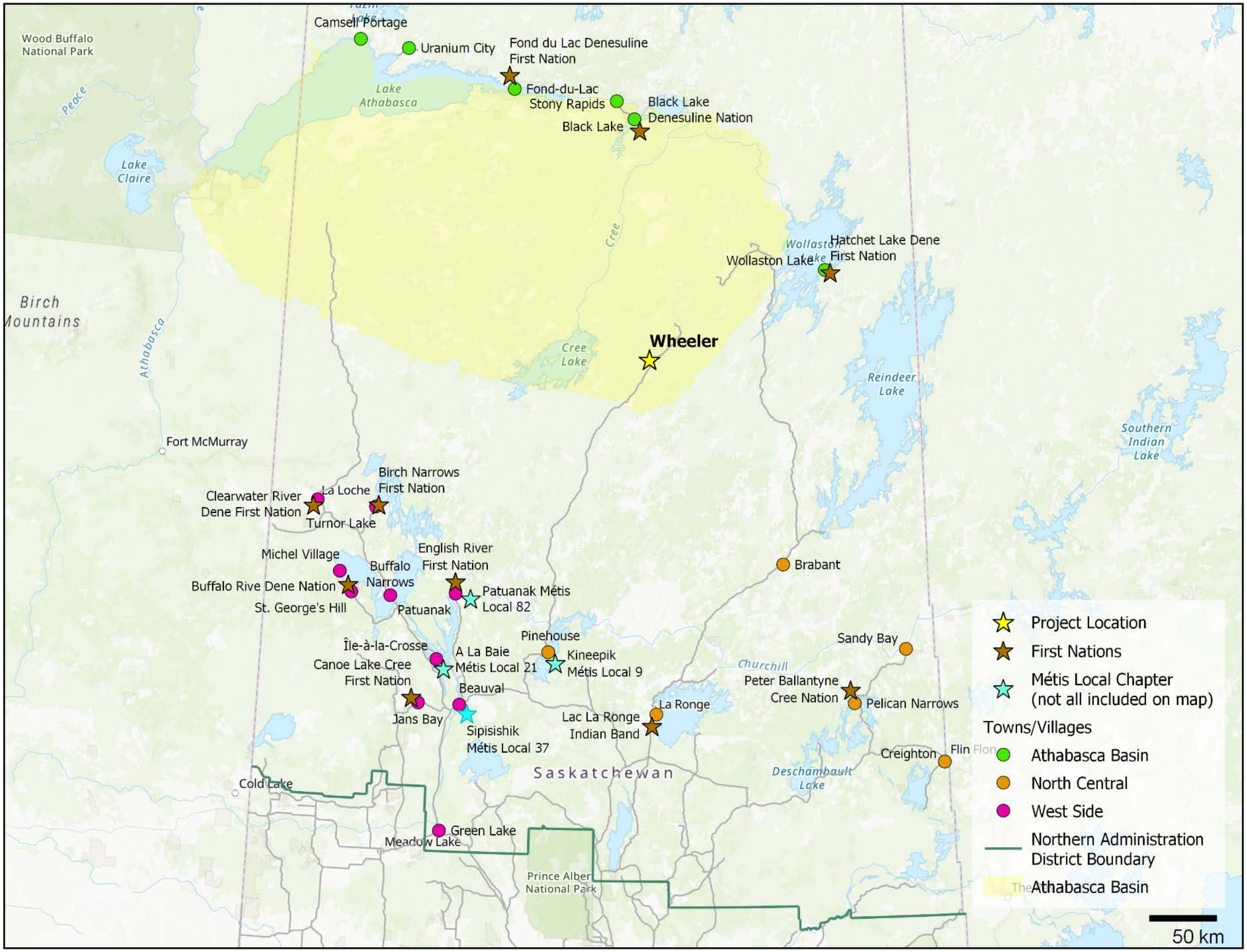
Indigenous organizations can provide a single point of contact for Denison to share information more broadly to a wide variety of Indigenous communities and their leadership regarding Project information, company information, etc. These organizations can also provide specific information regarding their members, interests their members may have, opportunities for Denison to work collaboratively together on various initiatives, etc.

As such, Denison has identified three Indigenous organizations to be included in the Program. The following outlines the criteria for their inclusion:

Ya'thi Nene Land and Resource Office: The Ya'thi Nene Lands and Resources Office (YTNLRO) was created as a not-for-profit organization to be the single point of contact between industry, government and the local Athabasca communities of Hatchet Lake First Nation, Black Lake First Nation, Fond du Lac First Nation, Camsell Portage, Stony Rapids, Uranium City and Wollaston Post. Hatchet Lake First Nation is a Treaty 10 signatory. Denison has evaluated the information currently available online (http://yathinene.ca/#open-map) which suggests that there are limited contemporary traditional land use activities near the Project location, relative to the high concentration of traditional land use activities in the Athabasca Region. However, Denison recognizes that these communities may have an interest in the Project and therefore, Denison intends to engage with the YTNLRO in order to better understand contemporary traditional land use activities that are currently being undertaken in the Project area by the member Indigenous communities of the YTNLRO.

Métis Northern Region I: The Project is located within Métis Region I in Saskatchewan. The Métis in Saskatchewan are currently structured with a President, an Executive, Regional Presidents, and Local Presidents. As noted on the Métis Nation of Saskatchewan's (MNS) website, the MNS identifies that 'consultations must be with the Métis government structures that are elected and supported by the Métis people.' As a result, since the Regional Presidents are elected (in addition to the Local Presidents), Denison will engage with the MNS Regional President I regarding the Project.

Métis Northern Region II: While the Project is not located within Métis Region II, a number of key Métis communities with whom Denison is engaging, are located in Northern Region II. The Métis in Saskatchewan are currently structured with a President, an Executive, Regional Presidents, and Local Presidents. As noted on the Métis Nation of Saskatchewan's (MNS) website, the MNS identifies that 'consultations must be with the Métis government structures that are elected and supported by the Métis people.' As a result, since the Regional Presidents are elected (in addition to the Local Presidents), Denison will engage with the MNS Regional President II regarding the Project.



Denison Mines

Wheeler River Project
Provincial Technical Proposal and Federal Project Description

Figure 8.1: Communities and Indigenous Groups within the Northern Administration District of Saskatchewan

May 2019

8.2 Summary of Indigenous Engagement Activities to Date

Since the spring of 2016, Denison has completed over 20 in-person engagement events (Table 8.2) involving the leadership and general public of the communities of Patuanak, Pinehouse, Ile a la Crosse and Beauval, involving representatives of English River First Nation, the Kineepik, the A La Baie, and the Sipisishik Métis Locals and non-Indigenous residents of these communities as well.

In all cases, Denison's reception by the Indigenous leadership as well as the general populations at each of the communities visited was positive. This early and frequent engagement fostered the development of a positive, mutually respectful relationship between Denison and the community leadership and members at large, and as a result, Denison was complimented by the communities for their decision to come to the communities at the very early stages of the proposed project. In addition, it allowed the Denison team to solicit feedback on aspects of the project engineering early enough in the design phase of the project such that this feedback could be integrated into the designs (Section 8.2.1.2).

Table 8.2 Summary of In-Person Indigenous Engagement Activities

Indigenous Community	Organization or Individual	Date	Summary of Engagement
English River First Nation	Chief	July 6, 2016	Denison introduced their leadership team to leadership of English River First Nation and requested permission to visit the community and provide an introductory presentation to the community
	English River First Nation Members	July 27, 2016	Following a community meal, introductory presentations on Denison Mines, the company and its Wheeler River Project were given
	High School Students and Teachers	November 17, 2016	Denison staff hosted a booth at the English River First Nation job fair, providing advice to high school students on the career opportunities in the mining and exploration industries.
	Lands and Resources Manager	November 30, 2016	Discussed the upcoming schedule of the Wheeler River Project as well as the best way of obtaining and incorporating English River First Nation Traditional Knowledge into the Project's 2017 environmental baseline data collection.
	Lands and Resources Manager	March 3, 2017	Obtained and discussed the English River First Nation Traditional Knowledge map of their Traditional Territory
	Chief of English River First Nation, English River First Nation Members	May 3, 2018	Denison representatives traveled to Patuanak to provide a Project update. A workshop was completed with participants at the meeting to help identify (1) the most effective mine access route from the existing public highway to the project, (2) the pros and/or cons with respect to which lake would be the most appropriate lake to select in terms of discharging treated effluent once the mine was operational and, (3) the pros and/or cons the community saw with respect to the mining methods under evaluation at the time.
	Land & Resources Officer, Elder	January 31, 2019	Provide an update to leadership regarding: the finalization of the Project Description for submission to the CNSC and the Province of Saskatchewan to initiate the environmental assessment of the Wheeler River Project; provide an overview of the details of the pending environmental assessment submission; discuss future opportunities

Indigenous Community	Organization or Individual	Date	Summary of Engagement
Pinehouse Kineepik Métis Local	Local President, community councillors, local community members, and Business Development Corporation	September 7, 2016	Following a community meal, introductory presentations on Denison Mines, the company and its Wheeler River Project were provided to those in attendance. These presentations were followed by a Question and Answer session. This session was followed by a presentation to Denison from Pinehouse Business North focused on their current capabilities.
	Local President, Community Councillor	November 29, 2016	Discussed upcoming activities at the Wheeler project and how best to obtain and incorporate community Indigenous Knowledge into the 2017 environmental baseline data collection. In addition, spoke about potential training and employment opportunities with Denison's exploration activities.
	Local President, Community representatives, Business Development Corporation	September 6, 2017	Provide the community Leadership with an update on the development of the Wheeler River project
	Local President, Community Representative	November 3, 2017	Discussions regarding maintaining the strong relationship developed to date between Pinehouse and Denison.
	Local community members	January 16, 2018	Held a community workshop in Pinehouse. The workshop was completed with participants at the meeting to help identify (1) the most effective mine access route from the existing public highway to the project, (2) the pros and/or cons with respect to which lake would be the most appropriate lake to select in terms of discharging treated effluent once the mine was operational and, (3) the pros and/or cons the community saw with respect to the mining methods under evaluation at the time.
	Local President	February 1, 2019	Provide an update to leadership regarding: the finalization of the Project Description for submission to the CNSC and the Province of Saskatchewan to initiate the environmental assessment of the Wheeler River Project; provide an overview of the details of the pending environmental assessment submission

Indigenous Community	Organization or Individual	Date	Summary of Engagement
Beauval Sipishik Métis Local	Local President and representatives, local community members	December 6, 2016	Following a community meal, introductory presentations on Denison Mines, the company and its Wheeler River Project were provided to those in attendance. These presentations were followed by a Question and Answer session.
	Local community members	January 18, 2018	Held a community workshop in Beauval. A workshop was completed with participants at the meeting to help identify (1) the most effective mine access route from the existing public highway to the project, (2) the pros and/or cons with respect to which lake would be the most appropriate lake to select in terms of discharging treated effluent once the mine was operational and, (3) the pros and/or cons the community saw with respect to the mining methods under evaluation at the time.
A La Baie Métis Local	Local representatives, and local community members	December 7, 2016	Following a coffee and snacks, introductory presentations on Denison Mines, the company and its Wheeler River Project were provided to those in attendance. These presentations were followed by a Question and Answer session.
	Local community members	January 17, 2018	Held a community workshop in Ile a La Crosse. The workshop was completed with participants at the meeting to help identify (1) the most effective mine access route from the existing public highway to the project, (2) the pros and/or cons with respect to which lake would be the most appropriate lake to select in terms of discharging treated effluent once the mine was operational and, (3) the pros and/or cons the community saw with respect to the mining methods under evaluation at the time.
	High School Students and Teachers	May, 2018	Denison Geologists hosted a booth at the high school job fair, providing advice to high school students on the career opportunities in the mining and exploration industries.

Note: Since 2016, additional engagement has been completed via letters, emails, and phone calls.

Early and frequent engagement also fostered the development of a positive, mutually respectful relationship between Denison and the community leadership and members at large. It has allowed the Denison team to solicit feedback on aspects of the Project engineering early enough in the design phase of the Project such that this feedback could be integrated into the designs.

Some examples of successes achieved with Indigenous communities as a result of Denison's commitment to early and effective engagement are listed below in Section 8.2.1.

8.2.1 Achievements

8.2.1.1 Memorandums of Understanding

In order to formalize Denison's commitment to its local Indigenous communities (and their associated non-indigenous communities), Memorandums of Understanding (MOU) have been signed between Denison and:

- English River First Nation;
- Kineepik Métis Local and the community of Pinehouse;
- A La Baie Métis Local 21 and the community of Ile a la Crosse; and
- Sipisishik Métis Local 37 and the community of Beauval.

These non-binding MOUs formalize the signing parties' intent to work together in a spirit of mutual respect to cooperate in order to collectively identify practical means by which to avoid, mitigate, or otherwise address potential impacts of the Project upon the exercise of the indigenous rights, treaty rights, and interests. In addition, the MOUs formalize the signing parties' intent to work together regarding the benefits that will flow from the Project, provide a process for continued Project engagement and information-sharing about the project and establishes a relationship to identify business, employment and training opportunities for the parties with respect to the Project.

8.2.1.2 Integration of Indigenous Knowledge

Indigenous knowledge (IK) has been incorporated into the early design stages of the Project.

English River First Nation provided their IK map to Denison along with the permission to use it. Denison provided the map to consultants responsible for the collection of the baseline data prior to the development and initiation of these studies in 2016. This allowed Denison's consultants to incorporate English River First Nation IK data into the early designs of their field programs. More recent IK data has been received from Pinehouse Kineepik Métis Local 9, and this IK, along with that from English River First Nation, will be incorporated into the design of all subsequent baseline programs, the selection of VCs and ultimately, the Environmental Impact Statement. In addition, Indigenous field support staff worked closely with consultants during baseline field programs whenever possible, which, in Denison's experience, also provides a valuable Indigenous worldview when undertaking the supporting activities for the eventual EIS preparation.

Knowledge from Indigenous community members was also included in the Project design and influenced the selection of access road alignments, mining method, and proposed treated effluent discharge location. Engineering options developed as part of the prefeasibility study were taken to the Indigenous communities and discussed in focussed workshops. Project design options under the following three topics where discussed:

- Preferred access road routing to the site from Highway 914. Three different options analyzed in the prefeasibility engineering studies were presented.
- Preferred surface water course, to be used for the discharge of treated effluent associated with the proposed Project: six options that were shortlisted as a result of the hydrological and biological data collection were presented.
- Two mining methods under consideration for the Project were presented.

Participants at these workshops consisted of general members of the public (divided into groups of Elders and youth) as well as high school students who were specifically invited to the workshops through each school's administration.

Each group was led through a series of slides explaining the options within all three of the topic areas. Participants were then asked to identify the pros and cons of each of the options within the three topics. The participants were specifically asked to consider these pros and cons from their perspective and backgrounds. In all three topics discussed at the workshop, the options identified by the Indigenous communities as carrying the highest number of pros were ultimately chosen as the preferred options to advance through the Project's Prefeasibility Study (Denison 2018). Denison's work to collect and integrate IK into the Project design will continue as the Project design is refined through feasibility and detailed design stages and as the regulatory process advances. Updates on any new and continued integration of IK will be included in updates to the IER and the environmental impact statement (EIS).

8.2.2 Summary of Questions and Feedback from Indigenous Engagement

All questions and answers provided during the community engagement sessions as well as one set of written questions provided to Denison by two residents of Beauval have been recorded and captured by Denison (Table 8.3). The themes arising out of many of the engagement sessions generally followed two main areas: economic development opportunities for northerners and environmental protection associated with the eventual operation of the Project.

Table 8.3: Summary of Project Questions and Feedback from Indigenous Groups

Date	Type of Meeting	Question or Feedback	Denison Response
English River First Nation			
27-Jul-16	Community Meeting	Band Asking for a monetary agreement based on percentage	Denison recorded the request
		Request to see results of environmental studies	The environmental work is just starting; our consultants have been mandated to maximize northern employment.
		Request for employment, including drilling and environmental disciplines. Insistence on hiring now.	We share benefits between communities and look for opportunities to hire northerners.
		How much money have you and your investors made so far?	We have made none; our investors may have made some, but likely very little. We, and they, are investing for the future.
		Specific questions from Marius Paul regarding safety, cleanup, funding, taxes, health & safety, emergency cleanup, tailings, long-term contamination, weapons, environmental impact, pollution, worker mortality,	Written answers would be provided to all questions given that they were provided in writing as well as verbally.
			The government does not allow Canadian uranium to be used for nuclear weapons.
		Concern about ongoing access to the Wheeler River; and protection of whitefish spawning and moose/caribou calving areas. Some changes to the landscape take time to manifest.	Denison recorded the concern.
		Will the project be sold to another company?	Denison plans to stay with the project throughout production as the Operator.
		Noted that a road will be required between McArthur River and Cigar lake to transport the ore. The province will come to the people for approval, but Province is likely to do it anyway.	This road is key for the Gryphon deposit. Without that road the Gryphon project may not be viable.
		We need an agreement that benefits us ahead of the mine or the government.	We understand. As a small example, Denison has switched its grocery supplier from La Ronge to the ERFN store at Beauval Forks.

Date	Type of Meeting	Question or Feedback	Denison Response
03-May-18	Community Workshop	The Chief outlined some historical and cultural considerations. Insisting that ERFN is the only community that should benefit. Denison does not need to speak with any other communities about the project. You don't need MOUs with anyone but us.	We have your traditional land use map posted at camp and are using it to help steer the project.
		People want to work. What types of jobs will be available? What can Denison do to help build capacity in elementary and middle school students?	Our hiring priorities are from here.
			Initially, environmental or geological technicians. For technical positions, they need math and science skills. For management positions, the same plus experience.
			We're open to scholarship programs.
		Would like a resident elder at site.	Denison noted the request.
		Concern about additional impact to Russell Lake; there are already many cabins on that lake.	The cumulative effect will be considered in the environmental assessment.
		If you sell or merge, what happens to the contracts?	The buyer would take over the contracts previously established.
		Questions about the ISR mining method	The mining method was explained and the environmental protection measures that come with Denison's planned application of the method.
		Could you power the mine using solar and wind? ERFN has considered power generation as an economic development opportunity.	Would probably need grid power for the base load; solar and wind could be supplemental sources. If ERFN chose to generate, we would be open to buying power.
		Is there cell service at the site?	With a booster, or on a high hill coverage from the Key Lake cell tower can be obtained.
		We want more ERFN people being trained in the drill helper program.	Denison noted the comment.

Date	Type of Meeting	Question or Feedback	Denison Response
Kineepik Métis Local / Pinehouse Lake			
07-Sep-16	Community Meeting	What are environmental baseline studies are being completed?	Local and regional data is being collected. Denison is also hoping to use existing data from Cameco's Millennium project and the provincial government. Cumulative Effects Monitoring is part of the monitoring that is needed as well.
		We as a community want to start to understand the science involved so we can create local capacity – our area will always have commodities and mining and require services.	Denison is happy to work with the community to help them develop capacity.
		How do current markets affect your decisions?	They are very important to our decisions. We expect prices to be better by 2025 when we start production.
		What is Denison's market cap?	About $370 million. If the price was $55/lb, our market cap could be as high as $1.5 billion.
		Where does your revenue come from?	Some from toll milling Cigar Lake ore at McClean Lake., and some from our environmental services division. A little from managing Uranium Participation Corp. We have a 25% interest in GoviEx Uranium, and 12% in Skyharbour Resources.
16-Jan-18	Community Workshop	What is a shareholder and how do I become one?	Denison explained to process of how to purchase shares in a public company. Noting there is risk of losing money as well.
		Discussion on price and markets.	
		How would you get Gryphon ore to surface? Technical questions about ground conditions and mining method.	Skipped as rock up a conventional mine shaft, not pumped as slurry.
			Gryphon Ore is in hard basement rock; no freezing necessary the ground conditions are very good.
		Cost of ISR vs. jet boring	ISR is much cheaper; too deep for jet boring from surface. ISR only works on some ore bodies. You can't use it on the Gryphon deposit as we understand the technology today.

Date	Type of Meeting	Question or Feedback	Denison Response
		How do you treat tailings	There are no tailings produced with ISR.
		Need for independent water sampling program alongside of the company's sampling program.	Governments require independent sampling for the State of the Environment Report every five years. Environment Canada requires independent Environmental Effects Monitoring every three years.
		We never get this independent information	Part of the MOU process is to establish what information the community wants, so as to allow Denison to provide it to the community.
		Can you prove there is no long-range impact – that cumulative effects are zero.	Through the environmental assessment process, we expect to prove that the Project will be below guidelines and that there is no cumulative effect in the regional assessment area. Cumulative Effects Monitoring is usually the government's responsibility; however, we will need to address the issue of potential cumulative effects as part of the environmental assessment. We do not believe the project will negatively affect tourism activities in the region.
		At what point is tourism affected?	
A La Baie Métis / Ile a la Crosse			
07-Dec-16	Community Engagement	Why hire drillers from BC when there are drillers in La Ronge?	Hy-Tech hires locally and has a shop in Saskatoon. Local companies sometimes do not bid on the job. It's sometimes a financial decision.
		Requested copy of feasibility study	It will be public when it is completed.
		Will you present to schools on future jobs?	Denison would be happy to do so.
		How are you financed?	We seek investors from global capital markets; we get a portion of revenue from McClean Lake mill and our environmental services division.
		How much are you investing in the north?	We're in the early stages and trying to invest as much as we can in the north.
		How can this project be feasible given recent shutdowns?	We are planning for production when prices rise again. The world is moving towards more nuclear energy.

Date	Type of Meeting	Question or Feedback	Denison Response
		We are developing a goods and services database of northern businesses.	We're encouraged to hear that and would welcome the opportunity to receive a copy.
		Is this consultation?	Formal consultations will start when the project description is written, and the environmental assessment starts. We are trying to be proactive.
		Can we see the EA before it goes to government?	The process will be interactive with the communities, so you will have opportunities to see it and make comments during that process.
		We would like Sakitawak Development Corporation to be involved in mine development and operation.	Hopefully we can work something out as we go forward.
		We would like to have northerners work with your human resources people on hiring.	So far we only need drillers. We can train driller helpers. Environmental sampling is part-time. We are at early stages of developing the project.
		One attendee spoke of his changed attitude to uranium mining and nuclear power – He is now in full support of the industry stating he has seen a lot of jobs go to northerners as a result of the uranium mines in northern Saskatchewan.	Denison thanked him for his support.
		Any Impact Management Agreement should be made with the whole north, not just specific communities. It puts the others at a disadvantage.	That's the next stage of discussions. While it could be much easier for the company, it is also a challenging proposition.
		We need a north-wide fund to draw from.	
		Are there still investment possibilities for First Nations, development corporations or individuals?	We already have two other partners, but the door is never closed for investment.
		Why not process ore at the closer Key Lake mill?	Our share of the ore is expected to go to McClean Lake, which we part-own. Cameco may take their 30% to Key Lake. Each company can decide what to do with their portion of the ore.

Date	Type of Meeting	Question or Feedback	Denison Response
17-Jan-18	Community Workshop	Concern that this is engagement, not duty to consult.	Denison was in the community to gather input from the members to help inform the project design and continue to build a relationship with the communities.
		What will be left behind at the site after the mine is closed?	Probably there will be a decommissioned landfill at site but not much more than that. Almost everything is taken off site.
		Concern that the Métis Nation (Region) was not formally invited to be part of the MOU. Students need to understand what a MOU is.	The MOU names the La Baie Métis Local and the community and has been discussed with representatives of the Local. The MOU is a commitment to talk and work together for mutual support in the areas of environmental sustainability, education, employment and training, business opportunities and community investment.
		Concern about who the agreements will be with.	
		Again, white people telling us what they want to do. Would like to hear from the Serpent River First Nation (Elliot Lake).	This is a dialogue; we want your input. Denison is considering having local community liaison people added to the team as the project advances.
		The students need to know this information.	Denison agrees, that is why we invited them to be a part of this workshop and why they are here.
		Are the jobs transferable to the community?	Most, if not all, of the trades needed are transferable across the country. Other more specific mining jobs are strictly mining-related. It's a risk you take depending on what training you select.
		Any news on the McArthur - Cigar Lake road?	We have met with the province. If the road is not built, the Gryphon component of the project is unlikely to go ahead.
		When will you sign a surface lease agreement?	After the environmental assessment is successfully completed. Before construction begins.
		Northerners can supply a lot of goods and services. Look at Sakitawak Development Corp.	We agree. One of the components of the MOU is to help identify these opportunities.

Date	Type of Meeting	Question or Feedback	Denison Response
		Should work with local people on culture and climate change.	Denison is happy to do that. We have English River's Traditional Territory map. and have asked for similar information if available from Pinehouse, Ile a la Crosse and Beauval.
		Sipishik Métis / Beauval	
06-Dec-16	Community Meeting	Our local post plant could produce core boxes	Currently these are supplied from La Ronge.
			We are in communication with KCDC on the topic of career development.
		What jobs are and will be available?	Drillers are the main employment opportunity at this stage of the project. Geologists and environmental specialists are also going to be needed. At the feasibility stage, also need additional safety people. There are only about 10-12 people on site at this stage. Workers to build roads, power lines etc. will be needed once construction starts.
		Do you have a HR department?	Yes
		Need for a more sophisticated human resource development strategy to attract high school students into some of the careers in mining.	Denison noted the comment.
		There's still a trust gap between development and peoples' relationship to the land. It's time to build environmental monitoring liaisons to help build trust.	Denison noted the comment.
		To help develop opportunities, Beauval has Northwest Communities (NWC), Primrose Lake Economic development Corp (PLEDCO), the resources of the Gabriel Dumont Institute (GDIO) for apprenticeship training.	Denison noted the comment and welcomed the opportunity to work with these groups as the project advanced.
		What is the potential for you to invest in our communities?	The next stage of discussion is to explore those options as the project moves forward.

Date	Type of Meeting	Question or Feedback	Denison Response
		Could we invest in, say, heavy equipment?	
		We need to plan properly to get a piece of the action.	We will keep you informed as to what we're doing in order to help you prepare.
18-Jan-18	Community Workshop	Questions about hiring drillers, community response and logistics of accessing site.	Hired 2 driller helper trainees. One from Cole Bay and one from Pinehouse. Hy-Tech Drilling is the company running the training program.
		Preference to avoid spawning areas and general stress to fish and animals when choosing a discharge point. Preference to discharge into swift-flowing water at a point that allows flow through the entire river system. Preference not to discharge directly to Russell Lake.	Denison noted comments.
		Questions about the ISR technique and directional drilling. Glad to hear of closed-loop system, no waste water and no tailings.	Comments were noted by Denison.
		Concern that ore bodies may be under lakes	Denison indicated that both orebodies are under land approximately 500 metres below surface.
		How many employees will be needed for the ISR mining method.	Denison indicated about 100 to 150.

8.3 Planned Indigenous Engagement Activities

The Indigenous engagement activities initiated by Denison in 2016 are part of an ongoing commitment by Denison to actively engage both Indigenous and non-Indigenous communities throughout all phases of the Project. In addition, Denison's ongoing engagement program honours the commitments outlined in the MOUs.

The ongoing engagement schedule is also a product of the results of the previous engagement sessions. Denison has agreed to visit the Indigenous communities and provide project updates as the development activities advance. It is currently envisioned that community meetings will be held at least once per year with the Patuanak Métis, the Kineepik Métis, the A la Baie Métis Local 21 Sipishik Métis Local 37, English River First Nation, along with their associated municipal communities. Denison will meet more frequently if desired and warranted.

Denison is also committed to meeting with the leadership of each of these Indigenous communities as and when they make a request to do so. In addition, Denison has a standing commitment to respond to any enquires to meet and/or make presentations on the Project to informal or formalized groups.

As the project advances, Denison will continue to utilize local community radio stations, social media as well as print media that may reach appropriate Indigenous audiences.

In accordance with current guidance documents and illustrated in Table 8.4, Denison will undertake engagement activities during the Project's stages as outlined below.

Table 8.4: General Engagement Schedule

<table>
<tr><th>Project Evolution</th><th>Indigenous Groups Engaged</th><th>Coordination to include Federal and Provincial Governments</th><th>Rationale</th></tr>
<tr><td>Prefeasibility engineering and environmental baseline collection</td><td>Indigenous communities potentially affected and interested in the Project</td><td rowspan="3">Denison will contact federal and provincial governments to coordinate attendance at engagement events wherever possible</td><td>Allows for Indigenous communities to be engaged at earliest stage of the Project, allows for adjustments to baseline collection if needed</td></tr>
<tr><td>Initiation of environmental impact assessment – submission of Project Description</td><td>Indigenous communities potentially affected and interested in the Project</td><td>Allows continued engagement</td></tr>
<tr><td>Throughout completion of environmental impact assessment</td><td>Indigenous communities potentially affected and interested in the Project</td><td>Allows continued engagement throughout entire process</td></tr>
</table>

Detailed schedules and work plans for engagements with be developed in consultation with the various Indigenous groups at the appropriate stage of the Project's evolution. As referred to above in Table 8.4, some engagements will be mandatory requirements of the EIA process and as such, the scheduling of those sessions may be determined by the regulatory schedule. Denison and individual Indigenous communities will work together to propose an appropriate schedule for follow-up discussions. In general, it has been agreed between each of the Indigenous communities and Denison to attempt to hold update meetings every quarter or half year with leadership representatives and an open invitation for each group to request a meeting with Denison as and when desired.

Denison will include the CNSC and the Province of Saskatchewan in the planning and participation within ongoing engagement activities. Denison's Community Social Responsibility Manager will contact the CNSC Project Officer once formal and specific engagement plans have been developed for the various stages of the Project.

It is expected that a more formalized schedule will be developed as part of the EA process.

8.3.1 Ongoing Engagement – Specific Topics for Upcoming Engagement

In addition to Project updates, a number of specific topics will be the focus of ongoing engagement as Denison prepares the EIS. The anticipated topics for the foreseeable future are:

- Contemporary traditional land use activities occurring in proximity to the Project and potential impacts of taking up the land associated with the surface lease during construction and operation.
- Identification of both biophysical and human environment VCs.
- Traditional / contemporary local names for features such as lakes and other geographic areas or features.

Other topics will likely arise as outcomes of the engagement activities with Indigenous communities present themselves and as the Project advances.

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Appendix A:
Table of Concordance with Prescribed Information for the Description of a Designated Project Regulations

Table of Concordance with Prescribed Information for the Description of a Designated Project Regulations

Section in *Prescribed Information for the Description of a Designated Project Regulations*		Wheeler Technical Proposal and Project Description Document Section
General Information	1 The project's name, nature and proposed location.	Section 1 Introduction
	2 The proponent's name and contact information and the name and contact information of their primary representative for the purpose of the description of the project.	Section 1.1 Project Proponent
	3 A description of and the results of any consultations undertaken with any jurisdictions and other parties including Aboriginal peoples and the public.	Summary in Section 1.5 Engagement Details in Section 7 Stakeholder Engagement and Section 8 Engagement with Indigenous Communities
	4 The environmental assessment and regulatory requirements of other jurisdictions.	Section 1.3.1.2 Provincial
	4.1 A description of any environmental study that is being or has been conducted of the region where the project is to be carried out.	Section 1.4 Regional Studies
Project Information	5 A description of the project's context and objectives.	Section 2.1.4 Objective and Overview of Wheeler In Situ Recovery In addition, context on the Project components and activities is provided in Section 2, context on the Project's location is in Section 3, and context on the existing biophysical and human environment is provided in Section 5
	6 The provisions in the schedule to the Regulations Designating Physical Activities describing the project in whole or in part.	Section 1.3.1.1 Federal
	7 A description of the physical works that are related to the project including their purpose, size and capacity.	Section 2.3 Project Components
	8 The anticipated production capacity of the project and a description of the production processes to be used, the associated infrastructure and any permanent or temporary structures.	Section 2.3 Project Components and Section 2.4 Project Activities and Schedule
	9 A description of all activities to be performed in relation to the project.	Section 2.3 Project Components and 2.4 Project Activities and Schedule
	10 A description of any waste that is likely to be generated during any phase of the project and of a plan to manage that waste.	Section 2.3 Project Components and Section 2.4 Project Activities and Schedule

Section in *Prescribed Information for the Description of a Designated Project Regulations*		Wheeler Technical Proposal and Project Description Document Section
	11 A description of the anticipated phases of and the schedule for the project's construction, operation, decommissioning and abandonment.	Section 2.4 Project Activities and Schedule
Project Location Information	12 A description of the project's location, including (a) its geographic coordinates;	Section 3 Project Location
	(b) site maps produced at an appropriate scale in order to determine the project's overall location and the spatial relationship of the project components;	Section 2 Project Information, including Figure 2.7 and Figure 2.8
		Section 3 Project Location, including Figure 3.1, Figure 3.2, Figure 3.3, Figure 3.4, Figure 3.5, Figure 3.6 and Figure 3.7
	(c) the legal description of land to be used for the project, including the title, deed or document and any authorization relating to a water lot;	Section 2.2.2 Land Tenure
	(d) the project's proximity to any permanent, seasonal or temporary residences;	Section 3 Project Location, including Table 3.1, Table 3.2, Figure 3.2 and Figure 3.4
	(e) the project's proximity to reserves, traditional territories as well as lands and resources currently used for traditional purposes by Aboriginal peoples; and	Section 3 Project Location, including Table 3.3, Table 3.2, Figure 3.2, Figure 3.4 and Figure 3.5
		Section 5.7.3 Current Traditional Land Use by Indigenous , including Figure 5.7 and Figure 5.8
	(f) the project's proximity to any federal lands.	Section 3 Project Location, including Table 3.3 and Figure 3.5
Federal Involvement	13 A description of any financial support that federal authorities are, or may be, providing to the project.	Section 4 Federal Involvement Federal Involvement
	14 A description of any federal land that may be used for the purpose of carrying out the project.	Section 4 Federal Involvement Federal Involvement
	15 A list of the permits, licences or other authorizations that may be required under any Act of Parliament to carry out the project.	Section 1.3.3 Licensing and Permitting
Environmental Effects	16 A description of the physical and biological setting.	Section 5 Existing Environment
	17 A description of any changes that may be caused, as a result of carrying out the project, to (a) fish and fish habitat as defined in subsection 2(1) of the Fisheries Act;	Section 6.1.3.1 Fish and Fish Habitat (see 6.1.1.4 Aquatic Environment for supporting information)

Section in *Prescribed Information for the Description of a Designated Project Regulations*		Wheeler Technical Proposal and Project Description Document Section
	(b) aquatic species, as defined in subsection 2(1) of the Species at Risk Act; and	Section 6.1.3.2 Aquatic Species
	(c) migratory birds, as defined in subsection 2(1) of the Migratory Birds Convention Act, 1994.	Section 6.1.3.3 Migratory Birds
	18 A description of any changes to the environment that may occur, as a result of carrying out the project, on federal lands, in a province other than the province in which the project is proposed to be carried out or outside of Canada.	Section 6.1.3.4 Changes to the Environment on Federal Lands, in a Province other than Saskatchewan, or outside Canada
	19 Information on the effects on Aboriginal peoples of any changes to the environment that may be caused as a result of carrying out the project, including effects on health and socioeconomic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.	Section 6.1.3.5 Effects on Indigenous People (see 6.1.2 Human Environment for supporting information)
Summary	20 A summary of the information required under Sections 1 to 19.	Summary – English version Page ii
		Summary – French version Page x
		Summary – Dene version Page xx
		Summary – Cree version Page xxviii