Preliminary Economic Assessment for the Tthe Heldeth Túé (J Zone) Deposit, Waterbury Lake Property, Northern Saskatchewan, Canada

Report Prepared for
Denison Mines Corp.

Effective date: **October 30, 2020**
Signature date: **December 23, 2020**

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1.1 Executive Summary

The Waterbury Lake property is located within the eastern part of the Athabasca Basin in Northern Saskatchewan, which is within Treaty 10, in the Nuhenéné / Athabasca Denesųłiné territory, and in Métis Northern Region 1 within the Métis Homeland. Points North Landing, a privately-owned service centre with accommodations and an airfield, is located near the eastern edge of the property. Several uranium deposits are located nearby including the Roughrider, McClean Lake, Midwest, and Midwest A deposits. The "Tthe Heldeth Túé" (formerly known as J Zone) and Huskie uranium deposits are located within the property near its eastern edge, of which the former is discussed in detail within this report.

Denison Mines Corp. ("Denison" or the "Company") understands and is respectful of the role the Ya'thi Néné Lands and Resources Office ("YNLR") facilitates in representing the Athabasca Basin residents and communities of the Nuhenéné, guided by the knowledge, traditions, and ambitions of the Athabasca residents for themselves and the Athabasca Denesųłiné territory. Working together with Denison, the YNLR reviewed the J Zone Conceptual Mining Study completed internally by Denison prior to the initiation of the PEA and recommended that the J Zone deposit be renamed the "Tthe Heldeth Túé" deposit. Denison has agreed with this recommendation and has announced the renaming of the deposit going forward accordingly.

The Waterbury Lake property is owned through partnership by Denison through its subsidiary, Denison Waterbury Corp. ("DWC"), and Korea Waterbury Uranium Limited Partnership ("KWULP"). Denison is the operator of the project. As of November 30, 2020, Denison will hold a 66.90% ownership interest and KWULP will hold a 33.10% ownership interest. This is the basis utilized for the economic model produced for this study.

In August 2013, Denison prepared a conceptual study on the Tthe Heldeth Túé deposit located on the Waterbury Lake project that assessed several mining options for the exploitation of the Tthe Heldeth Túé deposit. None of the mining alternatives evaluated in the 2013 study were found to be economically viable at that time.

On September 24, 2018, Denison released the results of the Pre-feasibility Study ("PFS") for its flagship Wheeler River uranium project in northern Saskatchewan. The PFS was completed in accordance with NI 43-101 and is highlighted by the selection of the in-situ recovery ("ISR") mining method for the development of the unconformity-hosted Phoenix deposit, with highly attractive operating costs and low initial pre-production capital costs. The complete technical report titled "Pre-feasibility Study for the Wheeler River Uranium Project, Saskatchewan, Canada", with an effective date of September 24, 2018, supporting the disclosure of the PFS results was made available on Denison's website as well as SEDAR and EDGAR on October 30, 2018. Considering the Tthe Heldeth Túé is also an unconformity-hosted uranium deposit, Denison recommended an initial concept level evaluation of the ISR mining method for the Tthe Heldeth Túé deposit that was completed internally in 2020. Results of the conceptual evaluation warranted progressing the project to a Preliminary Economic Assessment. At present no mining studies have been completed to assess the Huskie deposit.

Engcomp has prepared this Preliminary Economic Assessment (“PEA”) study for Denison with the objective of demonstrating economic viability under reasonable project execution and operational assumptions. The report has found that ISR mining is an economically viable approach for the exploitation of the Tthe Heldeth Túé deposit as considered. Only the Tthe Heldeth Túé East pod is assessed as part of this report. The Tthe Heldeth Túé West pod has not been included as part of the current study. The total mineral resource estimate for the Tthe Heldeth Túé deposit remains unchanged from the mineral resource statement provided in the NI 43-101 technical report titled *“Technical Report with an Updated Mineral Resource Estimate for the Waterbury Lake Property, Northern Saskatchewan, Canada – Mineral Resource Estimate” (SRK, 2018)*”, dated December 21, 2018, prepared by Serdar Donmez, P.Geo. E.I.T., Denison Mines Corp, Dale Verran, P. Geo. Pr. Sci.Nat., Denison Mines Corp., Paul Burry, P.Geo., Denison Mines Corp., Oy Leuangthong, P.Eng, SRK Consulting (Canada) Inc., Cliff Revering, P.Eng, SRK Consulting (Canada) Inc, Allan Armitage, P.Geo, SGS Geostat, Allan Sexton, P.Geo, GeoVector Management Inc.

The Mineral Resource estimate for the Waterbury Property is summarized in Table 1-1. Only the recovery of the Tthe Heldeth Túé deposit was evaluated in this PEA.

Table 1-1: Waterbury Lake Property Mineral Resource Estimate Summary with an effective date of October 17, 2018.

Deposit	Category	Tonnage (kt)	Grade (% U_3O_8)	Contained Metal (x1000 lbs. U_3O_8)
Tthe Heldeth Túé	Indicated	291	2.00	12,810
Huskie	Inferred	268	0.96	5,687

Notes:

1. Mineral resources are not mineral reserves and have not demonstrated economic viability.
2. Mineral resources are reported at a cut-off grade of 0.1% U_3O_8
3. Denison’s share of the Waterbury Lake project will be 66.90% as of November 30, 2020.
4. The mineral resource estimate for the Tthe Heldeth Túé deposit is unchanged from the September 6, 2013 estimate as detailed in the NI 43-101 technical report entitled “Mineral Resource Estimate on the J Zone Uranium Deposit, Waterbury Lake Property, dated September 6, 2013, by Allan Armitage, Ph.D., P.Geo, and Alan Sexton, M.Sc., P.Geo of GeoVector Management Inc.”
5. The audited Mineral Resource Statement for the Huskie deposit in the Waterbury Lake Uranium was prepared by Dr. Oy Leuangthong, PEng (PEO#90563867) and Mr. Cliff Revering (APGS#9764). Dr. Leuangthong and Mr. Revering are independent qualified persons as this term is defined in National Instrument 43-101. The effective date of the audited Mineral Resource Statement is October 17, 2018.

1.2 Technical Summary

1.2.1 Property Description and Location

The Waterbury Lake property is located within the eastern part of the Athabasca Basin in Northern Saskatchewan, which is within Treaty 10, in Nuhenéné / Athabasca Denesųłiné territory, and in Métis Northern Region 1 within the Métis Homeland. The mineral dispositions of the project are within the 1:50,000 NTS topographic sheets 64L/05, 74I/01 and 74I/08. Points North Landing, a privately-owned service centre with accommodations and an airfield, is located near the eastern edge of the property. Several uranium deposits are located nearby including the Roughrider, McClean Lake, Midwest, and Midwest A deposits. The Tthe Heldeth Túé and Huskie Zone deposits are located within the property near its eastern edge. The project dispositions are approximately 750 km by air north of Saskatoon and about 420 km by road north of the town of La Ronge.

1.2.2 Ownership

The Waterbury Lake property is owned by the Waterbury Lake Uranium Limited Partnership (“WLULP”), of which Denison Waterbury Corp. (a wholly-owned subsidiary of Denison) owns 66.90% and Korea Waterbury Lake Uranium Limited Partnership (“KWULP”) owns 33.10%. KWULP is comprised of a consortium of investors, in which Korea Hydro & Nuclear Power (“KHNP”) holds a majority position. KHNP is headquartered in Gyeongju, South Korea and is the country’s largest electrical power generation company, operating 24 nuclear power reactors and supplying approximately one-quarter of the country’s electricity. KHNP is also a significant shareholder in Denison.

1.2.3 Geology and Mineralization

The Waterbury Lake property is located near the southeastern margin of the Athabasca Basin in the southwest part of the Churchill Structural Province of the Canadian Shield. The Athabasca Basin is a broad, closed, and elliptically shaped, cratonic basin with an area of 425 km east-west by 225 km north-south. The bedrock geology of the area consists of Archean and Paleoproterozoic gneisses unconformably overlain by flat-lying, unmetamorphosed sandstones and conglomerates of the mid-Proterozoic Athabasca Group. The property is located near the transition zone between two prominent litho-structural domains within the Precambrian basement, the Mudjatik Domain to the west and the Wollaston Domain to the east. The Mudjatik Domain is characterized by elliptical domes of Archean granitoid orthogenesis separated by keels of metavolcanic and metasedimentary rocks, whereas the Wollaston Domain is characterized by tight to isoclinal, northeasterly trending, doubly plunging folds developed in Paleoproterozoic metasedimentary rocks of the Wollaston Supergroup, which overlie Archean granitoid orthogenesis identical to those of the Mudjatik Domain. The area is cut by a major northeast-striking fault system of Hudsonian Age. The faults occur predominantly in the basement rocks but often extend up into the Athabasca Group due to several periods of post-depositional movement.

The basement beneath the Waterbury Lake project is comprised of approximately northeast-trending corridors of metasediments wrapping around orthogneissic domes and locally in the Discovery Bay trend an east-west trending corridor of metasediments bounded to the north and south by thick zones of orthogneiss that, based on interpretation of aeromagnetic images, may represent two large dome structures. Based on a review of the Wollaston Supergroup by Yeo and Delaney the metasediments and the orthogneiss domes are interpreted to be Paleoproterozoic and Archean in age, respectively (Yeo & Delaney, 2007).

The Tthe Heldeth Túé is hosted within an east-west trending faulted package of variably graphitic and pyritic metasediments bounded by orthogneiss to both the north and south. The pelitic metasedimentary assemblage, which ranges in thickness from 90 to 120 m and is moderately steep dipping to the north includes, from north to south, a roughly 50 m thick pelitic gneiss underlain by 20 m thick graphitic pelitic gneiss, underlain by a 10 to 15 m thick quartz-feldspar wedge underlain by 20 m thick graphitic pelitic gneiss, underlain by a 15 to 25 m thick pelitic gneiss, then back into a footwall orthogneiss. There are discontinuous offsets at the unconformity that range from a few metres to as much as ten metres.

The Tthe Heldeth Túé deposit is currently defined by 268 drill holes intersecting uranium mineralization over a combined east-west strike length of up to 700 m and a maximum north-south lateral width of 70 m. The deposit trends roughly east west (080°) in line with the metasedimentary corridor and cataclastic graphitic fault zone. A 45 m east-west intermittently mineralized zone occurs in the target area formerly known as Highland roughly separating the Tthe Heldeth Túé into two segments referred to as the eastern and western lenses which are defined over east-west strike lengths of 260 and 318 m, respectively. A thin zone of unconformity uranium mineralization occurs to the north of intermittently mineralized zone which is interpreted to represent a mineralized block that has been displaced northwards by faulting and is referred to as the mid lens.

Mineralization thickness varies widely throughout the Tthe Heldeth Túé and can range from tens of centimetres to over 19.5 m in vertical thickness. In cross section, Tthe Heldeth Túé mineralization is roughly trough shaped with a relatively thick central zone that corresponds with the interpreted location of the cataclasite and rapidly tapers out to the north and south. Locally, a particularly high-grade (upwards of 40% U_3O_8) but often thin lens of mineralization is present along the southern boundary of the metasedimentary corridor, as seen in holes WAT10-066, WAT10-071, WAT10-091, and WAT10-103. Ten-metre step out drill holes to the south from these high-grade holes have failed to intersect any mineralization, demonstrating the extremely discreet nature of mineralization.

Uranium mineralization is generally found within several metres of the unconformity at depth ranges of 195 to 230m below surface at the Tthe Heldeth Túé. Mineralization occurs in three distinct settings: (1) entirely hosted within the Athabasca sediments, (2) entirely within the metasedimentary gneisses or (3) straddling the boundary between them. A semi-continuous, thin zone of uranium mineralization has been intersected in occasional southern Tthe Heldeth Túé drill holes well below the main mineralized zone, separated by several metres of barren metasedimentary gneiss. This mineralized zone is informally termed the South-Side Lens and can host grades up to 3.70 % U_3O_8, as seen in drill hole WAT11-142.

The Huskie deposit is entirely hosted within competent basement rocks below the sub-Athabasca unconformity primarily within a faulted, graphite-bearing pelitic gneiss ("graphitic gneiss") which forms part of an east-west striking, northerly dipping package of metasedimentary rocks flanked to the north and south by granitic gneisses. The Athabasca Group sandstones that unconformably overlie the basement rocks are approximately 200 metres thick. The east-west trending faulted package of pelitic gneisses ranges in thickness from 40 to 60 metres and is moderately steep dipping to the north. There are discontinuous offsets at the unconformity that range from a few metres to as much as fourteen metres.

1.2.4 Mineral Processing and Metallurgical Testing

Mineral processing and metallurgical testing are partially based on data developed during test work performed in 2011 and additional composite leach testing to verify reagent consumable levels.

The 2011 test results were presented in the 2012 Technical Report for Fission Energy Corp. ("Fission") titled "Technical Report on the Waterbury Lake Uranium Project Including Resource Estimate on the J Zone Uranium Deposit, Waterbury Lake Property, Athabasca Basin, Northern Saskatchewan", dated February 29th, 2012 and revised on May 29th, 2012 by Armitage and Nowicki, which is filed on SEDAR under Fission's profile. As well, the updated 2018 report used this test data in the Denison report titled, "Technical Report with an Updated Mineral Resource Estimate for the Waterbury Lake Property, Northern Saskatchewan, Canada", dated December 21st, 2018 and prepared by Denison.

Additional test work was undertaken in 2020. Leaching tests to determine key ISR data such as optimum reagent addition rates at lower leaching temperatures (10 to 20 degrees Celsius) and expected Uranium Bearing Solution (UBS) head grade were conducted and the outcomes were used to drive reagent quantities.

Based on the estimated costs in the Wheeler River PFS (as of October 2018) for the construction and operation of the Phoenix ISR plant and additional necessary infrastructure, the initial costs estimated for a stand-alone process plant at Tthe Heldeth Túé are expected to approach the total estimated toll milling costs. Accordingly, It has been determined that the size of the deposit does not support a stand-alone process plant and therefore trucking the UBS to the McClean Lake Mill is the most economic means to extract this deposit. The limited metallurgical testing of the Tthe Heldeth Túé deposit and a review of the Roughrider PEA indicates that a UBS head grade of 7 g/l may be possible through enhanced permeability techniques commercially available. The metallurgical tests completed during the PEA indicate that approximately 27,000 tonnes of sulphuric acid will be required to leach the approximate 10 M lbs of U_3O_8 located within the Tthe Heldeth Túé East pod. Approximately 9,000 tonnes of hydrogen peroxide will be required. Lixiviant concentrations of 35 g/L hydrogen peroxide and 100 g/L of sulphuric acid have been estimated from metallurgical leach tests. Currently available data from metallurgical leach tests indicate no iron needs be added to the lixiviant.

1.2.5 Mineral Resource Estimates and Methodologies

1.2.5.1 Tthe Heldeth Túé

The mineral resource estimate for the Tthe Heldeth Túé deposit was prepared by Allan Armitage, Ph.D., P.Geo, and Alan Sexton, M.Sc., P.Geo of GeoVector Management Inc., filed on SEDAR as a NI 43-101 technical report titled "*Technical Report on the Mineral Resource Estimate on the J Zone Uranium Deposit, Waterbury Lake Property Located in the Athabasca Basin, Northern Saskatchewan*", dated September 6th, 2013 and incorporated into the 2018 technical report. Dr. Armitage and Mr. Sexton are independent Qualified Persons as defined by NI 43-101. Practices consistent with CIM (2005) were applied to the generation of the mineral resource estimate.

For the 2013 mineral resource estimate for the Tthe Heldeth Túé deposit, a grade control model or wireframe was constructed based generally on a cut-off grade of 0.03 to 0.05 % U_3O_8 which involved visually interpreting mineralized zones from cross sections using histograms of U_3O_8. 3D rings of mineralized intersections were made on each cross section and these were tied together to create a continuous wireframe resource model in Gemcom GEMS 6.5 software. The modeling exercise provided broad controls on the size and shape of the mineralized volume. Inverse distance squared interpolation restricted to a mineralized domain was used to estimate tonnes, density and U_3O_8 grades as well as gold, arsenic, cobalt, copper, molybdenum and nickel grades into the block model.

GeoVector estimated a range of resources at various U_3O_8 cut-off grades (COG) for the Tthe Heldeth Túé (Table 1-2). The current indicated resource is stated using a grade cut-off of 0.10% U_3O_8.

Using a base case COG of 0.10% U_3O_8 the Tthe Heldeth Túé deposit is currently estimated to contain an Indicated resource totaling 12,810,000 lbs based on 291,000 tonnes at an average grade of 2.00% U_3O_8 (100% basis).

The effective date of the Mineral Resource Estimate for Tthe Heldeth Túé is September 6th, 2013.

Table 1-2: Mineral Resource Estimate at various cut-off grades for the Tthe Heldeth Túé, dated September 6, 2013 (Armitage & Sexton, 2013).

Cut-off Grade (U_3O_8 %)	Tonnes	Specific Gravity	U_3O_8 (%) Grade	U_3O_8 (%) Lbs*
0.01 %	432,000	2.40	1.40	12,985,000
0.05 %	370,000	2.41	1.60	12,939,000
0.10 %	291,000	2.42	2.00	12,810,000
0.50 %	123,000	2.49	4.40	11,923,000
1.0 %	76,000	2.54	6.70	11,171,000
5.0 %	24,000	2.77	16.00	8,446,000
10 %	12,000	2.97	24.00	6,183,000
20 %	5,000	3.25	33.00	3,492,000

**100% Basis*

1.2.5.2 Huskie Deposit

The Huskie Deposit resource estimate was prepared by Denison and was audited and verified by SRK. SRK is satisfied that the mineral resources were estimated in conformity with the widely accepted CIM Estimation of Mineral Resource and Mineral Reserve Best Practices Guidelines. The mineral resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent mineral resource estimates. The mineral resources may also be affected by subsequent assessments of mining, environmental, processing, permitting, taxation, socio-economic, and other factors.

Table 1-3: Audited Mineral Resource Statement*, Huskie Deposit, Waterbury Lake Uranium Project, Saskatchewan, SRK Consulting (Canada) Inc., October 17, 2018.

Category	Zone	Tonnage (kt)	Grade (%U_3O_8)	Contained Metal (x1000 lbs. U_3O_8)
	Huskie 1	81	0.34	612
Inferred	Huskie 2	178	1.28	5,047
	Huskie 3	8	0.15	27
Total Inferred		268	0.96	5,687

1. Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates. Reported at mineral resource cut-off grade of 0.10% U_3O_8

1.2.6 Mineral Reserve Estimate

No pre-feasibility or feasibility studies have yet been completed to allow conversion of the mineral resources to mineral reserves. Consequently, no mineral reserves exist for the Waterbury Lake property at the present time

1.2.7 Mining Methods

The indicated Mineral Resource estimated for the PEA mine plan includes the Tthe Heldeth Túé East pod only and is estimated at 9.7 million pounds of U_3O_8 with an average grade of 2.49% over 178,000 tonnes as summarized in Table 1-4. The Potentially Recoverable Resource was prepared by Denison based on the mineral resources prepared by GeoVector applying a 0% grade cut-off typically utilized for ISR operations. The ISR process has been designed to a level appropriate for this PEA.

A small percentage of the Tthe Heldeth Túé East pod resource has not been included in the mine plan due to sterilization by freeze methods discussed in detail in later sections. Due to the geometry of the deposit and the nature of freeze technology applied to the deposit to allow for sufficient containment of mining fluid, the extreme western and easternmost portions of the deposit have not been considered in the Potentially Recoverable Resource. The collective resource attributed to sterilization is 206,180 lbs, representing 1.7% of the Tthe Heldeth Túé East pod.

Additionally, an 85% mining recovery factor was applied to the projected resource available for mining to account for sweep efficiencies and metallurgical recovery envisioned and deemed appropriate for the nature of the Tthe Heldeth Túé deposit. The mining recovery factor is a product of the metallurgical recovery and sweep efficiencies based on knowledge gained during the project development of the Phoenix deposit utilizing the ISR method. The sweep efficiency is defined as the percentage of mineralized rock in contact with the lixiviant as it circulates between the injection wells and surrounding recovery wells. The metallurgical recovery is determined by the amount and rate at which the uranium dissolves from the rock when in contact with the lixiviant.

Table 1-4: Tthe Heldeth Túé East Pod Projected Mine Production (0% Grade cut-off).

Deposit Category	Classification	Percentage	Tonnes	Pounds U_3O_8 (100% Basis)	Grade (% U_3O_8)
Tthe Heldeth Túé East Pod: In-Situ Resource	Indicated	100%	211,997	11,633,762	2.49%
Sterilized Resource	Indicated	100%	(2,980)	(206,180)	-
Tthe Heldeth Túé East Pod: Mineable Resource	Indicated	100%	209,017	11,427,582	-
Mining Recovery Factor		85%			
Projected Mine Production			177,664	9,713,445	2.49%

The foregoing is based upon estimated indicated mineral resources. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

In situ recovery (ISR), also known as solution mining, involves leaving the host rock in the ground and extracting the minerals from the deposit by dissolution using a series of drill holes serving as injection and recovery wells and a leaching solution (lixiviant) to recover the uranium bearing solution (UBS). Once recovered, the solution is transported to a mineral processing facility, where the uranium is recovered in much the same way as in any other uranium mill. Consequently, with ISR mining there is minimal surface disturbance and minimal tailings and waste rock generated.

Denison plans to mine the Tthe Heldeth Túé East pod deposit using the ISR extraction method with a low pH lixiviant. No mining of the Tthe Heldeth Túé West pod is contemplated at this time. This method is successfully used in global ISR operations in areas such as Kazakhstan, Australia and the United States. Uranium ISR uses the native groundwater in the deposit, which is fortified with a low pH solution and in most cases an oxidant. ISR operations require sufficient permeability of the ground to allow pumping solution through the deposit and allowing the solution to contact the mineral resource. Additional permeability testing was conducted in September of 2020 and the data demonstrated that the deposit and host rocks did in fact host the type of permeability required for ISR mining, but the data also showed that the permeability was lower than the Phoenix deposit and would require additional engineering controls be applied to meet the expected production rates. These elements have been incorporated into this study.

Wellfields are the groups of wells, installed and completed in the mineralized zones that are designed to effectively target delineated mineralization and reach the desired production goals. Mining of the Tthe Heldeth Túé East pod is proposed using a wellfield comprised of 184 wells at 7 m spacing arranged in a 5-spot pattern, with four injection wells around one recovery well.

Containment of the solution is a requirement in ISR operations to ensure recovery of the uranium and to minimize regional groundwater infiltration into the deposit and associated dilution of the mining solution. In typical ISR operations, this is normally achieved through natural clay or other impermeable geological layers. At Tthe Heldeth Túé, the basement rock below the deposit achieves this purpose but the sandstone formation which hosts and surrounds the deposit is not impermeable and is hydraulically connected to the regional groundwater system throughout the Athabasca Basin. As a result, in order to maintain containment, the entire deposit will be isolated by use of an artificial and impermeable freeze wall that will surround the deposit. The freeze wall will be established by drilling a series of cased holes from surface and along the perimeter of the deposit, and keyed into the basement rock. The freeze wall will be comprised of 92 holes planned at a 7 m spacing at the target depth of 200m and extend 30 m below the unconformity elevation. The freeze wall is planned to be drilled entirely from land on the peninsula on McMahon Lake which extends to the eastern portion of Tthe Heldeth Túé. Freeze holes will be angled out to surround the mining zone with the minimum drilling angle limited to 45º to reduce technical risk of drilling and installing the freeze holes. Circulation of a low temperature brine solution in the holes will remove heat from the ground, freezing the natural groundwater, and establishing an impermeable frozen wall around the deposit

Eight monitoring wells will be installed outside of the freeze wall to detect and remediate any excursion of lixiviant from the mining zone.

1.2.8 Recovery Methods

The size of the deposit does not support a stand-alone process plant. (Initial capital costs approaching toll milling costs). It is assumed that the UBS will be transported to McClean Lake in trucks utilizing specifically designed tanks for transportation. The trucks would return with necessary lixiviant to complete ISR mining at Tthe Heldeth Túé. The McClean Lake Mill is assumed to have all necessary infrastructure to process the UBS and provide the lixiviant except for the facilities to provide surge storage of UBS and lixiviant at both the Tthe Heldeth Túé site and at McClean Lake. These have been incorporated into the scope and costs of this study.

1.2.9 Production Schedule

Construction is expected to occur over approximately 2.5 years with the critical path to production being establishing the freeze wall to encapsulate the deposit. Total steady state annual production is estimated at 2.1 M lbs U_3O_8 per year with the figure and table below illustrating life of mine production. Production is expected to begin at 850,000 lbs in year one, ramping up to full production in years 2 through 5, with total production expected to be 9.7 Mlbs over a 6 period (100% basis).

Table 1-5: Tthe Heldeth Túé East Pod Deposit Projected Mine Production.

Tthe Heldeth Túé East Pod Projected Mine Production (1)							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Mined tonnes	15,599	38,994	38,994	38,994	38,994	6,089	177,664
Grade	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Mine production (millions lbs U_3O_8)	0.853	2.132	2.132	2.132	2.132	0.333	9.713

(1) Numbers may not add due to rounding

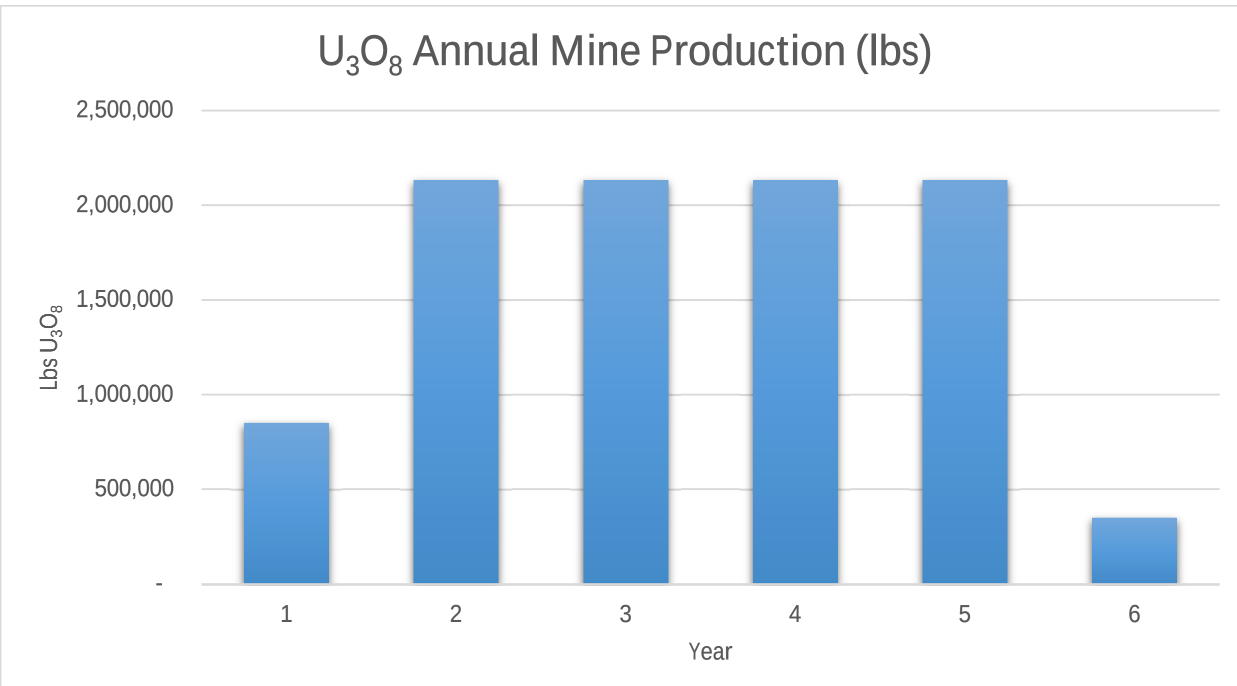


Figure 1-1: Tthe Heldeth Túé East Pod Projected Mine Production by Year.

1.2.10 Project Infrastructure

The Tthe Heldeth Túé site infrastructure has been modelled after the Wheeler River Phoenix infrastructure scaled appropriately for the requirements of the Tthe Heldeth Túé project.

Main land access to the site is from Saskatchewan Highway 905, via a road developed by Rio Tinto for their Roughrider exploration requirements. A road extension of 1.5 km will be required to access the ISR well field. Additionally, the existing road has been assumed to be upgraded from highway 905 to facilitate trucking of UBS and lixiviant.

Due to the initial capital costs required to install a standalone processing plant at Tthe Heldeth Túé, processing of the Tthe Heldeth Túé deposit is expected to occur at the McClean Lake mill with the UBS being transported via trucks from the Tthe Heldeth Túé site to McClean Lake on the existing provincial road (45 kilometre one way). The trucks would complete the return trip to Tthe Heldeth Túé loaded with lixiviant.

Electrical power has been chosen for this PEA to be fed from a substation located approximately 13 km from the Tthe Heldeth Túé Site. Power has been assumed to be brought to site at 25 kV. A tradeoff study was completed as part of this study to compare line power to power generated at site, the conclusion of which favored line power. Additional work studying transmission and distribution options is required should further studies be completed.

The planned surface infrastructure at the Tthe Heldeth Túé site includes:

- ISR Well field and header houses
- Freeze plant
- Special and clean waste pads
- UBS and lixiviant transportation pump stations for loading and unloading transport trucks
- UBS storage pond
- Lixiviant solution storage pond
- Contaminated landfill
- Operations center, complete with potable water, fire suppression and septic
- Electrical distribution
- Wash bay, warehouse and shop
- Propane and fuel storage tanks
- Operational waste water management pond

The planned infrastructure at the McClean Lake includes:

- UBS storage pond
- Lixiviant Storage pond
- Lixiviant transportation truck loading station

1.2.11 Environmental Studies, Permitting, Social and Community Considerations

At this stage, no environmental fatal flaws have been identified for the project. Through project design and implementation of various best management practices, project effects on the environment are expected to be avoided or minimized while meeting all applicable environmental guidelines and regulations. Given the proximity of the project to a surface waterbody it is likely that the most significant public concern will be the potential impacts to the lake, and it will be imperative for Denison to demonstrate how the groundwater and surface water environments will remain protected.

The project will require completion of a provincial environmental assessment and federal licensing which includes the review of the environmental assessment to support a licensing decision. The approval process is anticipated to take 24 months following the submission of the draft licensing and environmental impact assessment documents.

Denison recognizes the importance of early identification of Interested Parties, and in particular, Indigenous and non-Indigenous Communities of Interest ("Communities of Interest") who may have an interest in the Tthe Heldeth Túé Project based on historical and / or contemporary land use activities, known and asserted traditional territories, and / or historical precedent with the uranium industry in the eastern Athabasca Basin region. As noted above, also of importance consideration is the strong interest most Interested Parties hold with respect to the protection of water, further underscoring the need for a proper and complete engagement strategy.

As part of this process, Denison has identified a number of potential Communities of Interest for the Tthe Heldeth Túé Project and can begin the process of suitable and appropriate engagement for the stage of the development of the Tthe Heldeth Túé Project. This will assist Denison to determine the number and scale of Impact Benefit Agreements, which are often an important element as part of advancing a resource extraction project through the regulatory process in Canada.

1.2.12 Capital and Operating Costs

The Capital costs for the Tthe Heldeth Túé Project were estimated relying on available data from the 2018 NI 43-101 Wheeler PFS and the 2016 NI 43-101 Cigar lake Operation Technical Report, as well as based on quotes and first principles estimates. The initial capital investment is estimated at $111.6M CAD, Sustaining Capital at $24.8M CAD and decommissioning costs at $25.2M CAD. The initial CAPEX includes a 30% contingency and excludes $20.1M CAD of project evaluation costs that must be incurred prior to construction. These costs should be considered when assessing the merit of advancing the project to a development decision in the future.

The Operating costs for the Tthe Heldeth Túé Project were estimated relying on available data from the 2018 NI 43-101 Wheeler River PFS as well as historical milling cost from the MLJV for Toll Milling fees estimates, as well as first principal estimates. The total operating costs are estimated at $155.7M CAD ($16.27 CAD per lb of produced U_3O_8).

1.2.13 Economic Analysis

The economic analysis summary results on a 100% basis are shown in Tables 1-6 and 1-7.

Tthe Heldeth Túé economic model does not include any intellectual property charges that may be borne by the project in the future from the use of Wheeler River proprietary information.

The uranium pricing in the evaluation is provided by Denison and is based on UxC's forecasted annual "Composite Midpoint" spot price from the Q3'2020 Uranium Market Outlook ("UMO"), stated in constant dollars.

Each partner reports its share of the operations in its own tax return. As each partner has a unique tax profile, the project has been evaluated using two different cash flow model approaches:

- Project Pre-Tax – A pre-tax discounted cash flow model shows the economics of the project on a 100% basis, which excludes the Canadian Federal and Provincial income taxes and Saskatchewan profit-based royalties.
- Denison Post Tax – A post tax discounted cash flow model, specific to Denison's portion of the project which includes tax specific items related to Canadian Federal and Provincial income taxes and Saskatchewan profit-based royalties and other non-tax related items which are unique and applicable to Denison's economic interest in the project. The Denison post-tax results are based on:
    - DWC's expected ownership in Waterbury as of November 30, 2020.
    - DWC's Saskatchewan Royalty and Corporate Income Tax pools available as of December 31, 2019.
    - The Denison post-tax view does not include the impact of net smelter royalties owing to Denison which can be estimated to be CAD$3.8 million.

The computation of NPV has been calculated using a mid period discounting methodology. This was done to take into account the low intensity of CAPEX in the initial year of construction modelled for the economic analysis to start in 2025 . The NPV and IRR are calculated to the start of construction activities . The stated NPV excludes CAD $20.1M of estimated project development and evaluation related costs required to reach the construction phase.

Table 1-6: Tthe Heldeth Túé (J Zone) Projected Production Figures/ Base Case Revenue.

Mine & Mill Production 100% Project Tthe Heldeth Túé Project	Units	Total	2028	2029	2030	2031	2032	2033
Mined Ore Tonnes	Tonnes	177,664	15,599	38,994	38,994	38,994	38,994	6,089
Mined Ore Grade	% U308	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Mill Feed	lbs U308	9,713,445	852,806	2,132,015	2,132,015	2,132,015	2,132,015	332,579
Mill Process Recovery	%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%
Recovered U308	lbs U308	9,567,744	840,014	2,100,035	2,100,035	2,100,035	2,100,035	327,590
U3O8 in US$	US$/lb U3O8	53.59	49.43	51.85	53.83	54.41	55.40	57.07
FX (C$/US$)	FX	1.33	1.33	1.33	1.33	1.33	1.33	1.33
U3O8 in C$	C$/lb U308	71.28	65.74	68.96	71.59	72.37	73.68	75.90
U3O8 Revenue	C$1000	681,957	55,223	144,818	150,342	151,980	154,731	24,864

Denison THT (JZone) M12a-DRev10 LDS cash flow (Den JZONE-REV2) - final.xlsx

Table 1-7: Economic Evaluation Summary.

Cash Flow Summary **Tthe Heldeth Túé Project (J-Zone)**	Base Case Pre-Tax C$1000	Base Case Post Tax C$1000
Project Percentage Ownership	100% Project	66.90% Denison
U3O8 Revenue	681,957	456,229
MLJV Toll Milling - Non-Denison THT (J-Zone)	-	1,085
Net Revenue	681,957	457,314
Opex - Mining	-54,839	-36,687
Opex - Milling	-77,192	-51,641
Opex - Transport, Weigh, Assay re Convertor	-5,114	-3,421
Opex - G&A Site Support	-2,002	-1,339
Opex - G&A Admin / Other	-16,546	-11,069
Operating Cash Flow	526,264	353,156
MLJV Toll Milling - Denison THT (J-Zone)	-	2,193
Operating Cash Flow with Tolling	526,264	355,349
Saskatchewan Resource Surcharge	-20,305	-13,584
Saskatchewan Basic Royalty	-28,766	-19,244
Operating Cash Flow with Sask Royalties	477,193	322,520
Capex - Project Evaluation / Development	Excluded	-13,465
Capex - Off-Site Infrastructure	-9,710	-6,496
Capex - Surface Infrastructure / Mining / Milling	-126,673	-84,744
Capex - Decommissioning	-25,225	-16,876
Cash Flow After Capex	315,584	200,939
Sask Profit Based Tiered Royalty - THT (J-Zone)	-	-30,244
Fed. / Prov. Income Tax - THT (J-Zone)	-	-46,620
Cash Flow After Taxes	-	124,075

DCF Metrics **Tthe Heldeth Túé Project (J-Zone)**				Base Case Pre-Tax	Base Case Post Tax
Project Percentage Ownership				100% Project	66.90% Denison
	IRR		%	39.1%	30.4%
	Payback		Years	1.8	1.9
	NPV	8.0%	C$1000	177,295	72,470
U3O8 Wtd Avg Price		53.59	US$/lb	71.28	C$/lb
DCF Metrics are measured from 2025 onward NPV Discounting: End-of-Year measured from mid-2025					
Denison THT (JZone) M12a-DRev10 LDS cash flow (Den JZONE-REV2) - final.xlsx					

The calendar years referred to in the economic model developed for the Project are indicative only, and should not be understood as reflecting the Company's plans for advancing the project. Any advancement of the Project, or the timing thereof, is subject to various factors, some of which may be outside of the Company's control. The Company has advised that it will provide additional applicable guidance on its intentions to advance the Project in its public disclosure, as appropriate.

The PEA is a preliminary analysis of the potential viability of the Project's mineral resources and should not be considered the same as a Pre-Feasibility or Feasibility Study, as various factors are preliminary in nature. There is no certainty that the results from the PEA will be realized. Mineral resources are not mineral reserves and do not have demonstrated economic viability.

1.2.14 Adjacent Properties

1.2.14.1 Roughrider Property

Adjacent to the east end of the Tthe Heldeth Túé deposit, is the Roughrider uranium deposit located on the Roughrider property comprising three contiguous mineral leases (598 ha) that is registered to the sole ownership of Rio Tinto PLC.

Crown mineral lease ML-5544 hosts the Roughrider East Zone, West Zone, and Far East Zone. Mineral resources estimated for the East and West Zones include an Indicated mineral resource estimate of 17,207,000 lbs U_3O_8 (above a cut-off grade of 0.05% U_3O_8) based on 394,200 tonnes of mineralization at an average grade of 1.98% U_3O_8 and an Inferred mineral resource estimate of 10,602,000 lbs U_3O_8 (above a cut-off grade of 0.05% U_3O_8) based on 43,600 tonnes of mineralization at an average grade of 11.03% U_3O_8 for the Roughrider West Zone, and an Inferred mineral resource estimate of 30,130,000 lbs U_3O_8 (above a cut-off grade of 0.4% U_3O_8) based on 118,000 tonnes of mineralization at an average grade of 11.58% U_3O_8 for the Roughrider East Zone. ("Technical Report for the Midwest NorthEast Project, Roughrider Zone" prepared by SRK Consulting for Hathor Exploration issued on January 15, 2011)

Table i: Mineral Resource Statement* for the Roughrider Deposit, Saskatchewan, SRK Consulting Inc., November 29, 2010.

Category	Quantity	Grade							Contained
	[Tonnes]	U_3O_8 [%]	As [%]	Co [%]	Cu [%]	Mo [%]	Se [ppm]	Ni [%]	U_3O_8 [million lb]
Indicated High Grade Zone	58,200	10.68	0.17	0.03	0.41	0.22	46	0.15	13.703
Inferred High Grade Zone	36,600	13.07	0.69	0.10	0.57	0.26	56	0.55	10.546
Indicated Low Grade Zone	336,000	0.48	0.00	0.00	0.00	0.00	8	0.00	3.556
Inferred Low Grade Zone	7,000	0.31	0.00	0.00	0.00	0.00	4	0.00	0.048
Indicated Total	394,200	1.98	0.03	0.00	0.06	0.03	13	0.02	17.207
Inferred Total	43,600	11.03	0.58	0.08	0.48	0.22	48	0.47	10.602

* Mineral resources are not mineral reserves and do not have demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates. Reported at a cut-off of 0.05 percent U_3O_8 above 200 metre elevation and within the Roughrider Deposit owned by Hathor. "Reasonable prospect for economic extraction" assumes open pit extraction, metallurgical recovery of 98 percent, and metal prices of US$80.00 per pound of U_3O_8.

1.2.14.2 Midwest Property

The Midwest property is located adjacent to the main claim group of the Waterbury Lake property and the non-contiguous Waterbury Lake property claim S-107367 (near South McMahon Lake) approximately 15 km from the McClean Lake mill. The Midwest property is host to the high-grade Midwest Main and Midwest A uranium deposits which lie along strike and within six km of the Tthe Heldeth Túé and Huskie deposits. The project is a joint venture owned 25.17% by Denison Mines Inc. and74.83% by Orano Canada Inc., ("Orano").. Orano is the project operator.

As shown on Table 1-8, the Midwest Project, including the Midwest Main and Midwest A deposits is estimated to contain, above a cut-off grade of 0.1% U_3O_8, Inferred Mineral Resources of 18.2 M lbs U_3O_8 (846,000 tonnes at an average grade of 1.0% U_3O_8) and Indicated Mineral Resources of 50.78 M lbs U_3O_8 (1,019,000 tonnes at an average grade of 2.3% U_3O_8).

Table 1-8: Audited Mineral Resource Statement for Midwest Uranium Project, Saskatchewan, SRK Consulting (Canada) Inc., March 9, 2018.

Deposit	Classification	Tonnes	Grade % U_3O_8	M Lbs U_3O_8	Denison Share (M Lbs U_3O_8)
Midwest	Indicated	453,000	4	39.9	10.1
Midwest	Inferred	793,000	0.66	11.5	2.9
Midwest A	Indicated	566,000	0.87	10.8	2.7
Midwest A	Inferred	53,000	5.8	6.7	1.7

Notes:

1. The Mineral Resource estimate was audited for the Company by SRK Consulting in accordance with CIM Definition Standards (2014) and NI 43-101.
2. Mineral Resources for the Midwest Main and Midwest A deposits are reported above a cut-off grade of 0.1% U_3O_8.

1.2.15 Interpretation and Conclusions

Through the review and interpretation of existing geological & metallurgical studies summarized in previous NI 43-101 reports, it is believed that the Tthe Heldeth Túé east pod deposit is amenable to ISR mining.

The results of the PEA for the Tthe Heldeth Túé deposit demonstrate that even smaller-scale uranium deposits in the Athabasca Basin region, with access to an existing processing plant, have the potential to become globally competitive as a result of the unique cost advantages associated with the ISR mining method.

The economic evaluation completed in this PEA also shows the potential economic viability of the project as described in this report.

Given the estimated all-in costs of USD$24.93 per lb U_3O_8, the Project is projected to be able to generate positive economic results at uranium selling prices in the range of recent market conditions, while also offering excellent leverage to a rising uranium price.

In comparison to the previous concept study completed in 2013, the ISR extraction method is found to be the most economically viable mining method for the Tthe Heldeth Túé deposit.

1.2.16 Recommendations

Based on test work at the Phoenix deposit, the freeze technology that exists in the Athabasca Basin today and the economics demonstrated in this PEA, the authors fully endorse advancing this study to the Prefeasibility Stage.

It is recommended that the future study work considers the following activities:

- Assess drilling studies and alternative drilling technologies for the successful completion of freeze wells and ISR wellfield holes.
- Continue to characterize the permeability properties of the setting, including additional permeability testing and field verification of flows through test well drilling.
- Additional metallurgical testing to confirm the assumptions herein.
- Continue to understand and develop relationships with potential Interested Parties and Communities of Interest.
- Refinement of financial analyses including sensitivities.

2 INTRODUCTION

2.1 Denison Mines Corp.

Denison is a uranium exploration and development company with interests focused in the Athabasca Basin region of northern Saskatchewan, Canada (Figure 2-1). In addition to its 66.90% limited partnership interest in the Waterbury Lake property, Denison's exploration portfolio consists of numerous projects covering approximately 270,000 ha in the Athabasca Basin region. Denison's interests in Saskatchewan also include a 22.5% ownership interest in the McClean Lake joint venture, which includes several uranium deposits and the McClean Lake uranium mill, which is currently processing ore from the Cigar Lake mine under a toll milling agreement, plus a 25.17% interest in the Midwest Main and Midwest A deposits, and a 90% interest in the Phoenix and Gryphon deposits on the Wheeler River property. Each of Midwest Main, Midwest A, Tthe Heldeth Túé and Huskie deposits are located within 20 km of the McClean Lake mill.

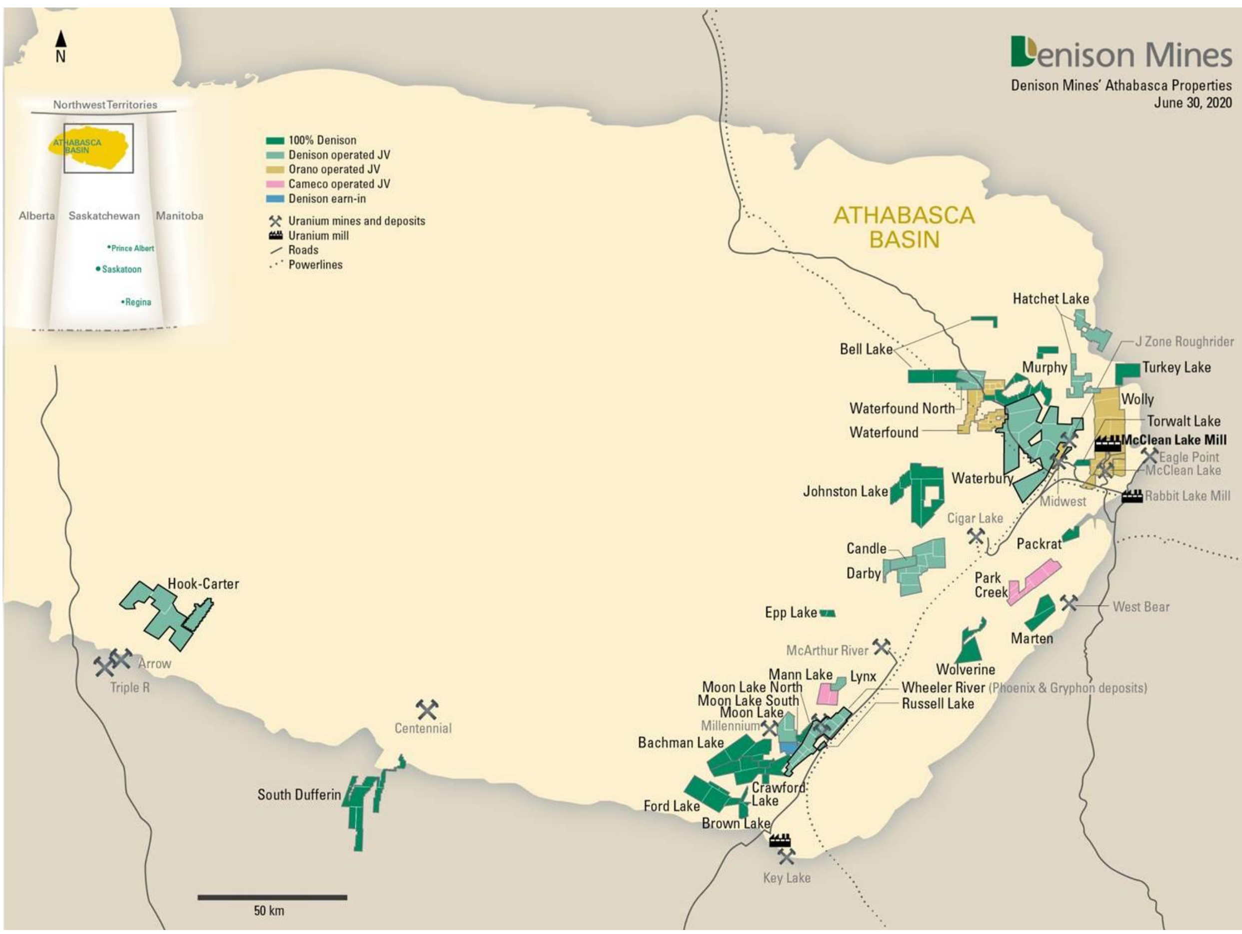


Figure 2-1: Location map of Denison's Athabasca Basin properties (as of June 30, 2020).

Denison is also engaged in mine decommissioning and environmental services through its Closed Mines division and is the manager of Uranium Participation Corp., a publicly traded company which invests in uranium oxide and uranium hexafluoride.

2.2 Terms of Reference

This report is prepared using the industry accepted Canadian Institute of Mining and Metallurgy (CIM) “Best Practice Guidelines” and Definition Standards for estimation of mineral resources and disclosing mineral exploration information (CIM, 2005), and the revised Canadian Securities Administrators guidelines for NI 43-101 and Companion Policy 43-101CP (CIM, 2014).

2.3 Purpose of the Report

The purpose of this report is to serve as a Preliminary Economic Assessment (“PEA”) of the Tthe Heldeth Túé deposit on the Waterbury Lake property assessing In-Situ Recovery (“ISR”) as the selected mining method. Only the Tthe Heldeth Túé deposit is assessed as part of this report. The Tthe Heldeth Túé deposit includes two mineralized pods: the East pod and the West pod. Only the East pod has been included as part of the PEA.

The mineral resource estimate for the Tthe Heldeth Túé deposit remains unchanged from the mineral resource statement provided in the NI 43-101 technical report titled “*Technical Report on the Mineral Resource Estimate on the J Zone Uranium Deposit, Waterbury Lake Property Located in the Athabasca Basin, Northern Saskatchewan*”, dated September 6th, 2013, prepared by Allan Armitage, Ph.D., P.Geo, and Alan Sexton, M.Sc., P.Geo of GeoVector Management Inc.

The 2013 Mineral Resource estimate for the Tthe Heldeth Túé deposit forms the basis for this PEA study.

2.4 Sources of Information

This technical report is based on the following sources of information:

- Discussions with Denison personnel
- Review of exploration and evaluation data collected by Denison and previous property owners
- Review of reports prepared by third parties, including those referenced in Section 27
- Additional information from public domain sources
    - December 2018 Waterbury Lake NI 43-101 Report “Technical Report with an Updated Mineral Resource Estimate for the Waterbury Lake Property, Northern Saskatchewan, Canada – Mineral Resource Estimate” (SRK, 2018)

- March 2016 Cigar Lake Operation NI 43-101 Report "Technical Report on the Cigar Lake Operation Northern Saskatchewan, Canada" (Cameco, 2016)
- January 2007 McClean North NI 43-101 Report "Technical Report on the Mineral Resource Estimate for the McClean North Uranium Deposits, Saskatchewan (RPA, 2007)
- March 2018 Midwest NI 43-101 Report "Technical Report with an Updated Mineral Resource Estimate for the Midwest Property, Northern Saskatchewan, Canada" (Denison Mines, 2018)
- September 2011 Hathor Preliminary Economic Assessment Report "Technical Report for the East and West Zones Roughrider Uranium Project, Saskatchewan" (SRK, 2011)
- October 2018 Wheeler River NI 43-101 "Prefeasibility Study Report for the Wheeler River Uranium Project Saskatchewan, Canada" (SRK, 2018)

2.5 Inspection on Property

In accordance with National Instrument 43-101 guidelines, Mr. Allan Armitage of GeoVector personally inspected the Property and drill core on October 6th to 8th, 2010. During the visit Armitage reviewed drill core from the winter and summer 2010 drill programs, as well as core logging and sampling procedures. In addition, Armitage reviewed a representative selection of drill intersections of the Tthe Heldeth Túé and associated mineralization using a scintillometer. Sexton personally inspected the Property and drill core on August 1st, 2012. During the visit Sexton reviewed the progress of the drill program and drill core from the winter and summer 2012 drill program, as well as core logging and sampling procedures. In addition, Sexton reviewed a representative selection of drill intersections of the Tthe Heldeth Túé and associated mineralization using a scintillometer.

In accordance with National Instrument 43-101 guidelines, Mr. Cliff Revering of SRK, and Mr. Serdar Donmez and Mr. Dale Verran of Denison, visited the Waterbury Lake property on August 20th and 21st, 2018 accompanied by Mr. Paul Burry (Project Geologist, Waterbury Lake Project) of Denison. The purpose of the site visit was to review exploration procedures, define geological modelling procedures, examine drill core located at the Waterbury Lake core storage, interview project personnel, and collect all relevant information to audit the Huskie mineral resource model and the compilation of a technical report.

In accordance with National Instrument 43-101 guidelines, Mr. Gordon Graham of Engcomp personally inspected the Property on September 9th, 2020. During the visit Graham reviewed the project site the existing infrastructure present as well as the regional infrastructure roads and access that could ultimately support the project and its development.

2.6 Abbreviations and Definitions

Abbreviations and acronyms commonly used in this report are presented in this section. Metric (SI System) units of measure are generally used in this report unless otherwise stated. All currency used in this report are in Canadian dollars (CAD) unless otherwise stated.

Analytical results are reported as parts per million (ppm U) contained for uranium; however, they may be converted to U grades in the database. For the purpose of this report chemically analysed samples will be stated as percent %U or % U_3O_8. Uranium values derived from radiometric probe analysis will be stated in this report as equivalent percent uranium: eU% or % eU_3O_8.

Abbreviation	
%	Percent
°	degree (degrees)
°C	degrees Celsius
µm	micron or micrometre
CAD	Canadian dollar
cm	Centimetre
cm^2	square centimetre
cm^3	cubic centimetre
cps	counts per second
Denison	Denison Mines Corp.
eU	equivalent uranium
eU_3O_8	equivalent uranium oxide
g	Gram
ha	Hectares
ICP	inductively coupled plasma emission spectroscopy, an analytical procedure
ID2	inverse-distance squared, an estimation methodology
ID3	inverse-distance cubed, an estimation methodology
kg	Kilograms
km	Kilometre
kt	thousand tonnes
l	Litre
lb	Pound
M	Million
m	Metre
m^2	square metre
m^3	cubic metre
Ma	million years
mL	millilitre
mm	millimetre
mPa.s	millipascal seconds
m a.s.l.	metres above sea level
MeV	mega-electron volt
KWULP	Korea Waterbury Uranium Limited Partnership
KHNP	Korea Hydro & Nuclear Power
NI 43-101	Canadian National Instrument 43-101
ppm	parts per million
REE	Rare Earth Elements
RQD	Rock Quality Description
s	second

SG	specific gravity
SRC	Saskatchewan Research Council
t	tonne (metric ton) (2,204.6 pounds)
U	uranium
%U	percent uranium (% U x 1.179 = % U_3O_8)
U_3O_8	uranium oxide (% U_3O_8 x 0.848 = % U)
% U_3O_8	percent uranium oxide
UBS	uranium bearing solution
UTM	Universal Transverse Mercator
WLULP	Waterbury Lake Uranium Limited Partnership
XRD	x-ray diffraction, an analytical procedure
yr	year

3 RELIANCE ON OTHER EXPERTS

This PEA study was completed by Engcomp, and a team of industry experts utilizing available information as listed in Section 2.4. Information contained in the public reports has been reutilized where applicable in this report.

The following is the list of external experts that contributed to the PEA study.

- **Engcomp Engineering & Computing Professionals Inc.** – Lead Author
- **Petrotek** – Hydrogeology and Mining
- **GeoVector Management Inc.** – Geology, Data Verification, Drilling Exploration, Resources
- **SRK Consulting (Canada) Inc.** – Resources
- **Bennett Environmental Services** – Environmental
- **Chuck Edwards Extractive Metallurgy Consulting** – Metallurgical Test Work and Milling
- **Lawrence, Devon, Smith & Associates Ltd.** – Economic Modelling
- **CANCOST Consulting Inc.** – Cost Estimating

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Waterbury Lake property is located within the eastern part of the Athabasca Basin in Northern Saskatchewan, which is within Treaty 10, in the Nuhenéné / Athabasca Denesųłiné territory, and in Métis Northern Region 1 within the Métis Homeland (Figure 4-1). The mineral dispositions (Figure 4-2) are within the 1:50,000 NTS topographic sheets 64L/05, 74I/01 and 74I/08. Points North Landing, a privately-owned service centre with accommodations and an airfield, is located near the eastern edge of the property. Several uranium deposits are located nearby including the Roughrider, McClean Lake, Midwest Main, and Midwest A deposits. The Tthe Heldeth Túé and Huskie deposits are located within the property near its eastern edge.

The project dispositions are approximately 750 km by air north of Saskatoon and about 420 km by road north of the town of La Ronge.

4.2 Mineral Disposition and Tenure

The land disposition on the Waterbury Lake Project, as of September 30, 2020, is shown in Table 4-1 and Figure 4-2, and is comprised of thirteen (13) mineral dispositions, covering 40,256 ha. The Tthe Heldeth Túé deposit is located within mineral dispositions S-107364 and S-107370.

Eleven of the mineral dispositions (S-107359 through S-107373) are at an annual assessment rate of $25.00 CAD per hectare, two of the mineral dispositions (S-111276 and S-111278) are at an annual assessment rate of $15.00 CAD per hectare and all dispositions have sufficient approved credits to maintain the ground in good standing until at least 2032.

Table 4-1: Waterbury Lake Project – Land Status Summary.

Disposition	Size (ha)	Annual Assessment	Excess Credit	Next Review Date (Anniversary Date)	Expiry Date	Years Protected
S-107359	4750	$118,750.00	$2,375,000.00	April 5, 2021	July 4, 2041	20.00
S-107361	1627	$40,675.00	$813,500.00	April 11, 2021	July 10, 2041	20.00
S-107362	5903	$147,575.00	$2,951,500.00	April 15, 2021	July 14, 2041	20.00
S-107363	4530	$113,250.00	$2,265,000.00	April 11, 2021	July 10, 2041	20.00
S-107364	5295	$132,375.00	$2,647,500.00	April 15, 2021	July 14, 2041	20.00
S-107365	5916	$147,900.00	$2,958,000.00	April 15, 2021	July 14, 2041	20.00
S-107366	1986	$49,650.00	$993,000.00	April 15, 2021	July 14, 2041	20.00
S-107367	469	$11,725.00	$143,125.00	May 2, 2021	July 31, 2033	12.21
S-107368	4440	$111,000.00	$2,109,000.00	April 15, 2021	July 14, 2040	19.00
S-107370	906	$22,650.00	$453,000.00	May 2, 2021	July 31, 2041	20.00
S-107373	1068	$26,700.00	$507,300.00	May 2, 2021	July 31, 2040	19.00
S-111276	5	$400.00	$8,000.00	July 6, 2021	October 04,2041	20.00
S-111278	3361	$84,025.00	$1,764,525.00	Nov. 23, 2020	Feb. 21, 2042	21.00
Total:	**40,256**	**$1,006,675**	**$19,988,450**			

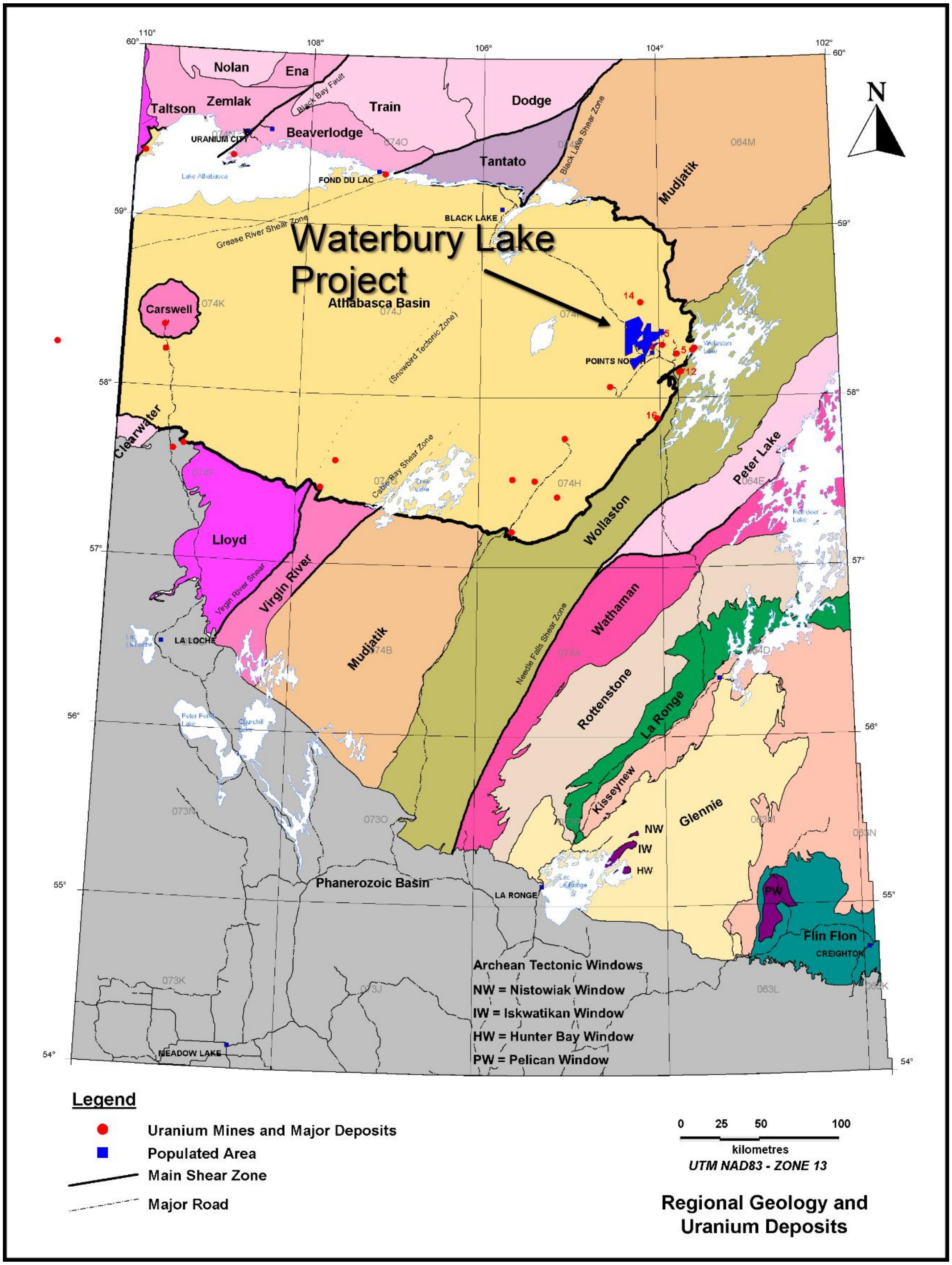


Figure 4-1: General Location Map, Waterbury Lake Project.

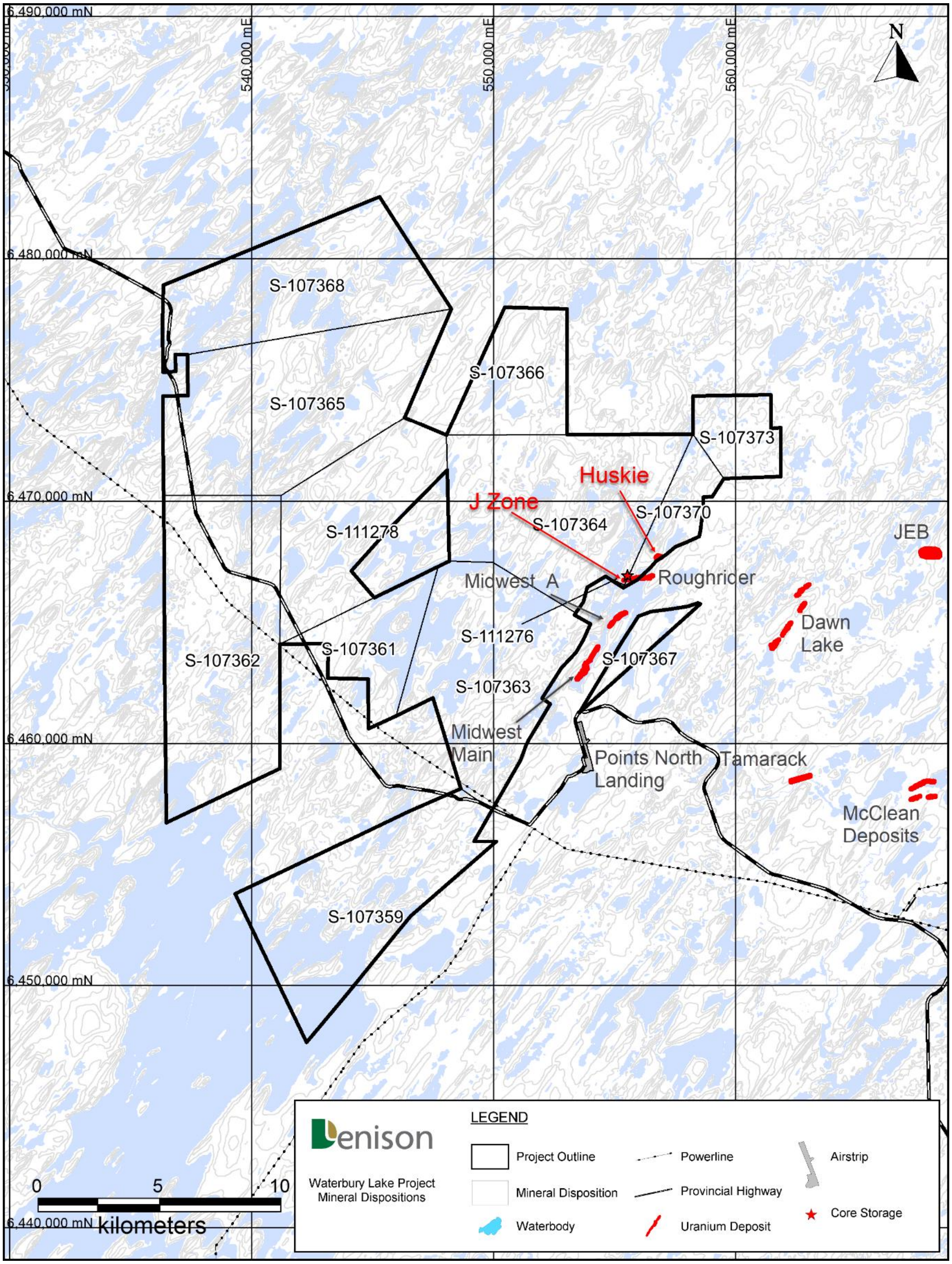


Figure 4-2: Location of Mineral Dispositions, Waterbury Lake Project.

4.3 Ownership

Waterbury is owned by the Waterbury Lake Uranium Limited Partnership (“WLULP”), of which Denison Waterbury Corp. (a wholly-owned subsidiary of Denison) owns 66.90% and Korea Waterbury Lake Uranium Limited Partnership (“KWULP”) owns 33.10%. KWULP is comprised of a consortium of investors, in which Korea Hydro & Nuclear Power (“KHNP”) holds a majority position. KHNP is headquartered in Gyeongju, South Korea and is the country’s largest electrical power generation company, operating 24 nuclear power reactors and supplying approximately one-quarter of the country’s electricity. KHNP is also a significant shareholder in Denison.

4.4 Nature and Extent of Title

The Property status shown in Table 4-1 includes the dates in which the mineral claims were recorded and the Anniversary Date. The Anniversary Date is not an expiry date. A company has 90 days from a claim’s Anniversary Date to file work and for the government to perform an auto renewal for an additional year should the claim have sufficient excess work credits. All claims, apart from S-107367, are contiguous and groupings can be made on an annual basis if the claims are in good standing. There are no surface rights to any portions of the property.

Prior to December 6, 2012, mineral dispositions were located in the field by corner and boundary claim posts which lie along blazed and cut boundary lines. The entire length of the Property boundary has not been surveyed. A legal survey is not required under the provisions of the Saskatchewan Mineral Disposition Regulations of 1986. The property location is defined on the government claim map.

As of December 6, 2012, all property and component claim locations are defined as electronic mineral claims disposition parcels within the Mineral Administration Registry of Saskatchewan (MARS), as per the Mineral Tenure Registry Regulations (formerly The Mineral Disposition Regulations, 1986). MARS is a web-based e-Tenure system for issuing and administering mineral permits, claims and leases.

MARS allows registered users to:

- Acquire mineral dispositions over the internet using a GIS map of Crown mineral ownership
- Transfer dispositions to other registered users
- Divide dispositions using GIS tools
- Submit records of work expenditures using a web form
- Search dispositions and obtain copies of search abstracts
- Group work expenditures among adjoining dispositions
- Convert dispositions from permits to claims

- Access an electronic re-opening board showing Crown minerals coming available for new acquisition

Exploration and mining in Saskatchewan are governed by the Mineral Tenure Registry Regulations 2012 and administered by the Mines Branch of the Saskatchewan Ministry of Energy and Resources. There are two key land tenure milestones that must be met in order for commercial production to occur in Saskatchewan:

1. Conversion of a mineral claim to mineral lease, and
2. Granting of a Surface Lease to cover the specific surface area within a mineral lease where mining is to occur.

A mineral claim does not grant the holder the right to mine minerals except for exploration purposes. Subject to completing necessary expenditure requirements, mineral claims can store assessment credits to protect the claim for a maximum of twenty-one years at a time. Beginning in the second year and continuing to the tenth anniversary of staking a claim, the annual expenditure required to maintain claim ownership is $15 CAD per ha, increasing to $25 CAD per ha after the tenth anniversary.

A mineral claim in good standing can be converted to a mineral lease by applying to the mining recorder and having a boundary survey completed. In contrast to a mineral claim, the acquisition of a mineral lease grants the holder the exclusive right to explore for, mine, recover, and dispose of any minerals within the mineral lease. Mineral leases are valid for ten years and are renewable. Surface facilities and mine workings are typically located within the land area covered by a mineral lease and considered to be located on Provincial lands and owned by the Province. Hence, the right to use and occupy those lands is acquired under a surface lease from the Province of Saskatchewan. The surface lease is issued for a maximum of 33 years and may be extended as necessary to allow the lessee to operate a mine and/or plant and undertake reclamation of disturbed ground.

4.5 Royalties, Agreements and Encumbrances

The Government of Saskatchewan approved a new uranium royalty system effective January 1, 2013. The uranium royalty system is enacted under *The Crown Mineral Royalty Regulations*, pursuant to *The Crown Minerals Act*. Currently, the royalty system has three components: basic royalty – 5% of gross revenue; profit royalty – rates increase from 10% to 15% as net profit increases; and the Saskatchewan Resource Credit – a credit of 0.75% gross revenue.

Except for the net smelter return royalty mentioned below, there are no contractual royalties on the property. On January 30, 2008, KWULP and Fission entered into an earn-in agreement for the Waterbury Lake property, pursuant to which Fission granted KWULP the exclusive rights to earn up to a 50% interest in the Waterbury Lake property by funding $14,000,000 CAD of expenditures on or before January 30, 2011. Additionally, Fission retained an overriding royalty interest in the property of 2% of net smelter returns. On April 29, 2010, KWULP had fully funded its $14 M CAD of expenditures and consequently earned a 50% interest in the property, and Fission and KWULP subsequently formed the WLULP. Subsequent to this transaction, Fission repurchased 10% equity in the project to gain a total equity interest of 60% on the Waterbury Lake property.

Effective April 26, 2013, Denison acquired Fission, and all of Fission's rights and entitlements to the Waterbury Lake property including the 2% net smelter returns royalty.

Denison is also the operator of the Waterbury Lake property and is entitled to a fee for operator services equal to 10% of the aggregate costs provided in an approved annual budget, as may be adjusted.

4.6 Environmental Liabilities

To the knowledge of Denison and the authors, there are no known environmental liabilities associated with the Property and there are no other significant factors and risks that may affect access, title, or the right or ability to perform work on the property.

4.7 Other Significant Factors and Risks

There are no known significant factors or risks that may affect access, title, the right, or ability of the operator to perform work at/on the Waterbury Lake property.

5 ACCESSIBILTY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Access to Property

The property can be accessed by ground and air. West Wind Aviation provides flights connecting Points North Landing to La Ronge, Prince Albert, Saskatoon, Regina, Fond du Lac, Stony Rapids, Wollaston Lake, and Uranium City. Road access to the property area is via Highway 102 from La Ronge then Highway 905. This four-season gravel road continues through the western edge of the property and onwards to Stony Rapids (Figure 5-1). Access around the property in the winter is by a network of snow roads through the bush and ice roads over lakes that can be used by four-wheel drive vehicle or heavy equipment. In the summer months helicopters, float planes, and boats are means to access the property. Additionally, a recent road upgrade completed by Rio Tinto for their Roughrider exploration activities allows for year-round access to the property. The Waterbury Lake Project core yard's coordinates are as follows: 555,520 mE, 6,646,950 mN (UTM Nad83 Zone 13).

5.2 Climate

Site activities can be carried out all year despite the cold weather during the winter months. Climatology, temperature, and precipitation information are collected by the Collins Bay weather station (Environment Canada, n.d.). The mean monthly temperatures are below 0°C for seven months of the year. The annual average monthly temperature ranges between -31°C and 16°C, with daily extremes as low as -45°C, indicating the severity of the winter. The mean annual temperature is -3.2° C and the area lies along the southern margin of the zone of discontinuous permafrost.

The precipitation in the region is relatively heavy with 530 mm annually, of which more than 330 mm is as rain. The wettest period is from May to September, which accounts for approximately 60% of the total annual precipitation.

5.3 Local Resources and Infrastructure

At present there are no facilities or infrastructure on the Waterbury Lake property. A provincial power station located 3.5 km to the southwest of Points North supplies power to the surrounding communities and mines. Fresh water can be readily supplied from the numerous surrounding lakes. There are several advanced development and mining operations within 20 km of the project, including Midwest, McClean Lake and Dawn Lake (Figure 5-1).

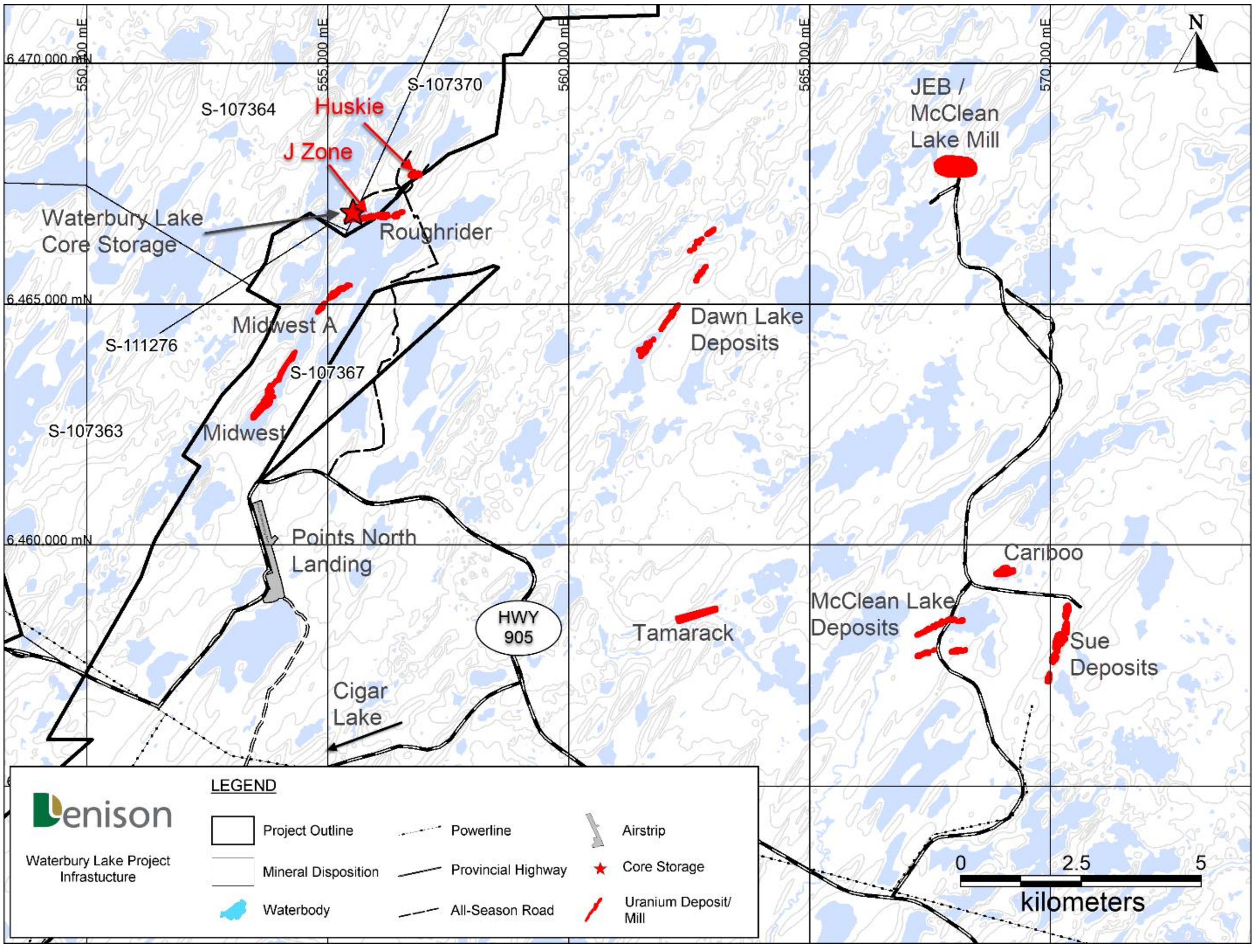


Figure 5-1: Local Resources and Infrastructure, Waterbury Lake Project.

5.4 Physiography

The elevation in the project area ranges from 430 to 540 m above sea level, with maximum topographic relief of about 80 m. Topography of the project area is typical of the recently-glaciated terrains of northern Canada with sand or gravel moraines and drumlins that generally follow northeast – southwest trends. Most of the area is covered by sand and gravel ridges. The drainage is typical of relatively flat, recently glaciated regions, characterized by numerous lakes and wetlands, which covers approximately 25% of the region. Discontinuous muskeg is present throughout the area in topographic depressions and ranges in thickness from one to three metres. Peat bogs, glacial drift, outwash, and lacustrine sands cover the bedrock. The vegetation is consistent with the Boreal Shield Ecozone, a region of extensive boreal forest lying on the Canadian Shield, with sub-tundra ground cover plants (Labrador tea, moss, and lichen) and trees, such as black spruce, jack pine, white spruce, tamarack, birch, and trembling aspen. The most prominent topographic feature in the immediate area is Waterbury Lake.

6 HISTORY

6.1 Prior Ownership

Uranium exploration activities have been conducted over various portions of Waterbury Lake Project claims over the past 50 years. The current Waterbury Lake Project dispositions were originally staked by Strathmore Minerals Corp. in 2004. Strathmore subsequently spun out all of its Canadian assets to Fission Energy Corp. in 2007. An earn-in agreement was signed between Fission Energy Corp. and the Korea Waterbury Lake Uranium Limited Partnership in 2008; the earn-in was met by 2010. In 2010, the Waterbury Lake Uranium Limited Partnership was formed upon execution of the partnership agreement, signed between Fission Energy Corp. and the Korea Waterbury Lake Uranium Limited Partnership. The Waterbury Lake property is currently 100% owned by the Waterbury Lake Uranium Limited Partnership (WLULP), a jointly controlled limited partnership between Denison and KWULP. Ownership interests as of this report release date are 66.90% Denison and 33.10% KWULP. No uranium or other mineral commodity has been produced from the property to date. Table 6-1 summarizes the historical work that was performed on the Waterbury Lake property.

Table 6-1: Historical work summary on the Waterbury Lake property.

Period	Operator	Summary
1969 – 1970	King Resources	King Resources conducted an extensive exploration program in the Waterbury Lake area including airborne radiometric, magnetic and electromagnetic (EM) surveys plus a hydro-geochemical survey.
1976 – 1982	Asamera Oil	Asamera Oil Corp initiated the Dawn Lake project with the Waterbury Lake property being part of the “Esso North Grid”. The Dawn Lake deposit was discovered by Asamera in 1978 approximately 7 km east of the Waterbury Lake property. Additional airborne radiometric, magnetic, EM and VLF-EM surveys were conducted across the property as well as radon surveys. Asamera conducted mapping and sampling programs throughout the early 1980s. A drill program of 21 holes completed on the Esso North Grid in 1982 identified encouraging geology with respect to lithology, alteration and structure, but no uranium mineralization. Several holes were drilled in close proximity to the J Zone and Roughrider deposits.
Late 1980s – early 1990s	Cogema Resources Inc.	In the late 1980s, Cogema acquired properties in the Waterbury and Henday Lake areas during the late eighties and carried out an extensive exploration program involving geological mapping, sampling, drilling and geophysical surveys. The latter included airborne EM and magnetic surveys, and ground VLF-EM and gravity surveys. In the 1990s, following-up on work done by Cogema up until the early nineties, Cameco acquired properties in the Waterbury and McMahon

Period	Operator	Summary
		Lakes area and initially completed geological mapping and sampling programs. This was followed by more geophysical surveys including ground time domain electromagnetic (TDEM), magnetic, gravity and induced polarization (IP) over select targets and select drilling throughout the decade.
Mid to late - 1990s	Cameco Corp.	In the 1990's Cameco acquired properties in the Waterbury and McMahon Lakes area and initially completed geological mapping and sampling programs. This was followed by more geophysical surveys including ground time domain electromagnetic (TDEM), magnetic, gravity and induced polarization (IP) over select targets and select drilling throughout the decade.
2004 to 2006	Strathmore Minerals Corp.	Strathmore Minerals conducted an airborne high power time domain electromagnetic (MEGATEM II) survey over the entire property. A total of 1,749 line-kilometres were flown at a line spacing of 400 metres. In the fall a boulder sampling program in which 77 samples were collected. In 2006, Strathmore Minerals completed a UTEM-3 ground geophysical survey over eleven 200 metre-spaced lines centred approximately eight kilometres north of Points North Landing. eight drill holes totalling 2,666 metres and a 12.6 line-kilometre IP-resistivity survey was competed over claim S-107367.
2007-2012	Fission Energy Corp.	**2007:** 8 drill holes totalling 2,222 metres drilled from November 2 to November 21. **2008:** 24 drill holes totalling 9,298 metres drilled from March 21 to August 21; 109.3 line-kilometres of DC-resistivity surveying from March 27 to May 14, 2008; 2,108 gravity stations and 231.5 line-kilometres of magnetic surveys. **2009:** 29 drill holes totalling 10,081 metres drilled from January 14 to August 25; 8,867 line-kilometres of airborne magnetic surveying from July 23 to August 4; 115.4 line-kilometres of 3D resistivity surveying; 99.0 line-kilometres of magnetic surveying completed from March 12 to April 25 **2010:** 52 drill holes totalling 16,422 metres drilled from January 19 September 7; 73.6 line-kilometres of induced polarization (I.P.) ground geophysical surveying from January 6 to February 24. **2011:** 103 drill holes totalling 33,301 metres from January 9 through July 20; 105.0 line-kilometres of moving-loop electromagnetic surveying; 98.2 line-kilometres of pole-pole array DC-Resistivity surveying; 833 metres of borehole transient electromagnetic surveying (BHTEM) in drill holes WAT11-161B and WAT11-211 on March 2 and July 13 to July 14. **2012:** 113 drill holes totalling 39,507 metres from January 12 to August 1; 50.3 line-kilometres of moving-loop electromagnetic surveying; 33.4

Period	Operator	Summary
		line-kilometres of resistivity surveying; 1,180 metres of borehole transient electromagnetic surveying (BHTEM)
2013-2020	Denison Mines Corp.	**2013:** 74 diamond drill holes totalling 22,940.7 metres were completed, the bulk of which were in the immediate vicinity of the J Zone. Also 62.0 kilometres of line cutting and a 50.5 line-kilometre IP-resistivity survey on claim S-107364. **2014:** 10 diamond drill holes totalling 2,976 metres, line-cutting totalling 60 line-kilometres, and 24 lines of DC-IP resistivity surveying totalling 40.4 line-kilometres. **2015:** 12 drill holes for a total of 4,447 metres and 28.8 kilometres of DC-IP resistivity surveying on claims S-107364 and S-107370. **2016:** 8 drill holes totalling 3,153 metres and five-line nine-kilometre DC-IP resistivity survey over the WAT16-G1 grid on disposition S-107370. Denison also completed a 21-line 115.2-kilometre DC-IP resistivity survey over the WAT16-G2 grid on dispositions S-107361, S-107362 and S-111278. **2017:** 20 drill holes for a total of 8,531 metres was completed by Denison; drilling was conducted on the WAT16-G2 grid and the Discovery Bay 2008 grid. **2018:** 38 drill holes totalling 13,106 metres was completed during 2018 and a fall DC-IP resistivity ground survey along the eastern margin of the property which aimed to map the southwest extension of the Midwest structure to the immediate south of the Midwest property on disposition S-107363 **2019**: 15 drill holes totalling 5,735 metres was completed during 2019. Drilling was conducted on portions of the WAT15-G1 grid in the GB Zone and Oban areas of dispositions S-107370 and S-107373. Drilling was also conducted on the WAT18-G1 grid in the Midwest Southwest Extension area of disposition S-107363. **2020:** completed a 17.6 line kilometre MLTEM survey in the GB North East area of disposition S-107373 which identified a moderate ground conductor with 2.2 km of strike length.

Historical drilling data within the current Waterbury Lake property dispositions (S-107359, S-107361 through S-107368, S-107370, S-107373, S-111276 and S-111278) comprises 639 diamond drill holes totalling 207,766 metres, as documented in the Denison Mines Corp database. Of this dataset, drilling on the Tthe Heldeth Túé deposit comprises 268 of these holes and drilling on the Huskie zone target comprises 30 holes that were successfully completed to depth.

6.2 Discovery

6.2.1 Fission Energy Corp. 2007 - 2012

The Tthe Heldeth Túé uranium deposit was discovered during the winter 2010 drill program at Waterbury Lake. The second drill hole of the campaign, WAT10-063A, was an angled hole drilled from a peninsula extending into McMahon Lake. It intersected 10.5 metres of uranium mineralization grading 1.91 % U_3O_8, including 1.0 metre grading 13.87 % U_3O_8 as well as an additional four meters grading at 0.16 % U_3O_8.The Tthe Heldeth Túé deposit discovery was made after Hathor Uranium had discovered the Roughrider Uranium deposit under the northern limb of McMahon Lake in 2008. Drill hole MWNE-08-12 intersected 5.29% U_3O_8 over 3.3 metres during a winter drill campaign which subsequently led Fission to focus in on a significant mineralized trend immediately adjacent to the southeastern boundary of disposition S-107370.

6.2.2 Denison Mines Corp. 2013 - Present

Denison Mines discovered the Huskie deposit in 2017 with the intersection 9.103% U_3O_8 over 3.7 metres, including 16.78% U_3O_8 over 2 metres, from 306.5 to 310.2 metres depth in drill hole WAT17-466A. Denison was following up on weakly elevated uranium intersected in WAT08-029 and anomalous alteration and structure in WAT09-053.

6.3 Historical Resource and Reserve Estimations

6.3.1 Tthe Heldeth Túé

GeoVector Management Inc. ("GeoVector") was contracted in 2011 by Fission to complete an initial resource estimate for the Tthe Heldeth Túé. The Tthe Heldeth Túé deposit was estimated to contain an Indicated resource totalling 7,367,000 lbs. based on 168,000 tonnes at an average grade of 2.00% U_3O_8. An additional 1,511,000 lbs. based on 150,000 tonnes averaging 0.50% U_3O_8 is classified as an Inferred mineral resource.

The resource was determined from the 7,377 assay results in 142 drill holes totalling 43,900 m of drilling completed by Fission between January 2010 and August 2011. General spacing of the drill holes is 10m-50m. The resource estimate is categorized as Indicated and Inferred as defined by the Canadian Institute of Mining and Metallurgy guidelines for resource reporting. Mineral resources do not demonstrate economic viability, and there is no certainty that these mineral resources will be converted into mineable reserves once economic considerations are applied.

Subsequent to the release of the first resource Fission completed additional drilling on the Property, including step-out and infill drill holes on the Tthe Heldeth Túé, which were completed during a winter (January to April, 2012) and a summer (June to August, 2012) drill program.

GeoVector was contracted by Fission in 2012 to complete an updated resource estimates for the Tthe Heldeth Túé and to prepare a technical report on the updated resource estimate in compliance with the requirements of NI 43-101, based on the results of the 2012 drill programs, GeoVector estimated a range of Indicated and Inferred resources at various U_3O_8 cut-off grades (COG) for the Tthe Heldeth Túé. The updated Indicated and inferred resources are stated using a grade cut-off of 0.10% U_3O_8. The previous resource statement was made using a grade cut-off of 0.05% U_3O_8. At the time, a cut-off grade of 0.10% was considered a reasonable economic cut-off grade for the Tthe Heldeth Túé to maximize the grade of the resource while maintaining a coherent model of the resource.
Using a base case COG of 0.10% U_3O_8 the Tthe Heldeth Túé deposit was estimated to contain an Indicated resource totaling 10,284,000 lbs. based on 307,000 tonnes at an average grade of 1.50% U_3O_8. An additional 2,747,000 lbs. based on 138,000 tonnes averaging 0.90% U_3O_8 is classified as an Inferred mineral resource.

The resource was defined by 10,567 assay samples collected from 200 drill holes totaling 62,416 m completed by Fission between January 2010 and August 2012. General spacing of the drill holes is 5m-20m.

Fission completed drilling on the Property, including step-out and infill drill holes on the Tthe Heldeth Túé during a 2013 winter (08 January to 17 March 2013) drill program. A total of 68 drill holes were completed totalling 21,012.9 meters (including failed holes). Mineralization was found in 35 holes or 51% of the holes in the program. All holes were targeted to further delineate and expand the mineralized area of the Tthe Heldeth Túé.

In 2013, GeoVector was contracted by Denison to complete a new resource estimate for the Tthe Heldeth Túé based on all drilling completed on the property to date. During a review of the previous resource, GeoVector identified a significant error in that previous resource estimate. After an in-depth evaluation of resource model, interpolation parameters and estimation parameters the error was identified. Essentially all partial resource blocks which intersected the resource model were treated as 100% blocks. This led to an overestimation of the resource volume, tonnes and ultimately the U_3O_8 lbs.

Table 6-2 shows the magnitude of the error by comparing the incorrect results with a corrected re-run of the data at that time.

Table 6-2: Review of the 2012 resource estimate.

	Cut-off Grade (U_3O_8 %)	**Tonnes**	**U_3O_8 (%)**	
			Grade	**Lbs**
	Indicated			
2012 Reported Resource	0.10%	307,000	1.50	10,284,000

2012 Corrected Resource	0.10%	221,000	1.70	8,239,000
Correction Factor		-28%	+11%	-20%
	Inferred			
2012 Reported Resource	0.10%	138,000	0.90	2,747,000
2012 Corrected Resource	0.10%	69,000	0.80	1,276,000
Correction Factor		-50%	-7%	-53%

Differences between the GeoVector corrected 2012 resource model and the 2013 resource model prepared by GeoVector and reported herein are largely due to the following:

- Additional drilling completed by Fission in 2013
- Changes in the specific gravity values used for grade estimation
- Changes in the block model parameters
- Changes in the grade estimation procedures
- Changes in the interpolation parameters

All the changes listed above were incorporated in the 2013 Mineral resource estimate for the Tthe Heldeth Tue deposit presented in section 14 of this report. The Tthe Heldeth Túé deposit remains unchanged from the mineral resource statement provided in the NI 43-101 technical report titled *"Technical Report with an Updated Mineral Resource Estimate for the Waterbury Lake Property, Northern Saskatchewan, Canada – Mineral Resource Estimate" (SRK, 2018)*", dated December 21, 2018, prepared by Serdar Donmez, P.Geo. E.I.T., Denison Mines Corp, Dale Verran, P. Geo. Pr. Sci.Nat., Denison Mines Corp., Paul Burry, P.Geo., Denison Mines Corp., Oy Leuangthong, P.Eng, SRK Consulting (Canada) Inc., Cliff Revering, P.Eng, SRK Consulting (Canada) Inc, Allan Armitage, P.Geo, SGS Geostat, Allan Sexton, P.Geo, GeoVector Management Inc.

6.3.2 Huskie

There are no historical resources or reserves estimated for the Huskie deposit.

7 GEOLOGICAL SETTING

7.1 Regional Geology

The project area is within the Western Churchill Structural Province of the Canadian Shield, near the eastern margin of the Athabasca Basin (Figure 7-1). The bedrock geology of the area consists of Precambrian crystalline metamorphic rocks made up of Archean granitic gneisses, Paleoproterozoic metasedimentary gneisses, and Hudsonian intrusive rocks, all unconformably overlain by flat lying, unmetamorphosed sandstones and conglomerates of the Athabasca Group.

In northwestern Saskatchewan, the crystalline metamorphic rocks of the Canadian Shield are divided into two chronotectonic units (Figure 7-1 and Figure 7-2), the Archean Western Churchill Province and the Proterozoic Trans-Hudson Orogeny (THO). The Western Churchill Province is subdivided into the Rae Subprovince and the Hearne Subprovince, separated by the Snowbird Tectonic Zone (STZ;b Figure 7-1). In this region, the Cree Lake Zone makes up the south-eastern margin of the Hearne Subprovince (Figure 7-6**;** (Annesley, et al., 2005)). This Zone is subdivided into the Virgin River Domain, the Mudjatik Domain, and the Wollaston Domain (Figure 7-2).

The basement rocks of the Cree Lake Zone were covered by Paleoproterozoic sediments and were then deformed and metamorphosed during the approximately 1,800 Ma continent–continent collision of the THO. The eastern half of the unmetamorphosed approximately 1,700 Ma Athabasca Basin overlies these metamorphic rocks. The Wollaston Domain fold and thrust belt forms the south-eastern part of the Cree Lake Zone (Figure 7-6). The dominant NE-trending strike-slip transpressional component of the fold–thrust belt has been described by (Annesley, et al., 2005). Peraluminous S-type granites and pegmatoids ("Hudsonian granites"), derived from partial melting of Wollaston Domain metasediments during the THO, also occur along major long-lived NE-trending structures (Annesley, et al., 2010). The unconformity between Paleoproterozoic graphitic pelitic gneiss lithologies of the Wollaston Group and the Athabasca Group is the site of numerous unconformity-type uranium deposits (Hoeve & Sibbald, 1978); (Hoeve & Quirt, 1984); (Thomas, et al., 2000); (Jefferson, et al., 2007b); (Jefferson, et al., 2007c).

The Athabasca Group fills the broad, oval, intracratonic Athabasca Basin that extends 425 km in an east-west direction and 225 km in a north-south direction (Figures 7-1, 7-2 and 7-3). The Athabasca Group has a maximum preserved thickness of approximately 1,500 m and it consists of flat-lying Paleo- to Mesoproterozoic (Helikian) sandstone (orthoquartzite) with minor conglomerate and siltstone and is dominantly quartz arenite (Ramaekers, 1990); (Ramaekers, et al., 2007). It lies with a marked angular unconformity above the intensely deformed and metamorphosed Archean and Paleoproterozoic crystalline basement rocks. These sandstones were deposited in several second-order sequences by braided stream systems and typically show abundant crossbedding and alternating coarser- and finer- grained units.

Mackenzie Swarm diabase dikes, dated at 1267 Ma, dominantly oriented northwest, and ranging from a few to a hundred metres in width, have intruded into both the Athabasca Group and the underlying basement ((Quirt, 1993); (Hulbert, et al., 1993)). In addition, the 1107 Ma Moore Lakes gabbro-diabase complex has intruded the Athabasca sediments in the southeast corner of the basin.

The Athabasca area is mantled by glacial drift, outwash, and lacustrine sands, forming an undulating, lake-covered plain, with generally less than 30 m of relief. Up to 40 m, but generally 5 to 20 m, of glacial materials covers the Midwest project area, resulting in extremely poor outcrop exposure.

7.1.1 Sub-Athabasca Crystalline Metamorphic Basement

The basement in the eastern half of the Athabasca Basin is composed of rocks of the Wollaston and Mudjatik lithostructural domains, both being part of the Cree Lake Zone (Figures 7-2, 7-3 and 7-4). The Cree Lake Zone is bounded on the northwest by the Virgin River Shear Zone and Black Lake Fault (STZ; (Hoffman, 1990)) and on the southeast by the Needle Falls Shear Zone.

The Wollaston Domain is a distinctly northeast-trending fold-thrust belt composed of Paleoproterozoic Wollaston Group metasediments overlying Archean granitoid gneisses. The Mudjatik Domain is a northeast-trending, shear-bounded belt consisting mainly of Archean felsic gneisses ((Annesley, et al., 2005); (Jeanneret, et al., 2016)). Both domains have undergone complex polyphase deformation and metamorphism during the THO, including intrusion of metaluminous and peraluminous granitic bodies.

The Mudjatik Domain (Figures 7-1 and 7-2) consists of variably reworked Archean granitic orthogneisses, locally charnockitic, and numerous small remnants of polydeformed Aphebian metasedimentary rocks similar to Wollaston Group metasediments. This domain displays a mixed pattern of aeromagnetic highs and lows.

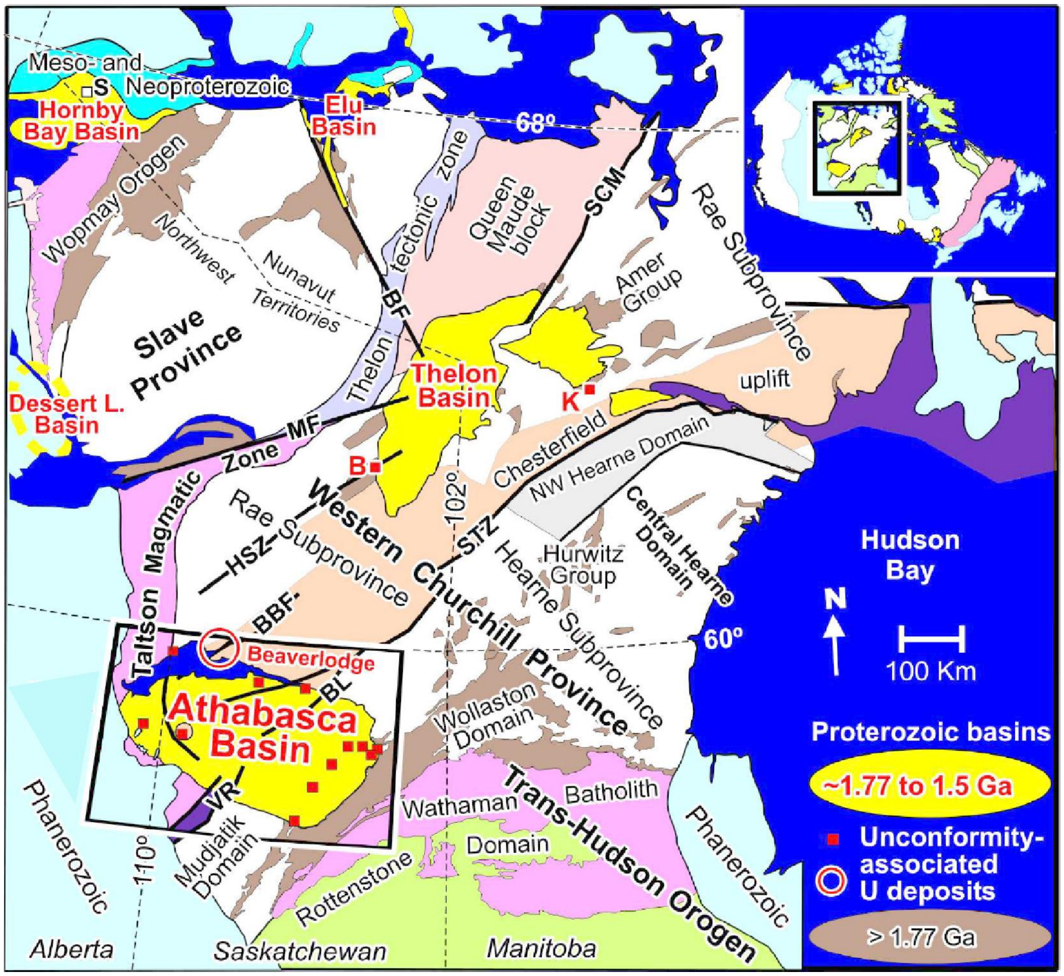


Figure 7-1: Location of the Athabasca Basin relative to the geology of the northwestern Canadian Shield (Jefferson, et al., 2007b).

1. Legend: Red squares - U deposits/prospects (K - Kiggavik, B - Boomerang). STZ, VR, BL, BBF, HSZ, MF, BF - crustal-scale fault zones (Snowbird Tectonic Zone, Virgin River, Black Lake, Black Bay Fault, Howard Shear Zone, McDonald Fault, Bathurst Fault).

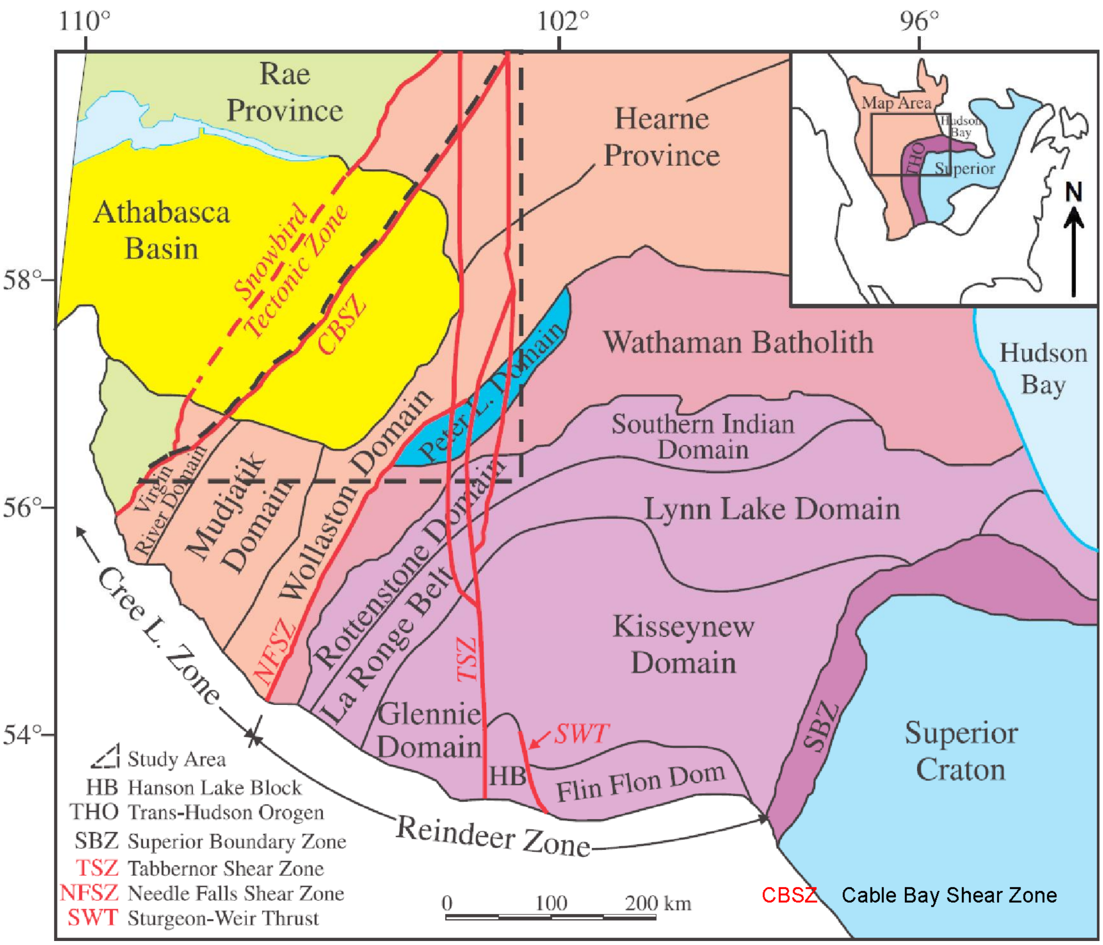


Figure 7-2: Lithotectonic domains in northern Saskatchewan and Manitoba (Annesley et al., 2005).

To the east, the metasedimentary rocks of the Wollaston Domain (Figures 7-2 and 7-3; and Table 7-1) rest unconformably on Archean granitoid gneiss. This Domain comprises the Wollaston–Mudjatik Transition Zone ("WMTZ"), the western Wollaston Domain, and the eastern Wollaston Domain. The WMTZ forms a transition from the linear Wollaston fold and thrust belt to the dome and basin interference folded Mudjatik Domain.

The metasedimentary lithologies in the Wollaston Domain comprise three metasedimentary supracrustal successions deposited in rift, passive margin, and foreland basin environments (Tran, et al., 2008). These rocks overlie and are locally intercalated with the Archean orthogneisses.

The Western Wollaston Domain and the WMTZ are structurally complex, consisting of elongated Archean granitoid domes (mega-boudins), dominant thrust- and strike-slip structures, and related duplex structures (Annesley, et al., 2005). The Western Wollaston Domain is characterized by an overall aeromagnetic low related to the dominant Paleoproterozoic Wollaston Group metasedimentary lithologies.

The lower sequence of the Wollaston Group consists mainly of, from the bottom, graphitic pelitic gneiss, followed by garnetite, pelitic gneiss, calc-pelitic gneiss, psammopelitic gneiss, psammitic gneiss, and meta-quartzite. The Wollaston Group rocks are interpreted to occupy synclinal structures. They originally consisted of shelf to miogeosynclinal sediments. Following Hudsonian metamorphism and deformation, these rocks now overlie, and are locally intercalated with, the Archean orthogneissic basement.

The eastern Wollaston Domain (Figures 7-2 and 7-4) corresponds to an aeromagnetic high and is made up of the upper sequence of the Paleoproterozoic Wollaston Group. It consists of calc-silicate- and magnetite-bearing siliciclastic metasediments overlying a lower Wollaston Group sequence of magnetite-rich to magnetite-poor pelitic to psammitic gneisses. Archean orthogneisses are locally infolded.

The eastern flank of the Waterbury Lake Project area is interpreted to be within the Wollaston-Mudjatik Transition Zone (WMTZ), and the remainder of the Waterbury Lake Project is interpreted to be within the Mudjatik Domain.

Sub-vertical, north-northeast-trending ductile and brittle-ductile fault zones that developed during the Hudsonian Orogeny (Figure 7-4) are dominant structural features within the eastern Athabasca ((Annesley, et al., 2005); (Tourigny, et al., 2007)). These faults were commonly reactivated after the deposition of the Athabasca Group and are commonly associated with graphitic Wollaston Group stratigraphy. Post-Athabasca Group faulting, as recognized within the Wollaston Domain (Harvey & Bethune, 2007), is characterized as dominantly reverse (D5; Table 7-2) with a later, dominantly strike-slip, component (D6).

7.1.2 Hudsonian Granites/pegmatites

The basal Wollaston Group sequence of graphitic pelitic to psammopelitic gneisses contain a large volume of peraluminous [molecular $Al_2O_3/(Na_2O+ K_2O+ CaO) > 1$)] S-type granites that have been interpreted to be a partial (anatectic) melting phase of the metasediments near the thermal peak of the THO (Annesley, et al., 2005). These S-type granites developed mostly in zones of structural complexity, such as fold noses, sheared limbs, dilation zones, and fault intersections. It has been postulated that when the host metasediments were enriched in uranium, the anatectic crustal melts derived from partial melting were also enriched in uranium (Cuney & Friedrich, 1987). Syn-orogenic peraluminous granitoids are the most abundant and the best studied, however, there are also calc-alkaline granitoids and high-Sr–Ba granitoids (details on these lithologies in (Annesley, et al., 2005); (Jeanneret, et al., 2016)).

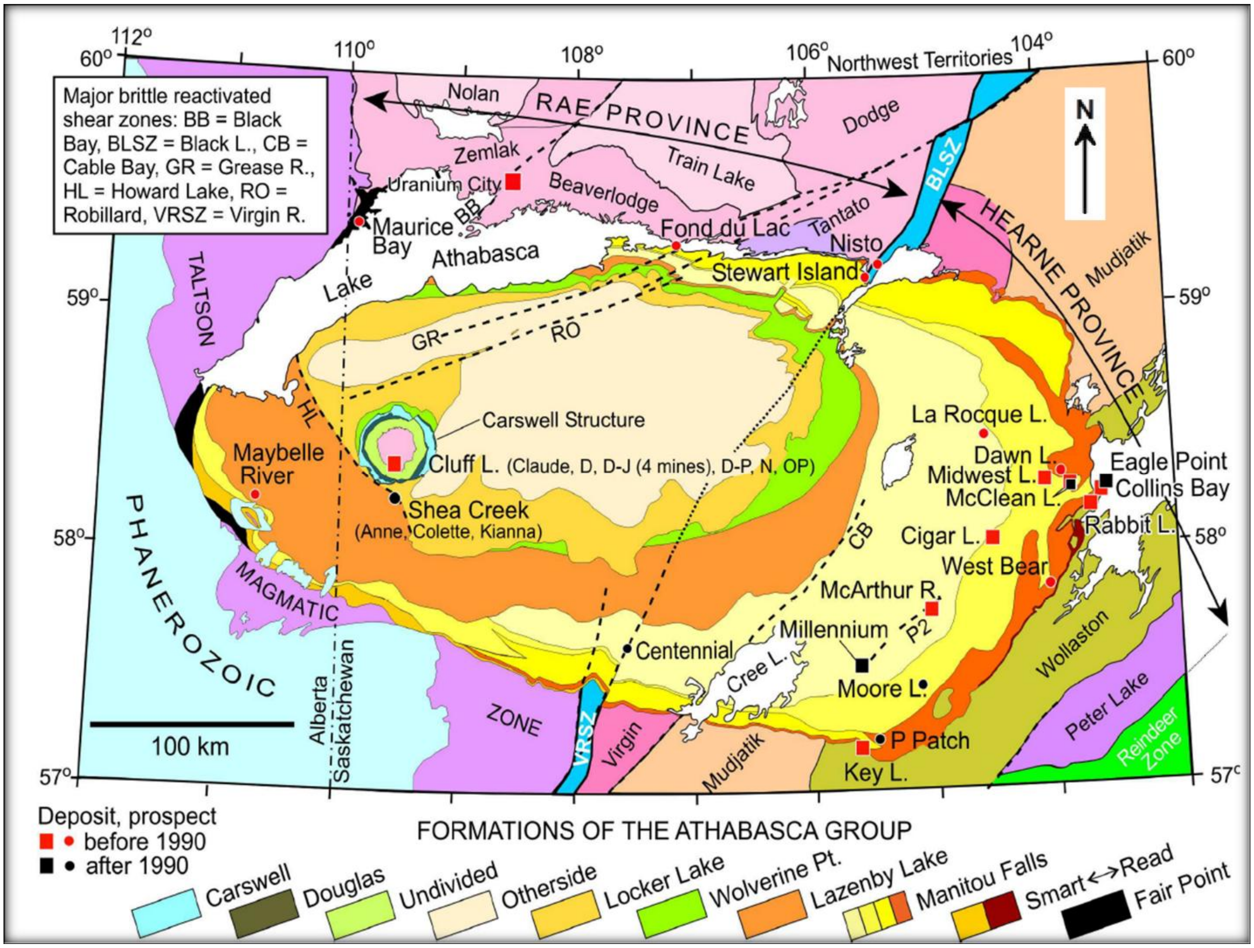


Figure 7-3: Geological setting of the Athabasca Basin and unconformity type U occurrences, northern Saskatchewan and Alberta (Jefferson, et al., 2007c).

The peraluminous granite (granitoid) suite comprises grey leucogranites, leucomicrogranites, granitic pegmatites, and very commonly observed peraluminous leucosomes (anatectic granite) in metasedimentary migmatites. The leucogranites and pegmatites are present as syn- to late-orogenic plutons, sheets, dikes, and network veins that are dominantly present in the hanging wall of thrust faults and in the footwall of normal faults. While the oldest leucogranites and granitic pegmatites belong to the grey granite suite (approximately 1840 Ma), younger (1820–1800 Ma) versions are more common, suggesting that there were pulses of leucogranite intrusion.

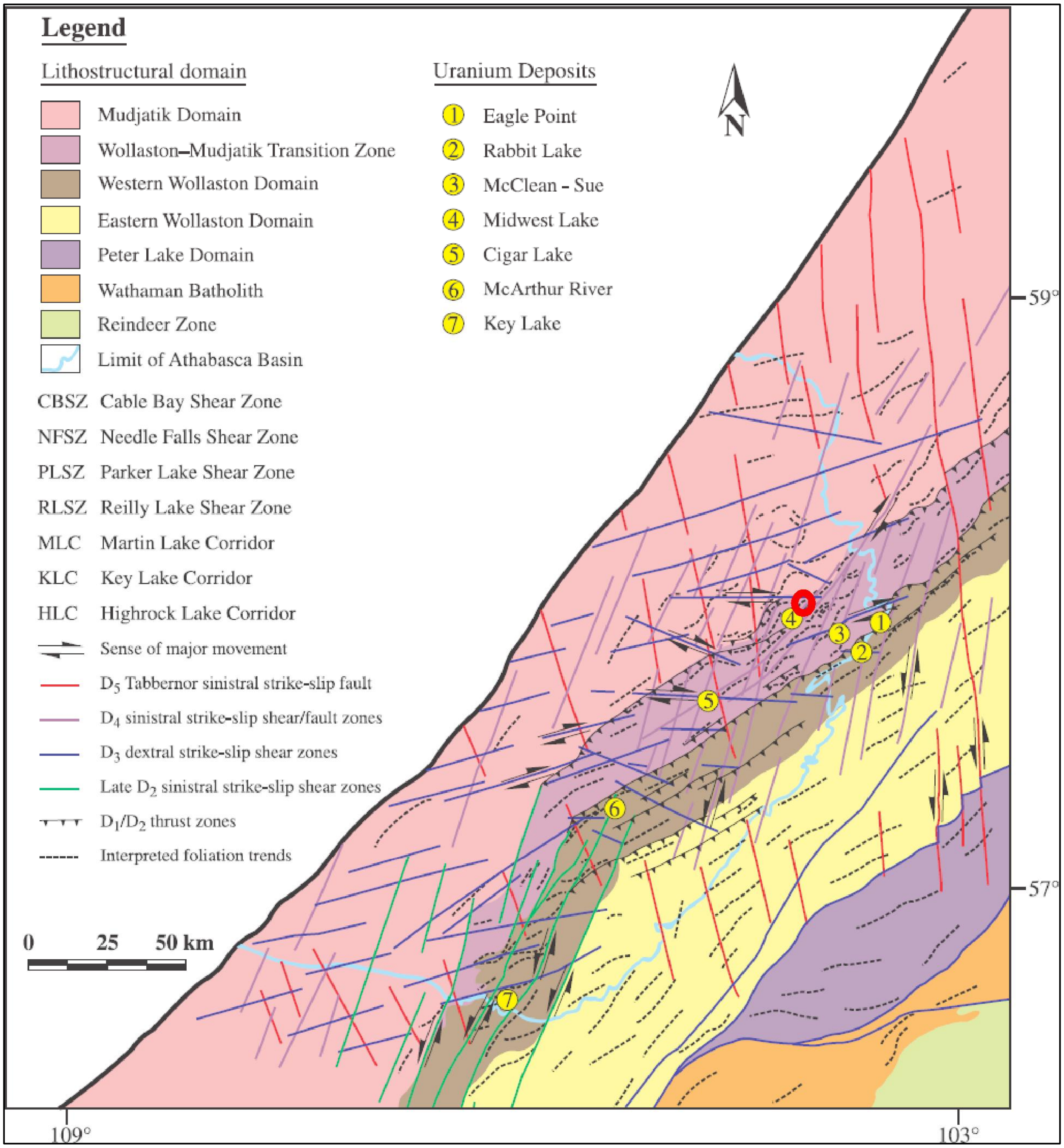


Figure 7-4: Lithotectonic geology of the eastern Athabasca region with locations of uranium deposits, including the Tthe Heldeth Túé deposit (circled in red).

Table 7-1: Summary of basement lithologies, East and Central Athabasca Basin.

METAMORPHOSED BASEMENT - HEARNE PROVINCE EAST - CENTRAL ATHABASCA BASIN (Card & Bosman, 2007)	
MUDJATIK DOMAIN	Distribution: Underlies the central portion of the Athabasca Basin. Bounded in the west by the Virgin River / Black Lake Shear zone. Lithologic Units: Reworked Archean granitic orthogneisses, locally charnockitic and numerous small remnants of polydeformed Aphebian metasedimentary rocks (pelitic to psammo-pelitic gneiss) similar to Wollaston Group metasediments. Metamorphism: Granulite (approximately 2.9 - 2.8 Ga near Mudjatik/Virgin Domains; 2.64 -2.58 Ga near Mudjatik/Wollaston Domains) overprinted by amphibolite (1900 Ma) to upper greenschist grade. These retrograde events may also, in part, represent effects of the Trans-Hudson Orogen (ca. 1800 Ma). Deformation: Recumbent regional gneissosity (D_1), WNW striking upright folds (D_2), two sets of NNEs to NE striking folds (D_3 and D_4).
WOLLASTON DOMAIN	Distribution: Underlies the eastern portion of the Athabasca Basin and bounded in the east by the Needle falls shear zone. Generally, a tightly folded northeast trending belt of Paleoproterozoic metasedimentary rocks and Archean granitoids. Lithologic Units: The Wollaston Domain contains a significant proportion of Archean granitoid gneiss exposed in structural domes. The Wollaston Group lies unconformably upon the granitoid gneiss. The lower Wollaston Group consists of graphitic pelitic gneiss, followed by garnetite, pelitic gneiss, calc-pelitic gneiss, psammopelitic gneiss, psammitic gneiss, and meta-quartzite. The upper Wollaston Group consists of calc-silicate- and magnetite-bearing siliciclastic metasediments. Metamorphism: upper green schist to lower amphibolite facies along parts of the eastern margin of Wollaston domain, but increases abruptly westward to upper amphibolite. Age dates range from 2550 to 1770 Ga. Deformation: Foliation, isoclinal folding (D_1), tight isoclinal folding (D_2), NE open and/or tight folding (D_3), NW open folding (D_4).

The grey granites form planar-layered bodies to dikes that are leucocratic, massive- to well-foliated, fine- to coarse-grained, and commonly equigranular. They are weakly to moderately peraluminous and contain quartz, Na-plagioclase, K-feldspar, and biotite, with lesser muscovite, garnet, cordierite, and locally sillimanite, and accessory monazite and zircon. Examples are present on Harrison Peninsula (Collins Bay to Eagle Point).

Table 7-2: Comparison of deformational events in the Wollaston Domain (Harvey & Bethune, 2007).

	Deformational Event	(Harvey & Bethune, 2007)	(Harvey, 1999)	(Tran, 2001)	(Lewry & Sibbald, 1980)	(Portella & Annesley, 2000a)	(Tourigny, et al., 2001)
Postdates Athabasca Group	Faulting (largely strike-slip)	D_6	D_5	D_5	ND	D_5	Post-D3
	Faulting (largely reverse)	D_5	D_5	D_5	ND	D_4	Post-D3
Predates Athabasca Group	NW close to gentle folds	D_4	D_4	D_4	Post-D_3	D_3	D_3
	Faulting	Late D_3	Post-D_3	Late D_3	ND	Late D_2	Post D_2
	Upright NE folding	D_3	D_3	D_3	D_3	D_2	D_2
	Tight to isoclinal folds	D_2	D_2	D_2	D_2*	ND	D_1
	Early ductile faulting	Late D_1	Late D_1	Late D_1	ND	D_1	Late D_1
	Isoclinal folds	D_1	D_1	D_1	ND	D_1	D_1
	Main regional foliation	D_1	D_1	D_1	D_1	D_1	D_1

ND: not discussed by authors
*Not recognized in Wollaston Domain

Pink K-feldspar-dominant metaluminous porphyritic granites (for example, in the Rabbit Lake area) are massive to moderately well foliated, fine- to coarse-grained, inequigranular to porphyritic, and are locally xenolithic. They are characterized by K-feldspar phenocrysts up to six millimetres in size that are set in a fine- to medium-grained matrix of quartz, K-feldspar, biotite, subordinate plagioclase, and accessory allanite, epidote, apatite, monazite, zircon, fluorite, titanite, opaque minerals, and xenocrystic garnet. These calc-alkaline granites are highly differentiated, are metaluminous to corundum normative, and are weakly peraluminous, containing elevated contents of K_2O+Na_2O, Ba, Ga, Rb, Th, U, LREEs, Y, and Zr.

Leucocratic microgranites, granitic pegmatites, and peraluminous anatectic leucosomes (remobilized partial melt material) in metasedimentary migmatites are ubiquitous in the Wollaston Domain. The leucogranites form syn- to late-orogenic plutons, sheets, dikes, and vein networks with variably concordant to discordant contacts, are typically metre-scale in thickness, and are very fine- to medium-grained, essentially equigranular, and are massive to well-foliated. They are high-silica (70–78 wt% SiO_2), extremely leucocratic rocks, containing low CaO and Sr.

Most granitic pegmatites intruding the basement rocks as sills and dikes are composed of predominant quartz and K-feldspar, subordinate plagioclase and biotite, and trace opaque minerals. Locally, the mafic mineral present is tourmaline, rather than biotite. Compositional zoning from feldspar-rich, near margins, to quartz-dominant, in the centre, is common in thicker examples. In general, they are highly variable in composition, ranging from alkali granite to granodiorite. They are larger versions of the leucosomes found in the migmatitic varieties of Wollaston Group pelitic and psammopelitic gneisses, and are compositionally similar to the grey granites, suggesting a common origin. Most of the S-type anatectic granitic pegmatites are strongly potassic (high K_2O/Na_2O) and peraluminous.

Uranium-bearing pegmatites have been found in several areas, including Fraser Lakes (McKechnie, et al., 2013), Kulyk Lake (McKeough & Lentz, 2011), and Moore Lakes (Annesley, et al., 2000). At Moore Lakes, the rock is composed mainly of quartz, grey feldspar, and biotite, minor amounts of pyrite, and accessory apatite, zircon, pyrite, ilmenite, and uraninite. The uraninite grains are cubic, range from 0.05 to 0.50 mm in size, and are found within biotite flakes. Mineralized pegmatites/leucogranites in the Fraser Lakes and Kulyk Lake areas range from simple granitic types (quartz, K-feldspar, plagioclase, with lesser biotite, amphibole) to more mineralogically-complex types with simple core and complex margins (plagioclase-dominant with K-feldspar, biotite, amphibole, magnetite/ilmenite, and little quartz; or Ca-pyroxene-dominant with tremolite/actinolite, biotite, and magnetite/ilmenite). These pegmatites are peraluminous and are variably enriched in U (± Th), with Th/U approximately 1 (containing uraninite, thorite, zircon, and allanite) or in Th and LREEs, with Th/U >2 (containing monazite, uranothorite, and zircon). Formation of the U-, Th-, and REE-enriched pegmatites is ascribed to partial melting of a metasedimentary rock-dominated source, entrainment of accessory minerals as xenocrysts, and assimilation-fractional crystallization (AFC) processes ((McKeough & Lentz, 2011); (McKechnie, et al., 2013)).

7.1.3 Paleoweathering

The unconformable contact between the Paleoproterozoic Athabasca Group sandstone and the underlying crystalline basement rocks is typically marked by several metres of clay mineral-rich and colour- and mineralogically-zoned post-Hudsonian regolith (paleoweathering) that can range in thickness from 0 to >80 m ((Hoeve & Quirt, 1984); (Macdonald, 1985)). The thickness of the profile is highly dependent on the composition of the parent rock, as well as the presence of relatively permeable basement structures. Below an upper clay-rich (kaolinitic) and hematitic red zone, there is an illitic to chloritic red-green zone that is transitional to a chloritic to illitic, variably light to dark green zone. The green zone material grades downward, generally over a few metres, into fresh or retrograde-metamorphic basement.

7.1.4 Athabasca Group Sandstone

The formation of the Athabasca Basin is interpreted to have started with the development of sedimentation into a series of northeast-southwest-oriented sub-basins with subsequent sedimentary coalescence into the greater Athabasca Basin (Armstrong & Ramaekers, 1985). The formation of the sub-basins was linked to movement on major northeast-southwest structures associated with the Trans-Hudsonian Orogeny and rooted in the underlying metasediments and granites (Cuney & Kyser, 2008). Sub-basin formation could have been initiated at circa 1750 Ma (based on timing of rapid uplift in the region of the THO; (Hiatt & Kyser, 2007)). Alternatively, (Rainbird, et al., 2007) suggests the Athabasca Basin was formed as a result of a broad thermal subsidence mechanism based on the geometry, sequence architecture, east-west elongation, and dish-shaped outline. A depositional age of 1740-1730 Ma for the basal Athabasca Group was estimated by (Rainbird, et al., 2007). However, actual sedimentary deposition may not have occurred until after circa 1710-1700 Ma (based on ages of greenschist facies retrograde mineral assemblages (Jeanneret, et al., 2016)).

The sub-Athabasca unconformity topography suggests a gentle inward slope from the east, moderate to steep slopes from the north and south, and a steeper slope from the west. Locally, pre-Athabasca fanglomerate (fault scarp talus deposits) is present below the basal Athabasca sandstone, for example, at Sue C, Read Lake, Wheeler River, and McArthur River (Quirt, 2000). In general, the Athabasca Group sediments consist of unmetamorphosed quartz-rich pebbly sandstone (quartz arenite; orthoquartzite) (Ramaekers, 1990); (Ramaekers, et al., 2007), with intercalated conglomerate and minor siltstone intervals. There are four major fining-upwards sequences, separated by unconformities, that are recognized in the Athabasca Group ((Ramaekers, et al., 2007); Table 7-3)). Sequence 1 (Fidler deposystem) comprises the Fair Point Formation, Sequence 2 (Ahenakew, Moosonees and Karras deposystems) includes the Read, Smart, and Manitou Falls Formations, Sequence 3 (Bourassa deposystem) includes the Lazenby Lake and Wolverine Point Formations, and Sequence 4 (McLeod deposystem) includes the Locker Lake, Otherside, Douglas, and Carswell Formations.

Sequence 1 was deposited in the Jackfish Sub-basin during the latest stage of the THO (the final actions of Superior-Hearne cratonic collision), however, formation of this sub-basin may have been more related to movements associated with Taltson-Thelon structures. Sequence 2 may have been deposited in escape basins, while the upper sequences in the Athabasca Basin may reflect a continental-scale extensional event around 1.40 Ga (Ramaekers & Catuneanu, 2012).

The sandstone is poorly sorted near the base of the Athabasca Group, where conglomerates form discontinuous layers of variable thickness. Minor shale- and siltstone-rich formations occur in the upper half of the succession. Locally, the rocks may be silicified and very well indurated (e.g. upper Manitou Falls Formation – MF Dunlop member) or partly clay-altered and de-silicified.

Most of the Athabasca sandstone strata were deposited in alluvial fans and in braided streams with generally horizontally bedded alternating coarser and finer units, with abundant crossbedding observed. The strata are nearly flat-lying or dip only a few degrees, except within the Carswell Structure and near faults. No regional folds have been recognized. Fractures and faults trend mainly in east-northeast, north-northeast, north south, and northwest directions. Fractures are more abundant in the Athabasca strata above buried faults in the basement, suggesting reactivation along these pre-Athabasca faults. Drilling at several uranium deposits has revealed local block faulting, where the unconformity has been fault-offset vertically by as much as 40 m in a reverse sense. Thrust faulting has affected the sandstone along the eastern margin of the basin (e.g. in the Collins Bay area).

The Manitou Falls Formation, which comprises most of the strata in the eastern half of the basin, is subdivided into four units from bottom to top (Ramaekers, 1990);Table 7-3): MFa (poorly sorted sandstone and minor conglomerate); MFb (interbedded sandstone and conglomerate); MFc (sandstone with rare clay intraclasts); and MFd (fine- to medium-grained sandstone with abundant (>1 %) clay intraclasts). Further mapping has subdivided the original MFa unit into two new formations, the Read Formation and the Smart Formation (Ramaekers, et al., 2007). The Manitou Falls strata nomenclature was also reassigned: conglomeratic MFb (Bird Member), sandy MFc (Collins Member), and clay intraclast-rich MFd (Dunlop Member). The sandstone in the eastern portion of the Athabasca Basin ranges in thickness from 0 to over 900 m.

Typically, the sandstone contains from 1% to 5% intergranular pore space that is filled with matrix clay. The matrix clay mineralogy is relatively consistent within sedimentary units and allows delineation of a clay mineral stratigraphy that is comparable to the lithostratigraphy (Hoeve & Quirt, 1984). The background (diagenetic) matrix clay mineralogy comprises kaolin (dickite and lesser kaolinite) and illite ± hematite, and variable amounts of quartz overgrowth cement.

The sandstone ranges in thickness from 200 to 370 m within the Waterbury Lake Project and consists of the Manitou Falls Formation: MFa, MFb and MFc Members.

7.1.5 Quaternary Geology

The surficial deposits in the Waterbury Lake project area are of Quaternary age and consist largely of tens of metres-thick Pleistocene bouldery, silty-sand till plain resting directly on the sandstone bedrock. Locally, the upper half to one-metre of underlying sandstone bedrock is frost-heaved (felsenmeer). Drumlins, up to 15 m in height, trace the latest ice advance from the northeast and are oriented NE-SW. The glacial till is locally overlain by glacio-fluvial sand and gravel, followed by deposition of recent sand and silt.

Table 7-3: Stratigraphy of the Athabasca Basin.

STRATIGRAPHY OF THE HELIKIAN ATHABASCA BASIN
(Mirror, Cree, and Jackfish Sub-basins)

(Ramaekers, 1990); (Ramaekers, et al., 2007).

Sequence and Deposystem	Environment	Brief Formation Descriptions
Sequence 4 McLeod	Marine platform-intertidal	**CARSWELL Formation:** Dolomitic, basal Sandstone, Mudstone. dolarenites with x-beds & ripple marks. Stromatolites common. Oolites up to 3 mm diameter in beds up to 15 cm thick. -lower contact at lowest prominent carbonate bed.
*(Occurs only in the annular ring of the Carswell Structure)	Fluviatile marine	**DOUGLAS Formation:** Thinly bedded & laminated very fine-grained Sandstone, Siltstone and Mudstone. -very friable. Variously calcareous and carbonaceous. -graded Sandstone beds (0.25-5 cm thick). -lower contact at first pebbly sandstone beds (base of 1st black mudstone).
	Fluviatile- Possible marine component at top	**OTHERSIDE Formation:** Sandstone, Siltstone (minor 5 cm to 3 m thick). -Bedding-parallel granules. -clay intraclasts common. -quartz pebbles at base of formation. -lower contact gradational.
	Fluviatile	**LOCKER LAKE Formation:** Pebbly to conglomeratic Sandstone (>16 mm diameter) and minor Siltstone (1-20 cm thick). -no clay intraclasts. -minor mudstone near base. -lower contact disconformable (Sequence 3 &4 boundary).
Sequence 3 Bourassa	Fluviatile and Playa lake	**WOLVERINE POINT Formation:** Sandstone, Siltstone (1 to >50 cm thick). -clay-rich, local hard red & green clay intraclasts -very friable locally. -clay intraclasts common. -local vitric tuff beds. -abrupt lower contact where common mudstone beds disappear.
	Fluviatile	**LAZENBY LAKE Formation:** Pebbly Sandstone, fine grained quartz arenite (isolated quartz pebbles 4-30 mm diameter). Mostly quartz arenite with low clay content; minor mudstone and hard, phosphatic beds in the upper part. -low angle crossbedding, local slumped bedding lower in section. -Base of the Mirror Subbasin in SW Athabasca Basin.

		-lower contact disconformable (or correlative unconformity, seq. 2 & 3 boundary).
Sequence 2 Ahenakew, Moosonees and Karras	Fluviatile	**MANITOU FALLS Formation:** Quartz-pebble conglomerate, fine to coarse grained arenite, Siltstone and lesser Mudstone. -clay intraclasts common in some members. -bulk of sedimentation in the Cree Subbasin. -5 members; from top: Dunlop, Collins, Warnes & Raibl (southern & northern Cree Subbasin, respectively) and Bird. -lower contact unconformable on Smart and/or Read formations, where not directly lying on crystalline basement.
	Fluviatile	**SMART Formation:** Fine grained to coarse grained quartz arenite and lesser pebbly mudstone. -upper part at least two fining-up quartz arenite units. -fine to coarse grained. -lower part discontinuous pebbly mudstone. -T and/or Fair Point Formation of the Jackfish Subbasin.
	Fluviatile with lesser Aeolian	**READ Formation:** Fine grained to coarse grained quartz arenite, quartz-pebble conglomerate and red, silty Mudstone. -discontinuous mudstone occurs at base overlain by quartz-pebble conglomerate with granule matrix and fine to medium grained ripple and cross-laminated quartz arenite at top. -distributed in the **eastern** Athabasca Basin. -lower contact unconformable on crystalline basement.
Sequence 1 Fidler	Fluviatile	**FAIR POINT Formation:** Pebbly sandstone with polymictic pebble conglomerate and quartz arenite. Minor mudstone. -distribution within the Jackfish Subbasin (western Athabasca Basin) and in the Carswell Structure at Cluff Lake. -lower contact unconformable on crystalline basement.

7.1.6 Uranium Mineralization

The uranium mineralization encountered in the eastern Athabasca region is of the diagenetic-hydrothermal unconformity type. The location of this mineralization type is around the unconformity between the basal Athabasca Group and the underlying crystalline basement, (Figure 7.6), particularly graphitic pelitic gneiss of the Wollaston Group (Hoeve & Sibbald, 1978); (Hoeve & Quirt, 1984); (Wallis, et al., 1985); (Jefferson & Delaney, 2007); among others). See Section 8 of this report for more detailed information on the unconformity-type uranium deposit.

7.2 Local Geology

7.2.1 Tthe Heldeth Túé

The Tthe Heldeth Túé is primarily comprised by an east-west trending faulted package of variably graphitic and pyritic metasediments bounded by orthogneiss to both the north and south. The pelitic metasedimentary assemblage, which ranges in thickness from 90 to 120 m and is moderately steep dipping to the north includes, from north to south, a roughly 50 m thick pelitic gneiss underlain by 20 m thick graphitic pelitic gneiss, underlain by a 10 to 15 m thick quartz-feldspar wedge underlain by 20 m thick graphitic pelitic gneiss, underlain by a 15 to 25 m thick pelitic gneiss, then back into orthogneiss. There are discontinuous offsets at the unconformity that range from a few metres to as much as ten metres. It is depicted in plan view in Figure 7-5 and on schematic cross-section in Figure 7-6.

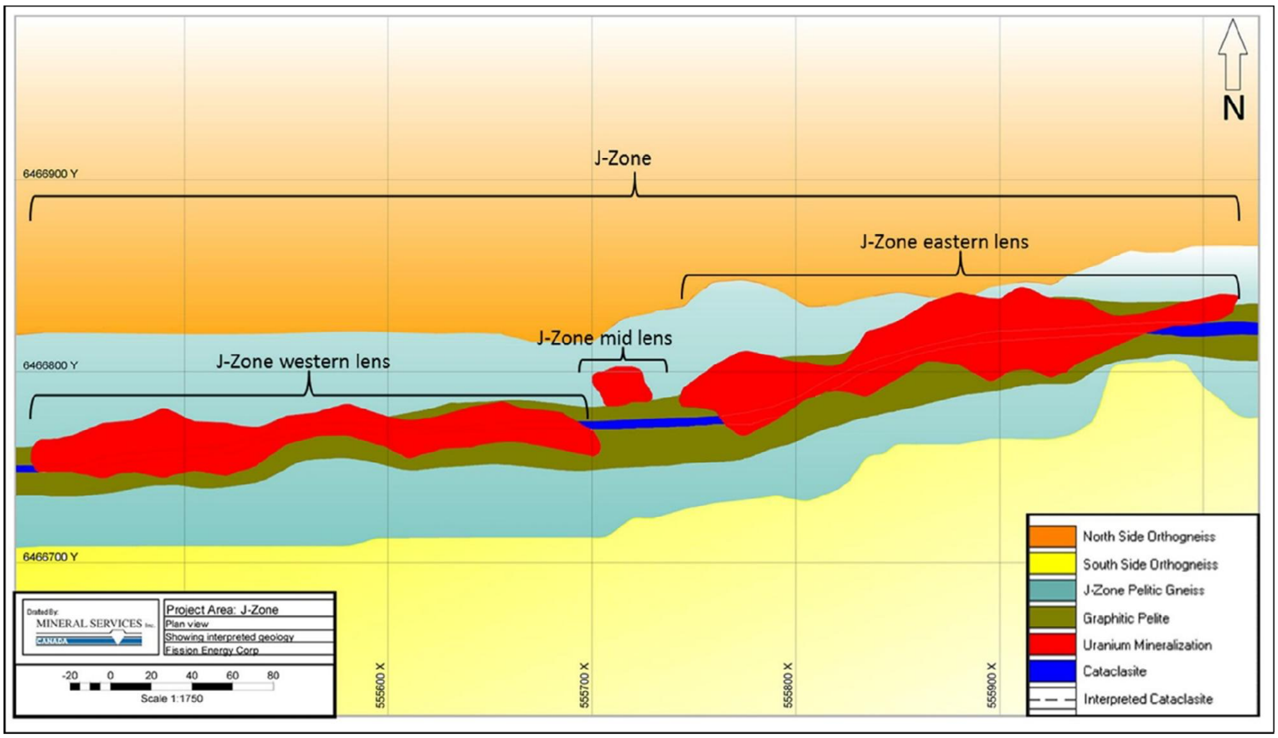


Figure 7-5: Plan view at 280 masl (roughly at the unconformity) showing the modeled geology of the Tthe Heldeth Túé (J Zone) in relation to mineralization (Armitage & Nowicki, 2012).

7.2.2 Huskie Deposit

The Huskie deposit is entirely hosted within competent basement rocks below the sub-Athabasca unconformity primarily within a faulted, graphite-bearing pelitic gneiss ("graphitic gneiss") which forms part of an east-west striking, northerly dipping package of metasedimentary rocks flanked to the north and south by granitic gneisses. The Athabasca Group sandstones that unconformably overlie the basement rocks are approximately 200 metres thick. The east-west trending faulted package of pelitic gneisses ranges in thickness from 40 to 60 metres and is moderately steep dipping to the north. There are discontinuous offsets at the unconformity that range from a few metres to as much as fourteen metres. It is depicted in plan view in Figure 7-5 and on a schematic cross-section in Figure 7-6.

7.2.3 Sub-Athabasca Crystalline Metamorphic Basement

The Waterbury Lake project is located over the Mudjatik-Wollaston Transition Zone (MWTZ). This zone is currently host to all of the producing uranium deposits in the Athabasca Basin. The basement beneath the Waterbury Lake project is comprised of approximately northeast trending corridors of metasediments wrapping around orthogneissic domes and locally in the Discovery Bay trend an east-west trending corridor of metasediments bounded to the north and south by thick zones of orthogneiss that, based on interpretation of aeromagnetic images, may represent two large dome structures. Based on a review of the Wollaston Supergroup by Yeo and Delaney the metasediments and the orthogneiss domes are interpreted to be Paleoproterozoic and Archean in age, respectively (Yeo & Delaney, 2007).

The Discovery Bay metasedimentary corridor appears to comprise a systematic sequence of steeply dipping, east-west striking units including: medium to fine grained, weakly graphitic cordierite-almandine pelitic gneiss, informally termed the 'typical Tthe Heldeth Túé pelitic gneiss'; graphite-sulphide rich pelitic gneiss; cordierite-almandine augen gneiss; and thin lenses of garnetite which appear to be more abundant along the southern edge of the corridor. Intercalated, lenses of semi-pelite, quartzite and psammitic gneiss are also occasionally present throughout the corridor. The metasediment stratigraphy in the portion of the corridor is poorly understood as Tthe Heldeth Túé mineralization dominantly occurs to the south of the corridor which is where drilling has been concentrated since the initial discovery. The northern portion of the metasedimentary corridor is interpreted to be made up primarily of the typical Tthe Heldeth Túé pelitic gneiss with an intermittent lens of steeply dipping quartzo-feldspathic, possibly psammitic, gneiss present locally. South of the typical Tthe Heldeth Túé pelitic gneiss is a package of graphite-sulphide rich pelite which appears to be flanked by, or hosts internally, intermittent zones of garnet-cordierite augen gneiss. In the approximate centre of the graphite-sulphide gneiss is a steeply dipping, strongly graphitic cataclastic fault zone that is closely associated with uranium mineralization. This fault zone is commonly enriched in classic Proterozoic basin uranium pathfinder elements such as arsenic, cobalt, copper, nickel, vanadium and lead, suggesting a possible pathway for a mineralizing and/or reducing fluid. The southern portion of the metasedimentary corridor is a continuation of the typical Tthe Heldeth Túé cordierite-garnet pelitic 25 gneiss, in this area characterized by an increased proportion of felsic banding and commonly intercalated lenses of almandine-magnetite-pyrite rich garnetite. A thin band of strongly altered calc-silicate material or pegmatite is commonly intersected along the southern contact between the metasediments and the southern orthogneiss.

The metasedimentary corridor is interpreted as the steeply north-northwest dipping limb of an antiformal fold structure wrapping around the southern orthogneiss dome. The north and south Archean orthogneiss bodies are typically composed of 25 % quartz, 65 % plagioclase and alkali feldspar combined and approximately 10 % biotite with trace garnet. The orthogneiss commonly contains thin pegmatite intrusions and lenses of non-foliated quartz-feldspar granofels. No significant structures or fault zones have been intersected in the orthogneiss bodies.

Away from mineralization the basement rocks display a typical paleo-weathering profile of rusty patchy to pervasive hematization which grades into dark green chloritization with depth. Throughout the paleo-weathered zone primary minerals have been completely altered to clay pseudo-morphs and this alteration can extend for tens of metres below the unconformity. Clay mineralogy in the paleo-weathering profile typically shows a downward progression from illite-kaolinite to chlorite. Orthogneiss commonly shows pervasive clay alteration near the unconformity that has resulted in pseudo-morphing of feldspar by chalky whitish-green illite and/or kaolinite. Primary textures are often destroyed and all that remains are quartz crystals in a clay-dominated matrix. Due to the higher proportion of garnet, biotite and other Al-silicates, the pelitic units tend to be significantly darker and more chloritic near the unconformity. Their ribbony texture is usually preserved despite the intense alteration. Zones of later-stage hydrothermal alteration are common throughout the basement beyond the paleo-weathered zone. Patchy red hematization is common, along with dark green, preferentially pervasive chlorite alteration of biotite and Al-silicates, and illitic-kaolinitic clay as pale yellow-green alteration of feldspar adjacent to fractures.

On a regional scale, the paleo-topography of the unconformity at the Waterbury Lake property is interpreted to be generally flat lying. In the vicinity of the Tthe Heldeth Túé however, interpreted stacked east-west striking sub vertical reverse faults have resulted in basement offsets of up to several metres which gradually down drop the unconformity towards the south. The most significant basement offset is associated with the thick graphitic cataclasite fault zone proximal to the Tthe Heldeth Túé mineralization. In zones of particularly thick or intense uranium mineralization the unconformity can be completely overprinted by massive hematite, clay and uranium, making it difficult to identify.

7.2.4 Athabasca Group Sandstone

The Athabasca Group sandstone, ranging from 200 to 370 m in thickness in the Waterbury Lake Project area, is comprised of Manitou Falls Formation sandstones and conglomerates of the MFb (Bird) Member (Table 7-3). The upper 100 to 140 m of sandstone is typically bleached to a buff colored, and is medium- to coarse-grained, quartz-rich, and cemented by quartz overgrowths, clay minerals (kaolin, illite), and/or hematite. Bleaching of the sandstone (removal of diagenetic hematite) is noted along much of the Tthe Heldeth Túé and Huskie zone trends.

The lower portion of the sandstone column is more typically conglomeratic and contains less quartz cement. The conglomeratic beds contain quartz pebbles ranging from one to four centimetres in diameter, locally up to 30 cm.

Illitic clay-rich zones are commonly associated with areas of intense hydrothermal alteration and uranium mineralization. These zones are generally present in the basal 20 m of the sandstone and associated with friable sand and conglomeratic beds.

Basement fault zones generally extend over 100 m into the overlying sandstone, act as hosts for uranium mineralization, and form the loci of the quartz dissolution and clay alteration zones that resulted in collapse of the property-scale conglomerate marker horizon.

7.2.5 Quaternary Geology

The surficial sediments in the Waterbury Lake Project area consist of a thin layer of Quaternary till and glaciofluvial sand and gravel. Low relief drumlins and eskers are the dominant surficial feature in the area. The till is typically brown, variably compact to dense and is composed of silt, sand, gravel, and boulders.

As defined by drilling, the thickness of this overburden typically ranges from 15 to 45 m in the project area.

7.3 Uranium Mineralization

7.3.1 Tthe Heldeth Túé

The Tthe Heldeth Túé uranium deposit was discovered during the winter 2010 drill program at Waterbury Lake. The second drill hole of the campaign, WAT10-063A, was an angled hole drilled from a peninsula extending into McMahon Lake. It intersected 10.5 m of uranium mineralization grading 1.91 % U_3O_8, including 1.0 m grading 13.87 % U_3O_8, as well as an additional 4 m grading at 0.16 % U_3O_8.

The Tthe Heldeth Túé deposit is currently defined by 268 drill holes intersecting uranium mineralization over a combined east-west strike length of up to 700 m and a maximum north-south lateral width of 70 m. The deposit trends roughly east west (080°) in line with the metasedimentary corridor and cataclastic graphitic fault zone. A 45 m east-west intermittently mineralized zone occurs in the target area formerly known as Highland roughly separating the Tthe Heldeth Túé into two segments referred to as the eastern and western lenses which are defined over east-west strike lengths of 260 and 318 m, respectively. A thin zone of unconformity uranium mineralization occurs to the north of intermittently mineralized zone which is interpreted to represent a mineralized block that has been displaced northwards by faulting and is referred to as the mid lens.

Mineralization thickness varies widely throughout the Tthe Heldeth Túé and can range from tens of centimetres to over 19.5 m in vertical thickness. In cross section, Tthe Heldeth Túé mineralization is roughly trough shaped with a relatively thick central zone that corresponds with the interpreted location of the cataclasite and rapidly tapers out to the north and south. Locally, a particularly high-grade (upwards of 40 % U_3O_8) but often thin lens of mineralization is present along the southern boundary of the metasedimentary corridor, as seen in holes WAT10-066, WAT10-071, WAT10-091, and WAT10-103. Ten-metre step out drill holes to the south from these high-grade holes have failed to intersect any mineralization, demonstrating the extremely discreet nature of mineralization.

Uranium mineralization is generally found within several metres of the unconformity at depth ranges of 195 to 230m below surface. It variably occurs entirely hosted within the Athabasca sediments, entirely within the metasedimentary gneisses or straddling the boundary between them. A semi-continuous, thin zone of uranium mineralization has been intersected in occasional southern Tthe Heldeth Túé drill holes well below the main mineralized zone, separated by several metres of barren metasedimentary gneiss. This mineralized zone is informally termed the south-side lens and can host grades up to 3.70 % U_3O_8 as seen in drill hole WAT11-142.

The Tthe Heldeth Túé deposit is generally flat lying (located roughly 200m below the surface of McMahon Lake) and therefore whenever possible holes have been drilled vertically in order to intersect the ore lenses perpendicularly, thereby giving an approximate true thickness. See Figure 7-5 for a plan view of the basement geology at the Tthe Heldeth Túé and Figure 7-6 for a cross section of the basement geology and mineralization at the Tthe Heldeth Túé.

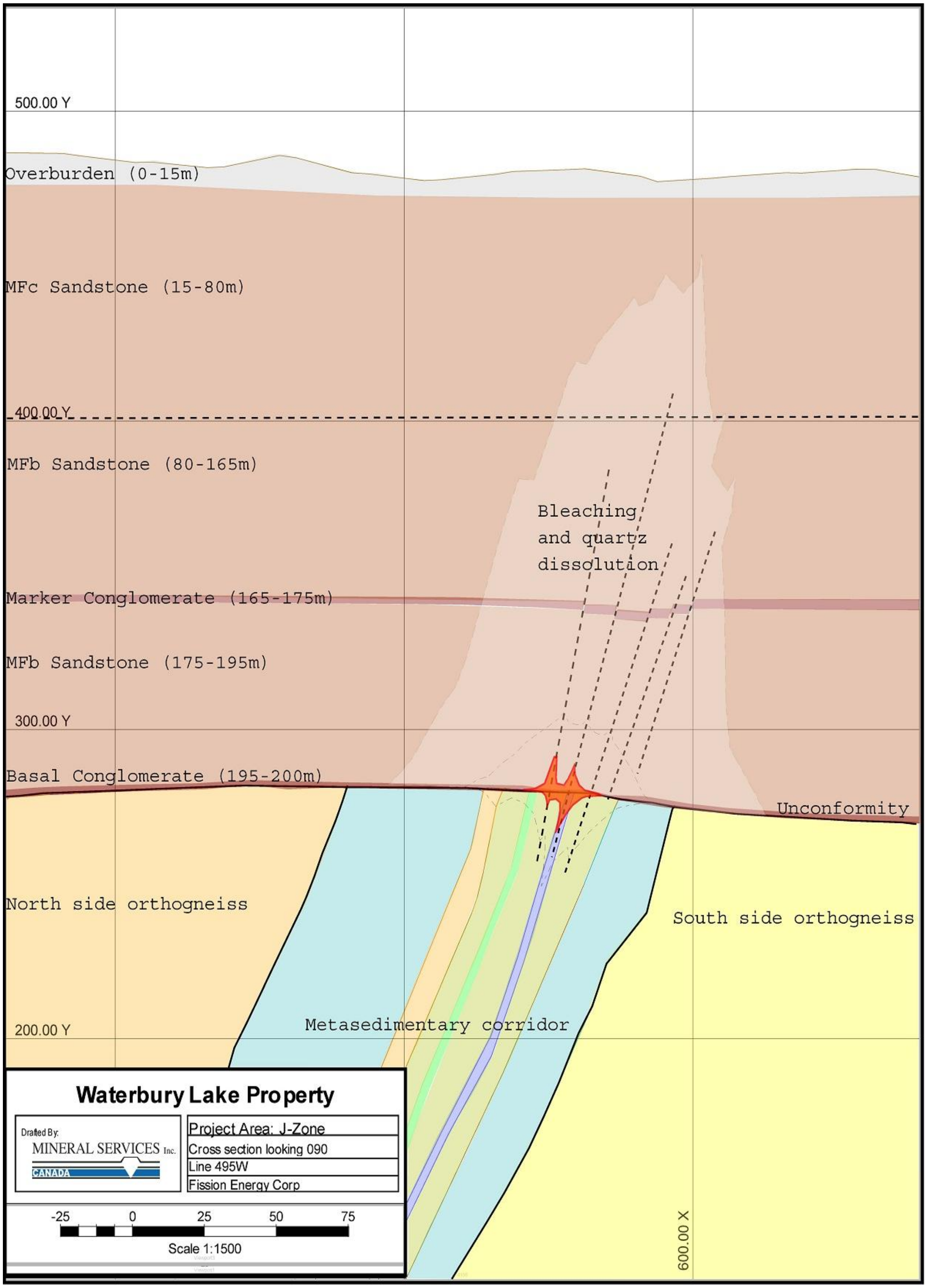


Figure 7-6: Interpreted simplified geology section through the Tthe Heldeth Túé (J Zone) deposit looking east. Expected depths or depth ranges of units noted in brackets (Armitage & Nowicki, 2012).

7.3.2 Huskie Deposit

The Huskie deposit mineralization is entirely basement-hosted comprising three stacked, parallel lenses (Huskie 1, Huskie 2 and Huskie 3) which are conformable to the dominant foliation and fault planes within the east-west striking graphitic gneiss unit. The drilling to date suggests the grade, thickness, and number of lenses present is controlled by the presence of northeast striking faults which cross-cut the graphitic gneiss unit. The northeast striking faults identified at the Huskie deposit are interpreted to be part of the regional Midwest structure. The deposit occurs over a strike length of approximately 210 metres, dip length of approximately 215 metres and has an overall true thickness of approximately 30 metres (individual lenses vary in true thickness of between 1 metre and 7 metres). The deposit occurs at vertical depths ranging between 240 and 445 metres below surface and 40 to 245 metres below the sub-Athabasca unconformity. The high-grade mineralization within the lenses is comprised of massive to semi-massive uraninite (pitchblende) and subordinate bright yellow secondary uranium minerals occurring along fault or fracture planes, or as replacement along foliation planes. Disseminations of lower grade mineralization occur within highly altered rocks proximal to fault planes. The mineralization is intimately associated with hematite, which both occur central to a broad and pervasive alteration envelope of white clays, chlorite and silicification. See Figure 7-7 for a plan view of the basement geology at the Huskie zone and Figure 7-8 for a cross section of the basement geology and mineralization at the Huskie zone.

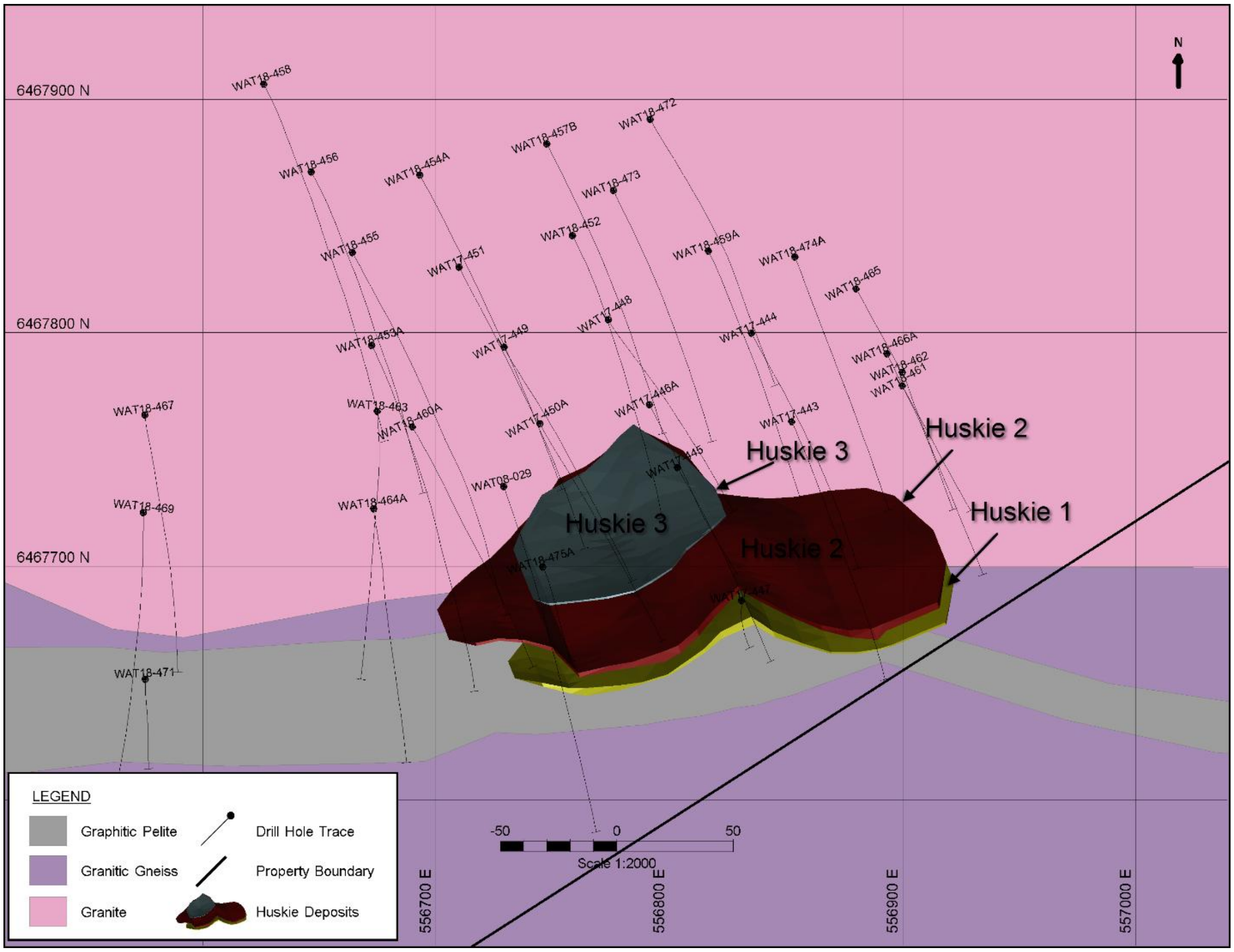


Figure 7-7: Geology Plan Map Showing Drill Hole Traces and the Huskie Deposit Mineralized Wireframes.

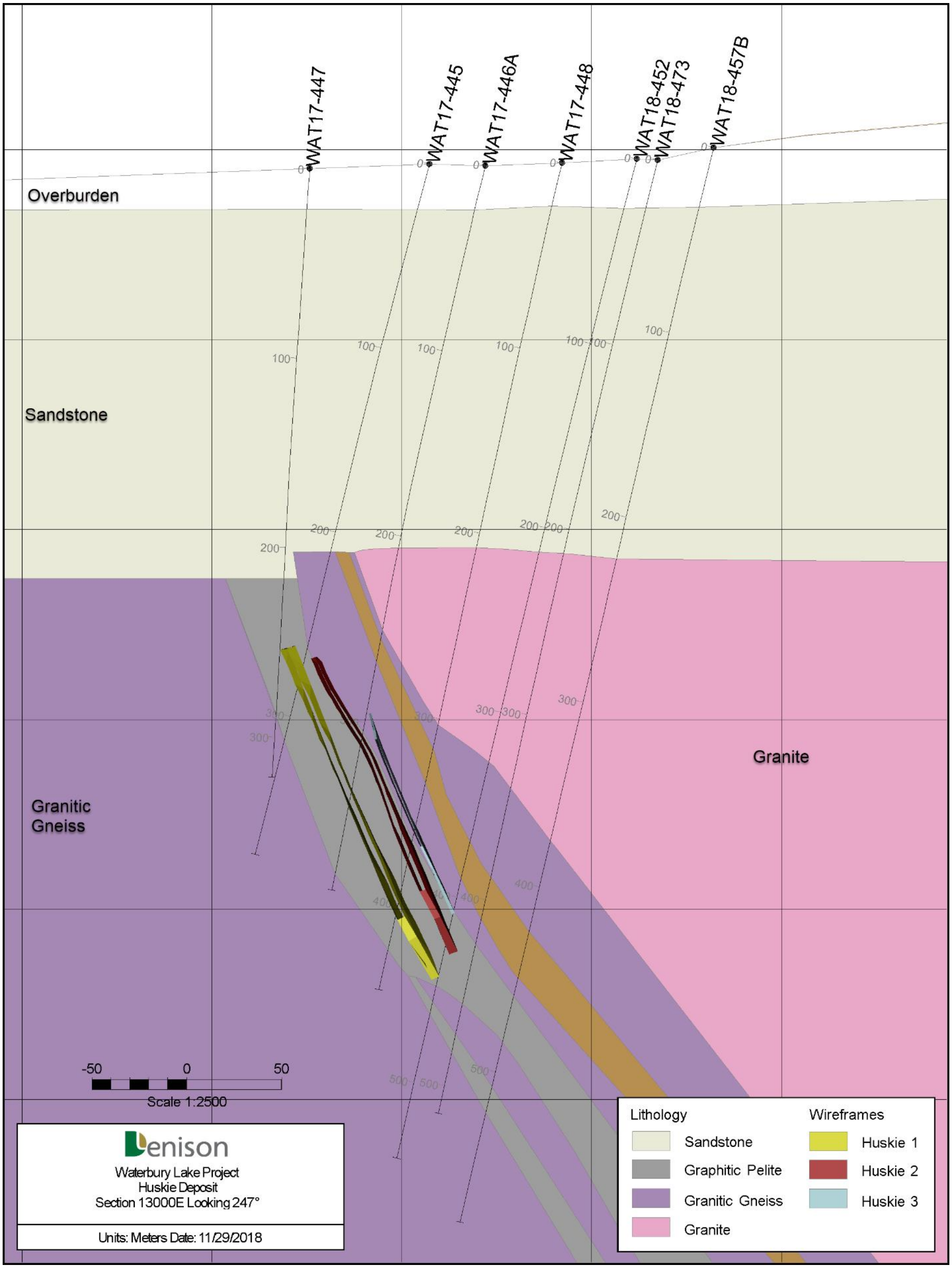


Figure 7-8: Cross section through the Huskie deposit with simplified geology.

8 DEPOSIT TYPES

8.1 Uranium Deposit Type

The Athabasca Basin is one of the principal uranium producing districts in the world (Jefferson, et al., 2007b) and it contains the world's largest high-grade unconformity-type (also called unconformity-related) uranium deposits (McArthur River and Cigar Lake). The Midwest uranium deposits (Midwest Main and Midwest A) are classified as typical egress-style unconformity-type uranium deposits (Figure 8-1, 8-2) that formed through diagenetic-hydrothermal basement-sandstone interaction (Hoeve & Sibbald, 1978); (Hoeve & Quirt, 1984); (Hoeve & Quirt, 1987). The IAEA definition of this type of deposit is: "Unconformity-related deposits comprise massive pods, veins, and/or disseminations of uraninite spatially associated with major unconformities that separate Paleoproterozoic metamorphic basement from overlying Paleoproterozoic-Mesoproterozoic siliciclastic basins" (IAEA, 2009).

Unconformity-type uranium deposits consist of pods, veins, and semi-massive replacements of pitchblende/uraninite resulting from diagenetic-hydrothermal basement-cover fluid-rock interactions and redox mineral reactions located close to unconformities between fluviatile conglomeratic sandstone and metamorphosed basement ((Hoeve & Sibbald, 1978); (Hoeve & Quirt, 1984); (Hoeve & Quirt, 1987); (Jefferson, et al., 2007b)). Complex redox-controlled reactions due to fluid-fluid and fluid-rock interactions resulted in precipitation of massive pitchblende, with associated hematite, and varying amounts of base and other metals.

A broad variety of deposit shapes, sizes, and compositions have been found (Figure 8-1). The deposits range from egress-style polymetallic lenses at and above the unconformity (Figure 8-1 and Figure 8-2), with variable Ni, Co, As, and Pb contents and elevated amounts of Cu, Mo, Zn, Au, S, Pt, and REEs, to ingress-style near-monometallic basement-hosted vein sets, with low base metal and REE contents. The ingress-style deposits are now generally recognized as "blind" deposits, having little to no expression in the overlying Athabasca sandstone and few direct clues for exploration (Hoeve & Quirt, 1984); (Quirt D. H., 1989); (Quirt D. H., 2003); (Jefferson C. W., Thomas, Quirt, Mwenifumbo, & Brisbin, 2007c).

The dominant location of egress-style mineralization can occur in the sandstone, directly above the unconformity (Cigar Lake, Sue A and B), straddling the unconformity (Collins Bay B Zone, Midwest Main, Midwest A, McClean North, Key Lake), or perched high above the unconformity (certain zones at McClean Lake, Midwest, Cigar Lake), or solely in the basement (Eagle Point, Sue C, Sue E, Millennium). The Millennium deposit contains mineralization both in the basement and at the unconformity, while the Shea Creek deposits contain mineralization in the basement, deep in the basement, at the unconformity, and perched in the sandstone. In some deposit areas, there is a plunge to the mineralized pods from sandstone-hosted to basement-hosted within deposit–scale strike lengths ((Rabbit Lake-Collins Bay-Eagle Point trend, Sue trend deposits, McClean North; (Quirt D. H., 2003)).

These mineralization types are also recognized based on fluid flow and varying interactions of fluid with fluid or rock, with two deposit/alteration styles (egress-style and ingress-style) being associated with mineralization (Figure 8-2). The egress-style formed through a fluid-fluid mixing process involving oxidized basinal brine and relatively reduced fluid emanating from the basement ((Hoeve & Sibbald, 1978); (Hoeve & Quirt, 1984); (Quirt D. H., 1989)). A Fe-U redox couple resulted in precipitation of pitchblende and hematite (plus Fe, Cu, Pb sulphide, and Co-Ni arsenide and sulpharsenide minerals) at locations of relatively stable sites of this fluid mixing (Hoeve & Quirt, 1987). The presence of mobile hydrocarbons likely also aided in the mineralization process (Hoeve & Quirt, 1984). The ingress-style formed through a fluid-rock interaction process involving the oxidized basinal brine entering the basement along fault/fracture zones and interacting/reacting with ferrous iron-bearing wall-rock. This interaction also resulted in a Fe-U redox couple and precipitation of pitchblende and hematite.

The diagenetic-hydrothermal metallogenetic model (Hoeve & Sibbald, 1978); (Hoeve & Quirt, 1984); (Wallis, et al., 1985); (Quirt, 1989); (Quirt, 2003); (Jefferson, et al., 2007c); among others) relates uranium mineralization to diagenetic processes within the Athabasca Group sediments. The model attributes the origin of uranium mineralization to fluid interaction between oxidized Athabasca basinal brines and variably reduced basement fluids in an intimate coupling of diagenesis, basin evolution, and formation of mineralization, particularly in periods of active tectonics. The source of metals in the unconformity-type deposits is still a contentious issue ((Jefferson & Delaney, 2007); (Jefferson, et al., 2007a); (Jefferson, et al., 2007b); (Jefferson, et al., 2007c)). Available evidence suggests that the constituents of the Athabasca unconformity-type uranium deposits were derived from both sandstone and basement sources.

Diagenetic-hydrothermal systems of basement-sandstone interaction developed in many structurally-controlled locations along traces of graphitic basement rocks sub-cropping at the unconformity (Hoeve & Quirt, 1984). Significant mineralization precipitated only where local hydrodynamic conditions were conducive to the formation of a stationary redox front (Hoeve & Quirt, 1987).

8.2 Host-Rock Alteration

As noted above, the two main types of unconformity-type uranium deposit paragenesis in the Athabasca Basin are dictated by the form of fluid interaction and can be separated by deposit location ((Quirt, 2003); Figure 8-2):

1. Sandstone-hosted egress-style (e.g. McClean North, JEB, Sue A and B, Collins Bay, Midwest, Cigar Lake, Key Lake) involving mixing of oxidized sandstone brine with relatively reduced fluids issuing from the basement into the sandstone, and

2. Basement-hosted ingress-style (e.g. Sue C, Sue D, Sue E, Eagle Point, Rabbit Lake, Millennium) involving fluid-rock reactions between oxidizing sandstone brine entering basement fault zones and the wall rock.

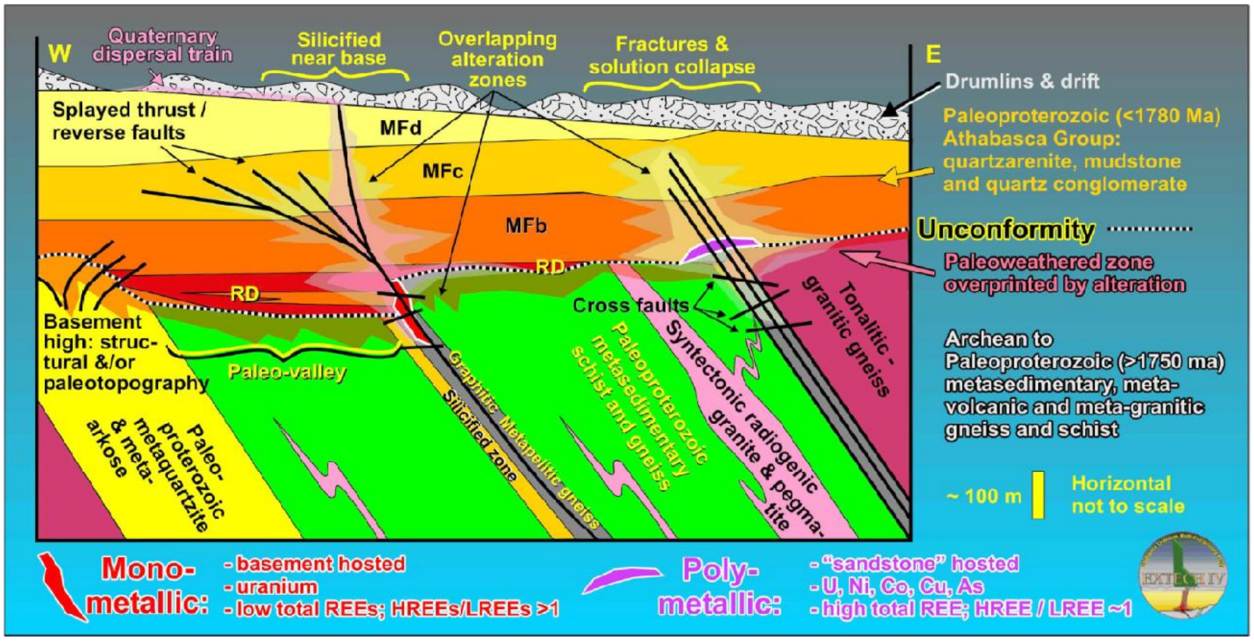


Figure 8-1: Geological elements of mono-metallic and poly-metallic unconformity-type uranium deposits ((Jefferson, et al., 2007b); (Jefferson, et al., 2007c).

Both styles of mineralization and associated host-rock alteration occurred at sites of basement-sandstone fluid interaction where a spatially-stable redox gradient/front was present. The mineralization-associated host-rock alteration is distinct from the diagenetic alteration in the sandstone and overprints the paleoweathering profile commonly observed in the upper part of the crystalline basement (Hoeve & Quirt, 1984).

In the sandstone, the host-rock alteration halos have a plume-shaped expression in and above the hosting structure, forming a series of onion skin-like mineralogical zones (Figure 8-2). In the sub-Athabasca basement, host-rock alteration comprises extensive clay mineral alteration (chloritization, illitization) of original retrograde metamorphic and/or paleoweathering mineralogy, conversion of clay mineral species, quartz dissolution, and bleaching. The alteration associated with basement mineralization is tightly constrained to the fracture- and fault-hosted mineralization, forming a sharp funnel-shaped alteration feature.

The hydrothermal alteration associated with mineralization comprises varying degrees of chloritization, hematization, bleaching, tourmalinization, illitization, kaolinization, and silicification and/or de-silicification. The alteration types may affect the basement rocks, the overlying sandstone, or both.

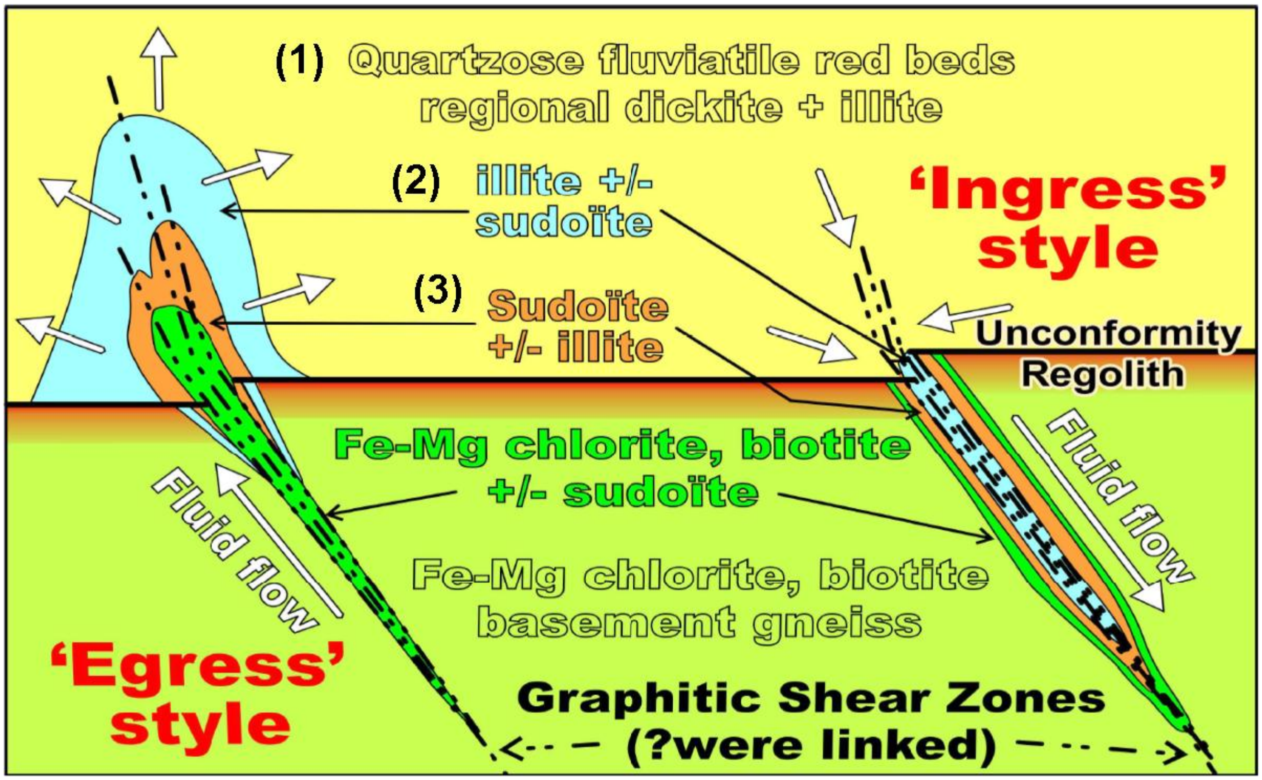


Figure 8-2: Egress versus ingress-style alteration zones for unconformity-type uranium deposits ((Jefferson, et al., 2007b); (Jefferson, et al., 2007c); (Quirt, 2003)).

Visually, the most conspicuous aspect of sandstone alteration is bleaching, the chemical reduction of ferric iron shown by white and creamy, to locally olive-green, bleached colours resulting from the removal of hematite from the normally purple or pink sandstones of the lower Manitou Falls Formation (Hoeve & Quirt, 1984). Discontinuous, patchy, to locally abundant diagenetic bleaching occurs in the sandstone, but host-rock alteration-related bleaching is pervasive in alteration haloes. The sub-Athabasca paleoweathering profile is similarly bleached where affected by host-rock alteration. Frequently, the bleached rock is separated from the purple hematitic rock by a narrow zone of orange-red to brick-red coloration. Basement "bleaching" is a result of destruction (argillization) of ferromagnesian minerals. The bleaching is fracture- and permeability-controlled, forming haloes around micro-fractures, joints, and faults, and it laterally advances along zones parallel to lithological bedding/foliation.

Hematite alteration also occurs both as a diagenetic and a hydrothermal process. The diagenetic alteration occurs disseminated throughout the sandstone and in the paleoweathered basement and is typically a purplish-red colour. Hydrothermal hematite occurs very close to the mineralization, usually within a metre, and where strongly developed is an ochre-red or brick-red colour. It is ubiquitous along well-developed redox fronts.

Most sandstone-hosted deposits display dominant desilicification features resulting from dissolution of quartz (overgrowths and detrital quartz grains in the sandstone and quartz crystals/grains in the basement) reducing the rock to rubbly semi- to unconsolidated material or to clay. It is a result of the interaction of the mineralizing fluids with the host rock and most commonly it occurs surrounding “perched” mineralization or above mineralization located at the unconformity. Desilicified material contains coincident abundant accumulations of clay minerals (resulting from the volume reduction), now dominantly illite, and detrital minerals like zircon and tourmaline.

Silicification (euhedral/druzy quartz) commonly surrounds or overlies desilicified zones around egress-style halos in the sandstone and likely represents deposition of silica obtained from the de-silicified zones. It usually occurs distal to the mineralization.

Illite, particularly the 1Mt polytype, is characteristic of the clay mineral alteration halo around both sandstone-hosted and basement-hosted deposits (Laverret, et al., 2006). Sudoitic chlorite is often found in the core of the altered and mineralized zones. Around basement-hosted deposits, however, the host-rock alteration is relatively tightly restricted to the proximity of the mineralized veins, unlike the massive to semi-massive alteration occurring around the egress-type deposits. The encompassing alteration is dominantly chloritic, at the expense of ferromagnesian minerals like biotite, cordierite, and garnet (Eagle Point, Sue C). The alteration grades from illite, present adjacent to the veins, to illite-sudoite, to sudoite, and then to background Fe-Mg chlorite plus biotite (Quirt, 1989).

Tourmalinization (Na-Mg borosilicate) occurs as cream-coloured to light bluish-white “dravite” (alkali-deficient dravite) that both replaces country rock and occurs as vein fillings. Dravite can be porcelain-like in texture and it is common as a proximal alteration mineral.

The Tthe Heldeth Túé shows characteristics that are typical ‘*egress-type’* deposit, in which alteration zones (1), (2), and (3) extends into the sandstone (Figure 8-2).

The Huskie deposit shows characteristics that are typical of ‘*ingress-type’* deposits, in which alteration zones extend into the basement.

9 EXPLORATION

The chronology of exploration on the Waterbury Lake Project is described in Section 6. The drilling history of the Tthe Heldeth Túé and Huskie deposits is described in Section 10.9.

The history of exploration work completed up to 2012 has been taken from the "*Technical Report on the Waterbury Lake Uranium Project Including Resource Estimate on the J Zone Uranium Deposit, Waterbury Lake Property*" by Armitage and Nowicki, prepared for Fission Energy Corp. (Armitage & Nowicki, 2012).

9.1 Geological Mapping

No significant geological mapping has been conducted on the Waterbury Lake property to date. The property is dominantly covered by a thick layer of Quaternary sediments resulting in poor outcrop exposure.

9.2 Geophysical Surveys

With the exception of drilling, and related work, exploration on the Waterbury Lake property has mostly been in the form of geophysical surveys. Airborne magnetic surveys (Figure 9-1) have been flown property-wide and have been used to identify significant basement structures and to help map basement rock types. Airborne and ground-based EM surveys have also been carried out across the property in order to define conductive, likely graphitic basement structures that may be associated with uranium mineralisation. Additionally, ground based induced polarization (DC-IP) (see Figure 9-3 for compilation of ground DC-IP surveys) and gravity surveys have aimed to identify zones of low resistivity and negative gravity anomalies resulting from quartz dissolution and clay alteration. The Tthe Heldeth Túé falls within a zone of low resistivity and is broadly associated with a conductive zone identified from airborne EM data. However, drill targeting in this area has been based on a combination of geophysical, geological, radiometric and geochemical factors. Many drill targets prior to the Tthe Heldeth Túé discovery were based on geophysical data, including those in the Highland, Talisker and Shuttle Lake areas. Although no drill holes targeting the geophysical anomalies intersected significant uranium mineralisation occasional encouraging alteration and / or basement lithologies were intersected. For example, WAT09-051 intersected zones of elevated radioactivity and illitic clay alteration in the sandstone, as well as intersecting pelitic basement lithologies.

In January 2011, a small moving loop EM survey was undertaken in the Discovery Bay area to refine the position of the strong EM conductor interpreted to be the graphitic cataclasite proximal to the Tthe Heldeth Túé. The revised EM conductor trace was found to intersect the unconformity 40 m south of the actual Tthe Heldeth Túé mineralisation. This offset relationship was tested along the extent of the Discovery Bay EM conductor in areas of coincident resistivity lows and resulted in the discovery of the PKB, which is now part of Tthe Heldeth Túé western lens, and Summit mineralised zones. Additional testing of resistivity lows and coincident EM conductors in the Oban (Figure 9-1) area resulted in intersection of intermittent mineralised zones, graphitic basement lithologies and significant hydrothermal alteration along the central O2 conductor. Drill testing in the Murphy Lake (Figure 9-2) target area along strong EM conductors and coincident resistivity lows intersected moderately altered metasediments and thin zones of weak to moderate uranium mineralisation. 2011 TEM and resistivity surveys also identified lower sandstone resistivity lows and coincident TEM conductors in target areas named Arran and Chivas to the southwest and northwest of the Tthe Heldeth Túé respectively (Figure 9-2).

During 2012, Fission Energy completed 50.3-line kilometres of moving loop electromagnetic ground surveying, 33.4 line kilometres of IP resistivity surveying and 1,180 metres of borehole transient electromagnetic (BHTEM) surveying. The ground surveys were completed on various grids throughout the property and are explained in detail in the assessment report titled “August 2011 - August 2012, Borehole and Ground Geophysical Surveys and Diamond Drilling on the Waterbury Lake Property, Athabasca Basin, Northern Saskatchewan” (McElroy, et al., 2013).

Denison took over exploration of the Waterbury Lake Project in 2013. In 2013, Denison completed a 50.5 line-kilometre DC-IP resistivity survey on claim S-107364 (Carmichael, 2013). The survey mapped a sub-linear, east-west trending zone of moderate to high resistivity in the basement which breaches the sandstone at a break in the residual magnetic intensity.

In 2014, Denison completed 24 lines of DC-IP resistivity surveying totalling 40.4 line-kilometres (Carmichael, 2014). DC-IP resistivity surveying identified two zones of low basement resistivity in the Discovery Bay area (Figure 9-3). One zone is parallel to and coincident with the Discovery Bay conductor and extends north beyond the terminus of the conductor. The second zone extends west-northwest from the Tthe Heldeth Túé and wraps around the margin of a body of granite gneiss which bounds the Tthe Heldeth Túé to the north.

During the winter of 2015, Denison completed 28.8 kilometres of DC-IP resistivity surveying on claims S-107364 and S-107370 (Figure 9-3). The survey mapped two east-west trending basement lows with weak associated sandstone breaches that are interpreted as a parallel set of steeply dipping conductive metasediments.

During the winter of 2016, Denison completed a five line DC-IP resistivity survey over the newly cut WAT16-G1 grid on disposition S-107370 (Burry, 2016). This survey totalled nine line kilometres and was an extension to the WAT15-G1 DC-IP survey completed in 2015. Denison also completed a 21 line DC-IP resistivity survey over the newly cut WAT16-G2 grid on dispositions S-107361, S-107362 and S-111278 (Burry, 2016). The WAT16-G2 survey totalled 115.2 line kilometres (Figure 9-3).

Denison did not conduct any geophysical surveys during 2017.

During the fall 2018, Denison conducted a 16 line 28.8 line kilometre DC-IP resistivity survey over the WAT18-G1 grid (Figure 9-3) to see if the interpreted Midwest structure crosses over from the Midwest property mineral lease ML5115 onto Waterbury Lake disposition S-107363; the survey defined a separate parallel trend, 800 metres to the west of the Midwest Structural corridor, which was subsequently drill tested in 2019. Weakly conductive psammopelitic to pelitic gneisses were intersected; no favourable structures or alteration were intersected.

During Q1 2020, Denison conducted a 12 line 17.6 line kilometre MLTEM ground survey over the WAT20-G1 grid, located on disposition S-107373, after drill hole WAT19-493 intersected favourable structure and alteration associated with an untested northeast oriented airborne magnetics low trend. The 2020 MLTEM survey defined a 2.2 kilometre long moderate electromagnetic ground conductor.

Detailed results and interpretations of the geophysical surveys undertaken on the Waterbury Lake property between 2005 and 2020 is beyond the scope of this document but can be found in the following reports:

1. Basic EM interpretation report; Airborne Magnetic and MEGATEM survey, Waterbury Lake. Fugro Airborne Surveys (2005)
2. 2005 and 2006 Exploration at the Waterbury Lake property, northern Saskatchewan. Dahrouge Geological Consulting (2006)
3. 2006 and 2007 Exploration of the Waterbury Lake property, northern Saskatchewan. Dahroughe Geological Consulting (2006)
4. Report on a helicopter borne time domain electromagnetic geophysical survey, Waterbury Lake property, Points North Saskatchewan, Canada. Geotech Ltd (2008)
5. Report on 2008 Ground geophysics surveys on the Waterbury Project Claims. Interpretex Resources Ltd (2009)
6. Report on the 2009 ground geophysical surveys on the Waterbury Project Claims. Interpretex Resources Ltd (2009)
7. Fission Waterbury Project Resistivity Evaluation and Interpretation. Living Sky Geophysics Inc. (2010)
8. Fission Energy Corp – Waterbury Project 2010-2011 field logistics report. Patterson Geophysics Inc. (2011)
9. Waterbury Lake Summary Report, Athabasca Basin, Northern Saskatchewan, Map sheets 64L/5, 74I1&8. Barbara Crawford (2011)
10. Report on EM and DC resistivity Surveys of the Waterbury Property. David Bingham, (2011)

11. Report on EM and DC Resistivity Surveys over the Waterbury Property. David Bingham, (2012)
12. 2013 Diamond Drilling on the Waterbury Lake Property, Andrew Carmichael (2013), MAW362
13. 2013 Geophysical surveying on the Waterbury Lake Property, Andrew Carmichael (2013), MAW359
14. 2014 Diamond Drilling on the Waterbury Lake Property, Andrew Carmichael (2014), MAW572
15. 2014 Geophysical surveying on the Waterbury Lake Property, Andrew Carmichael (2014), MAW570
16. 2015 2015 Annual Report on the Waterbury Lake Project, Andrew Carmichael (2015), MAW2111
17. 2016 Annual Report on the Waterbury Lake Project, Paul Burry, (2016), MAW2112
18. 2017 Annual Report on the Waterbury Lake Project, Paul Burry, (2017), MAW2392
19. 2018 Annual Report on the Waterbury Lake Project, Paul Burry, (2018), has not been submitted for assessment yet, will be submitted in 2021.
20. 2019 Annual Report on the Waterbury Lake Project, Paul Burry, (2019), has not been submitted for assessment yet and will be submitted at a later date.
21. 2020 Annual Report on the Waterbury Lake Project, Paul Burry, (2020), has not been submitted for assessment yet and will be submitted at a later date."

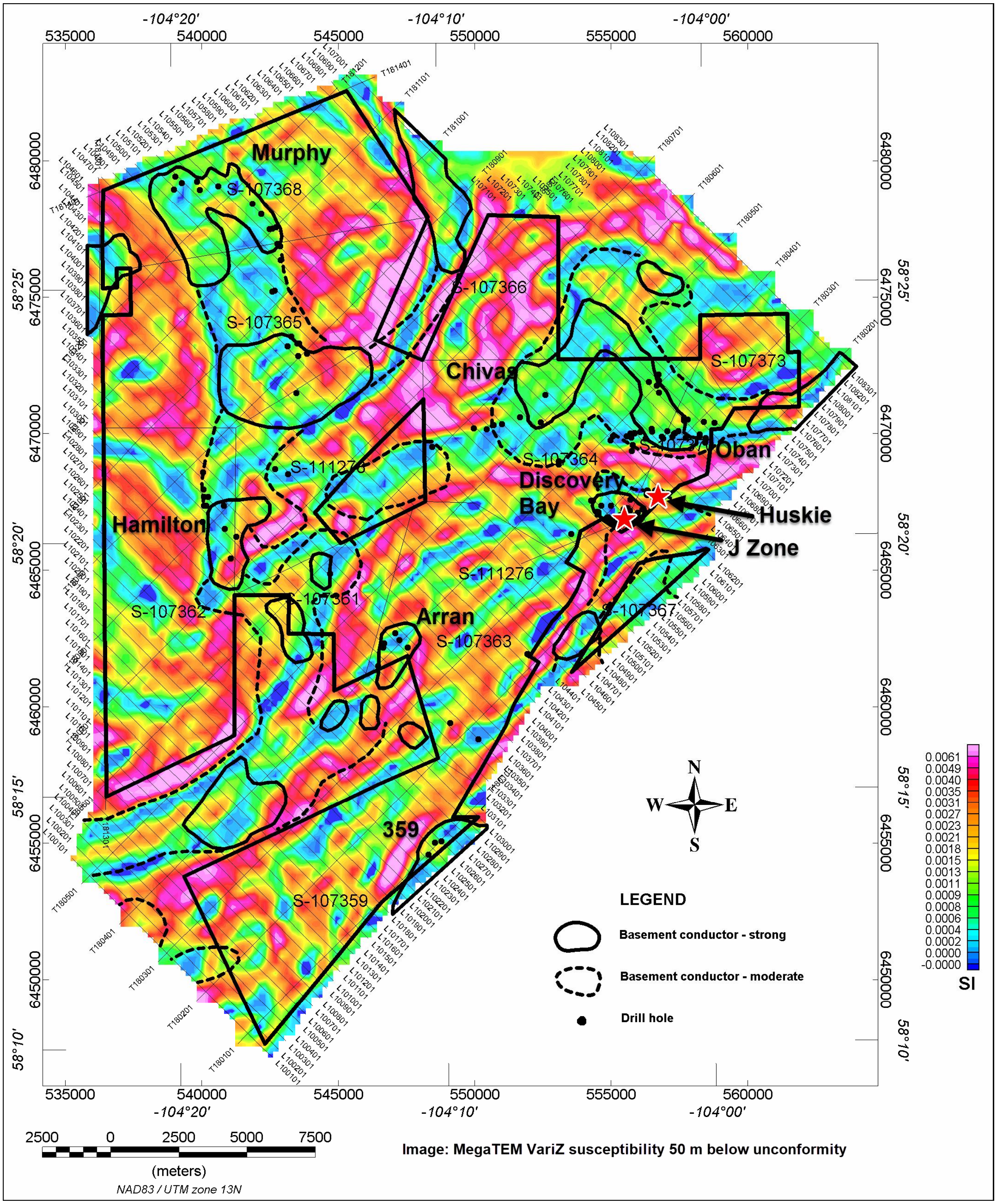


Figure 9-1: Property scale view of MegaTEM airborne magnetics survey.

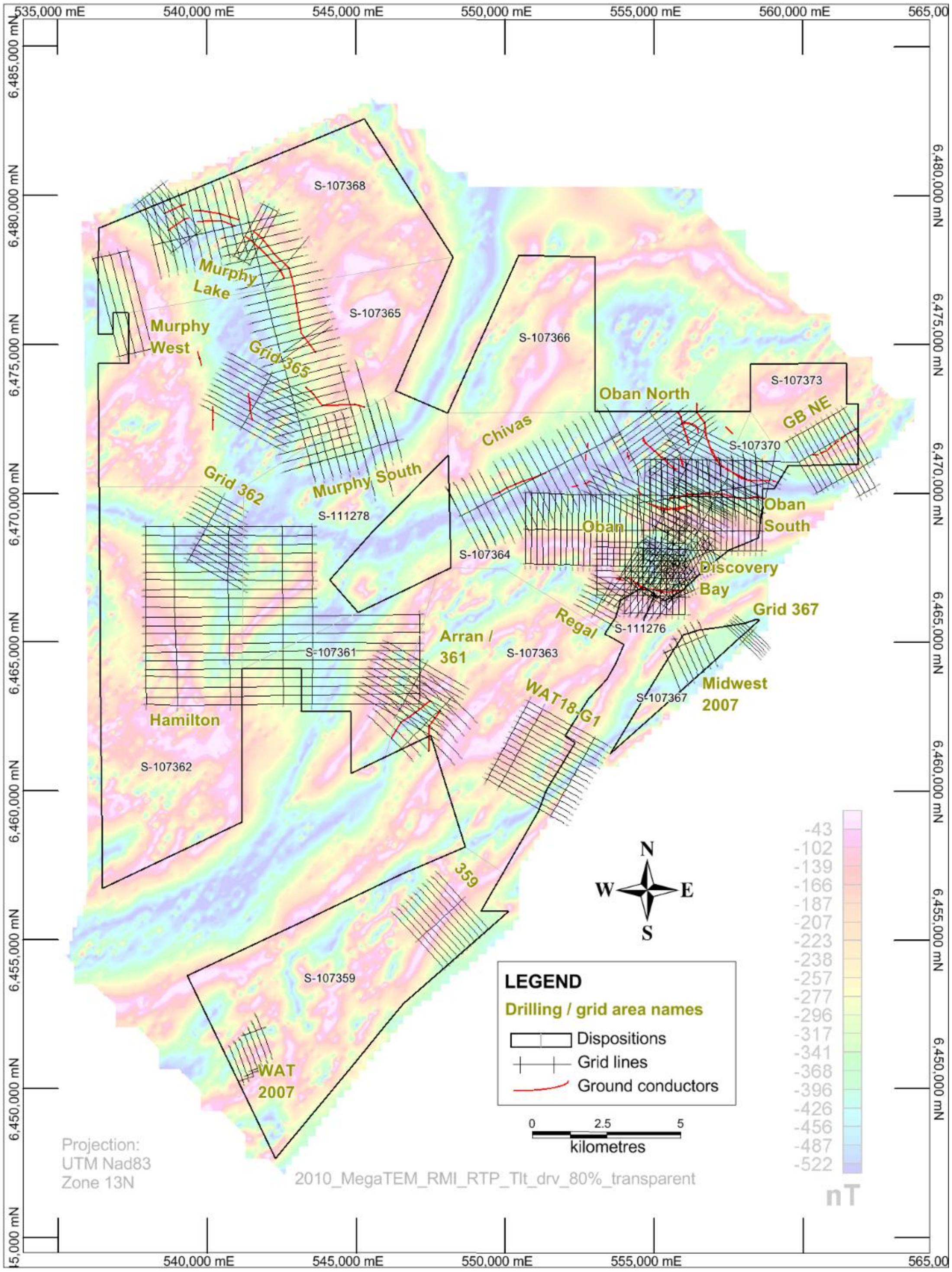


Figure 9-2: Property scale view of ground grid and defined ground electromagnetic conductors, 2006 – 2020

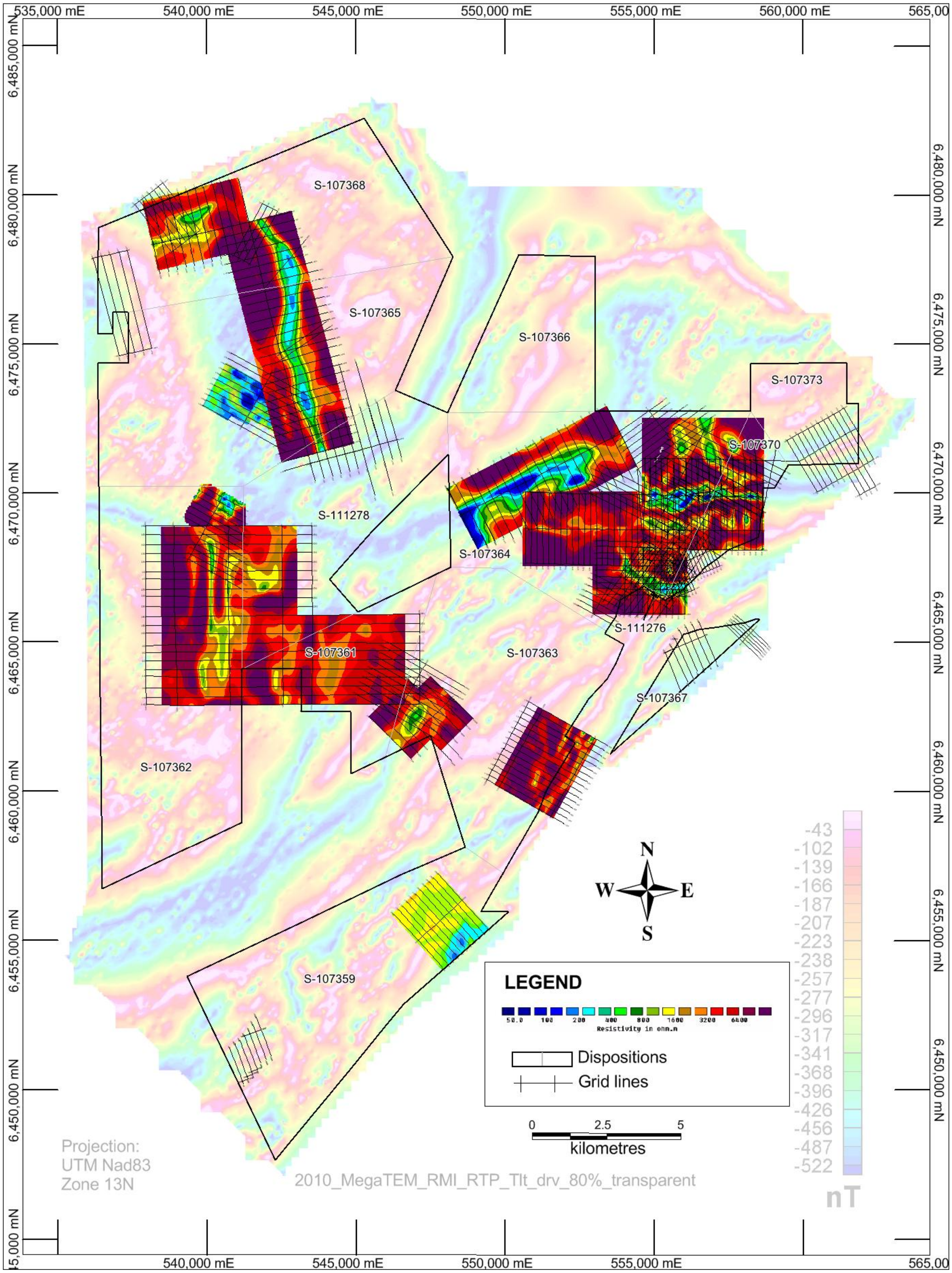


Figure 9-3: Property scale view of DC-IP ground resistivity surveying coverage, 2006 – 2018

9.3 Surface Geochemical Surveying

Several reconnaissance scale surface geochemical surveys have been undertaken on the Waterbury Lake property. A boulder sampling program began during the fall of 2005 by Dahrouge Geological for Strathmore Minerals Corp. A total of 77 sandstone boulder samples were taken but no anomalous uranium concentrations were found, although several samples did have elevated proportions of illitic clay. A mobile metal ions (MMI) survey was carried out in 2007 on the northwest portion of the Waterbury Lake property by Mount Morgan Resources Ltd of Lac du Bonnet, Manitoba, and Canada. A total of 434 grid controlled soil samples were taken over two sampling grids. Several geochemical anomalies were identified throughout the two grids but the high to moderate tin, tantalum and tungsten response suggested the basement lithology was dominantly granitic. The anomalous uranium concentrations were interpreted to have likely originated from the felsic basement rather than a deeply buried uranium deposit (Appendix 16; (McElroy & Jeffrey, 2009)). A second MMI survey was carried out by Fission Energy Corp. geologists during the summer 2008 program. A total of 452 samples were collected around the Discovery Bay portion of the Waterbury Lake property. An additional 465 soil samples were taken on claim S-107359 to the south of Discovery Bay. MMI uranium anomalies were found to be coincident with north-easterly trending lineaments cut by easterly lineaments (Appendix 17; (Zastavnikovich, 2009); (McElroy & Jeffrey, 2009)).

During the summer 2009 program, Fission Energy Corp geologists completed a short reconnaissance scale boulder sampling program. Targets were based on the results of a detailed airborne radiometric survey that was flown earlier in the summer. No significant uranium mineralisation was found, and the targets turned out to be dominantly conglomeratic sandstone boulders with slightly elevated radioactivity. Further analysis of the property wide airborne radiometric survey data from 2009 generated additional targets which required follow up in 2010. As in 2009, many of the target areas turned out to be boulder fields dominated by conglomeratic sandstone or felsic boulders with slightly above background levels of radioactivity (Pollock, 2010).

During the 2011 summer drill program a high-density lake bottom and soil geochemical survey was undertaken within the Discovery Bay Corridor. A total of 166 samples (42 ‘A’ horizon soil, 41 ‘B’ horizon soil, 57 lake bottom organics and 26 sieved lithic) were taken along five 500 m long roughly north-south oriented traverses over the Tthe Heldeth Túé, PKB, PKB west, Talisker and Summit target areas. Full details on the procedures, methodology, results and interpretations of the survey can be found in the unpublished report Geochemical Interpretation Report on the Waterbury Lake uranium project – Disco Bay and West Lake Area orientation soil, lake-bottom and lakeshore H.Q. sampling (Pollock, 2010).

Three surface geochemical surveys were undertaken in 2012 which focused on the Tthe Heldeth Túé and Murphy Lake target areas. Shortly after the completion of the winter drill program a hydro-radiometric trial survey was undertaken over the Tthe Heldeth Túé by Special Projects Inc of Calgary, Alberta. The objective of the initial orientation survey was to determine if the hydro-radiometric instrument could detect weakly mineralised sandstone boulders or fault hosted radon on the bottom of McMahon Lake interpreted to originate from the Tthe Heldeth Túé. Measurements were made along the lake bottom through ice holes in several profiles which cut across the main Tthe Heldeth Túé. No anomalous readings were recorded in any of the profiles over the Tthe Heldeth Túé. A second trial survey was also conducted at the southern tip of Murphy Lake (Figure 9-5) where the 2009 airborne radiometric survey identified a moderate uranium anomaly adjacent to an EM conductor. A series of holes were drilled across the ice surface in the up-ice direction of the radiometric MSC12/035R 50 anomaly allowing for a small portion of southern tip of Murphy Lake to be surveyed. At the lake bottom directly up ice from the airborne anomaly a hydro-radiometric peak of 7.5 ppm (15 times the background value) was measured. It was concluded by Special Projects Inc. from the test survey at Murphy Lake that the hydro-radiometric instrument could successfully detect radioactive material on the lake bottom.

Follow up work during the summer 2012 drill program focused on the strongly anomalous zone at Murphy Lake. A thorough hydro-radiometric survey was performed over the entire southern tip of Murphy Lake (Figure 9-5) which identified an extensive strongly uraniferous zone covering the entire southern bay. Detailed ground follow up in the area of the hydro-radiometric anomaly was also undertaken over a three day period during summer 2012 (Figure 9-5) aiming to identify the surface source for the uranium anomaly. Two moderately radioactive pegmatite and biotite gneiss boulders were discovered within the anomalous area, but the majority of the anomalies were identified as conglomeratic sandstone.

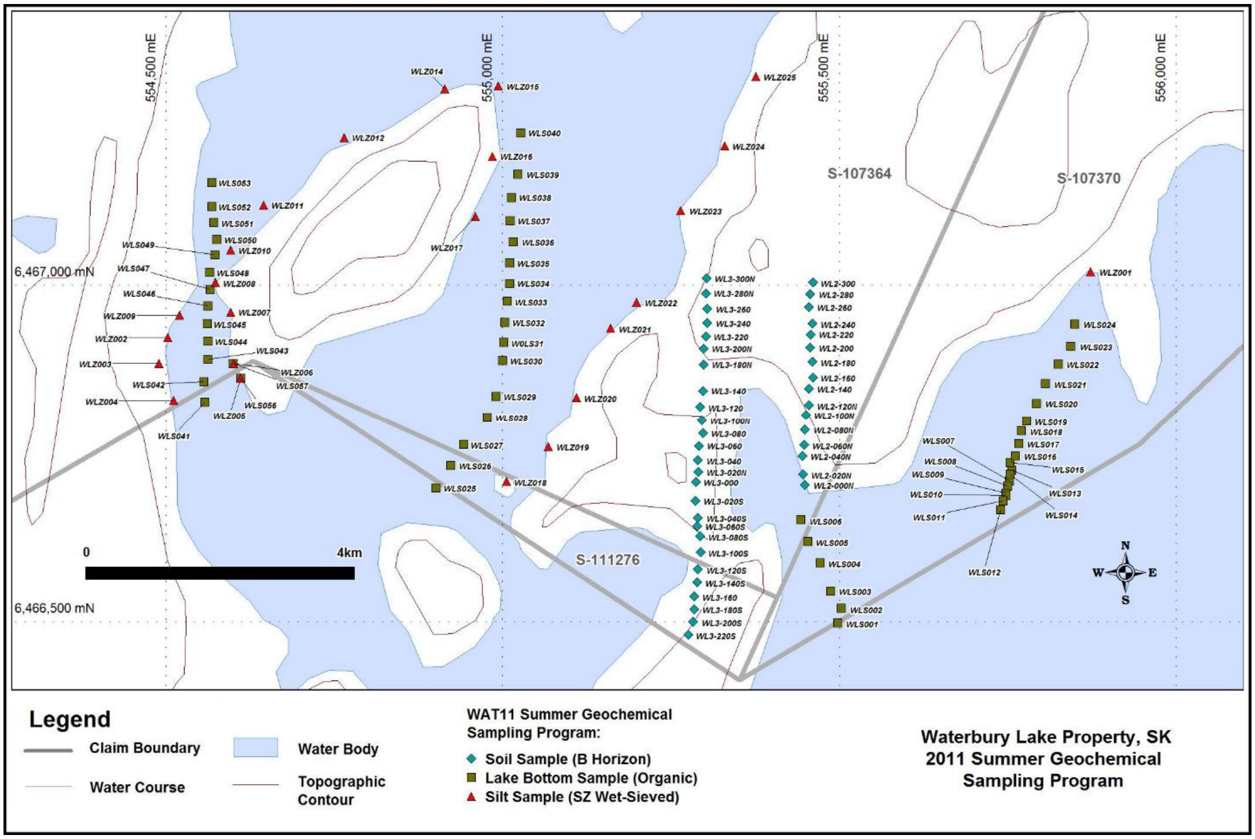


Figure 9-4: 2011 soil and lake sediment sampling locations.

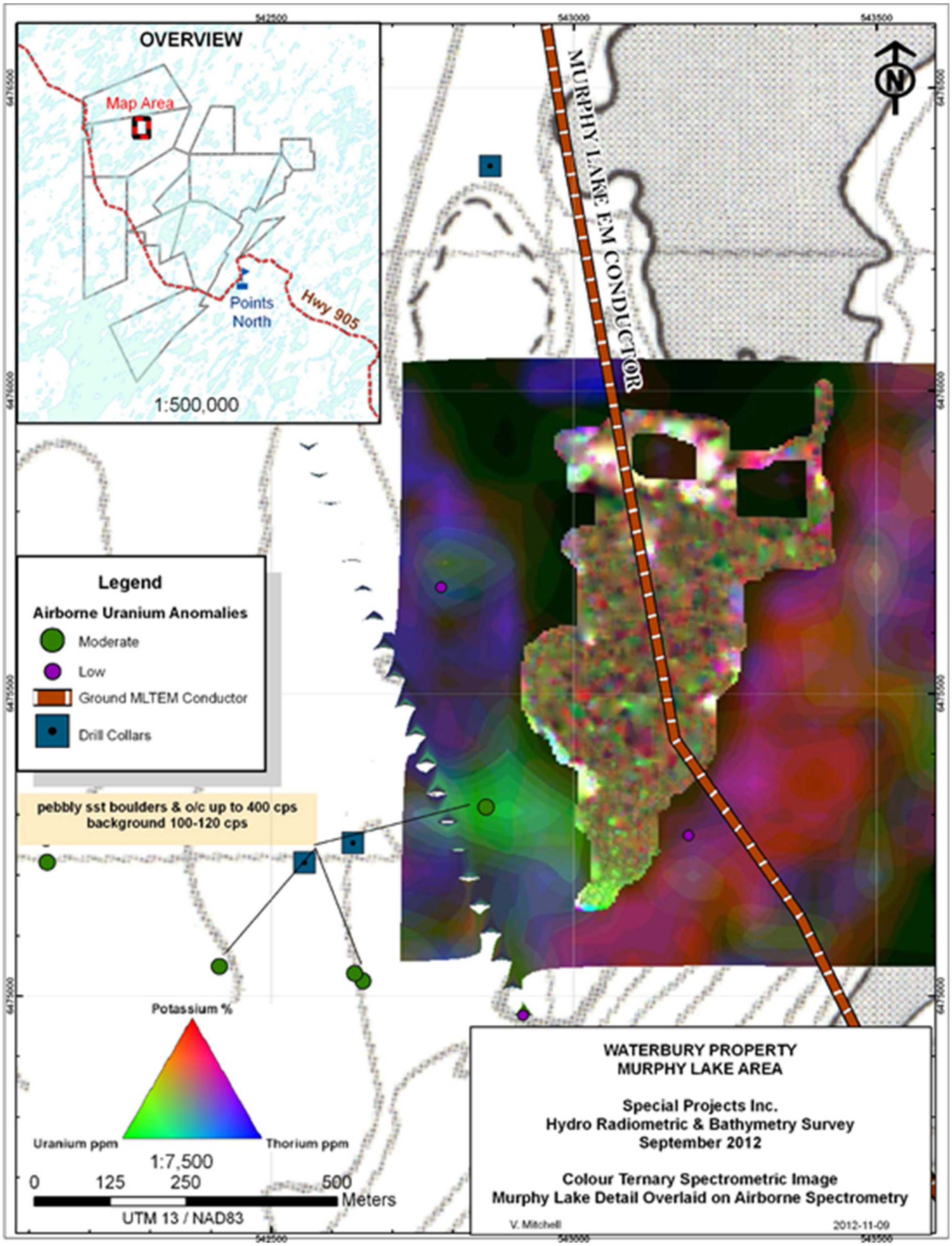


Figure 9-5: Murphy Lake hydro-radiometric survey area and contoured lake bottom radiometric results (from Fission Energy Corp, 2012).

10 DRILLING

The following is a description of historical and recent drilling completed at the Tthe Heldeth Túé and the Huskie deposits mainly by Fission and Denison, respectively. Although there are a few significant differences in the methodologies and techniques (drilling, drill core handling, sampling, etc.) employed by Fission and Denison at the Tthe Heldeth Túé and Huskie deposits, respectively, there are also many similarities and overlaps. The methodologies and techniques are discussed separately where significant differences exist.

In the opinion of the relevant Qualified Persons, there are no known drilling, sampling, or recovery factors at the Tthe Heldeth Túé and Huskie deposit that could materially impact the accuracy and reliability of the results.

10.1 Type, Methodology, and Extent of Drilling

10.1.1 Tthe Heldeth Túé

For all drill programs from 2007 onward, with the exception of spring 2008, Bryson Drilling of Archerwill, Saskatchewan was contracted by Fission for drilling in the Tthe Heldeth Túé. Zinex Mining Corp A5 diamond drill rigs which have a maximum depth capacity of approximately 800 m drilling NQ sized core were utilized. All holes drilled on the Waterbury Lake project during these programs recovered standard 47.6-millimetre NQ core for the entire depth. River Valley Drilling was contracted by Fission for the short spring 2008 drill program. River Valley Drilling utilized a Zinex Mining Corp A5 diamond drill rig, which has a maximum depth capacity of approximately 800 m drilling NQ sized core.

Upon completion, each drill hole was cemented at 30m depth to the top of bedrock regardless of whether or not it was mineralized. Drill holes with readings greater than 13,000 cps on the sodium Iodide (NaI) gamma probe counter were cemented completely from 10 metres below the mineralized zone to 10 metres above the mineralized zone. All drill holes had the casing removed once drilling was complete.

10.1.2 Huskie

Majority of the historical and current drilling at Huskie was carried out with NQ (47.6 millimetres diameter) in 3-metre runs using TECH 5000 and Zinex A5 drills owned and operated by Hy-Tech Drilling of Smithers, BC and Bryson Drilling of Archerwill, SK, respectively. Some of the initial drilling was completed with HQ (63.5 millimetres diameter) through the sandstone section due to difficult ground conditions, reducing to NQ at the unconformity through the basement lithologies and mineralization. All holes completed at Huskie in 2017 and 2018 were inclined holes drilled in a south-southeasterly direction.

All mineralized holes within the Huskie deposit were cemented for the entire basement column to approximately 10 metres above the unconformity and all mineralized and non-mineralized holes were cemented from approximately 25 metres below the overburden-bedrock contact to the overburden-bedrock contact.

10.2 Drill Hole Collar Locations and Downhole Surveying

Fission used a high accuracy Trimble GeoX GPS system to spot all drill holes at the Tthe Heldeth Túé. The GeoX GPS provides easting and northing coordinates with accuracy of up to ± 50 cm without post processing or the use of a base station. Each hole was surveyed again at the exact collar location once the drill was moved from the setup in order to provide a more precise coordinate. All drill hole locations were planned and recorded using the UTM NAD 83 coordinate system.

Similarly, the collar locations of drill holes at Huskie were spotted on a grid established in the field, and collar sites were surveyed upon completion by Denison personnel using a Trimble Pro XRS GPS data logger receiver with real-time differential correction accurate to less than 1 metre.

All coordinates at the Tthe Heldeth Túé and Huskie were based on the North American Datum (NAD) of 1983 (NAD83), zone 13N.

Drill holes were named in sequence starting with the project name WAT (Waterbury), then the year, followed by sequential drill hole number, for example, WAT13-340 was the three hundred and fortieth hole drilled on the property (post 2006), and was drilled in 2013. Holes requiring a restart were assigned letters after the drill hole number to indicate the number of restarts, with A being one restart, B being two, and so on. Hole restarts are a function of either a) exceeded desired maximum deviation tolerances (measured from down hole orientation surveys) or b) abandoning due to set-up or rock conditions encountered.

For all drill programs at the Tthe Heldeth Túé and Huskie, a Reflex EZ-Shot orientation tool was used for down hole surveying in single shot mode. The EZ-Shot has a typical error of ± 0.5 degrees for azimuth readings and ± 0.2 degrees for dip readings. Holes were surveyed initially at roughly 20m depth using the Reflex EZ-Shot to verify that the azimuth and dip were correct before proceeding and then a reading was taken every 50 metres from surface using the same EZ-Shot tool. Because the EZ-Shot azimuth accuracy is affected by any nearby steel or magnetic rock, six meters of steel drill rods were pulled back for each reading to allow the tool to hang into the open bore hole. Appropriate declination corrections provided by the Natural Resources Canada website were then applied to the raw EZ-Shot azimuths to give true azimuths.

A Reflex EZ-Trac tool was also used at the Tthe Heldeth Túé by Fission. The EZ-Trac is essentially the same tool as EZ-Shot but allows for multiple consecutive readings to be wirelessly recorded with a handheld device. The majority of the completed drill holes were surveyed using the EZ-Trac as the rods were being removed with one reading taken every 9 meters. The EZ-Trac has a typical error of ± 0.35 degrees for azimuth readings and ± 0.25 degrees for dip readings.

10.3 Radiometric Logging of Drill Holes

Prior to 2010, Fission used a Mount Sopris 2PGA-1000 Poly-Gamma probe to survey all drill holes at Tthe Heldeth Túé. From 2010 onward, a Mount Sopris 2GHF-1000 triple gamma probe was used instead. Additional logging equipment including the Mount Sopris winch(s), Matrix logging system and computer software remained the same.

Denison also used a Mount Sopris 2GHF-1000 triple gamma probe (SN 4146-4112) attached to a MX-series winch and a MGX II console to survey every drill hole at the Huskie deposit. 2GHF-1000 probe measures natural gamma radiation using three different detectors: one 0.5 inch by 1.5 inch sodium iodide (NaI) scintillation crystal assembly and two ZP1320 Geiger Mueller (G-M) tubes installed above the NaI detector. These G-M tubes have been used successfully to determine grade in very high concentrations of U_3O_8. By utilizing three different detector sensitivities (the sensitivity of the detectors is very different from one detector to another), these probes can be used in both exploration and development projects across a wide spectrum of uranium grades. Accurate concentrations can be measured in uranium grades ranging from less than 0.1% to as high as 80% U_3O_8. Data are logged from all three detectors at a speed of 10 metres per minute down hole and 15 metres per minute up hole through the drill rods. Speed is generally slowed down while logging through the mineralized intervals at approximately 5 metres per minute.

The radiometric or gamma probe measures gamma radiation which is emitted during the natural radioactive decay of uranium (U) and variations in the natural radioactivity originating from changes in concentrations of the trace element thorium (Th) as well as changes in concentration of the major rock forming element potassium (K). Potassium decays into two stable isotopes, argon and calcium, which are no longer radioactive, and emits gamma rays with energies of 1.46 MeV. Uranium and thorium, however, decay into daughter products which are unstable (i.e., radioactive). The decay of uranium forms a series of about a dozen radioactive elements in nature which finally decay to a stable isotope of lead. The decay of thorium forms a similar series of radioelements. As each radioelement in the series decays, it is accompanied by emissions of alpha or beta particles or gamma rays. The gamma rays have specific energies associated with the decaying radionuclide. The most prominent of the gamma rays in the uranium series originate from decay of bismuth-214 (^{214}Bi), and in the thorium series from decay of thallium-208 (^{208}Tl) (Bernius, et al., 1997).

The natural gamma measurement is made when a detector emits a pulse of light when struck by a gamma ray. This pulse of light is amplified by a photomultiplier tube, which outputs a current pulse which is accumulated and reported as counts per second ("cps"). The gamma probe is lowered to the bottom of a drill hole and data are recorded as the tool travels to the bottom and then is pulled back up to the surface. The current pulse is carried up a conductive cable and processed by a logging system computer which stores the raw gamma cps data.

Since the concentrations of these naturally occurring radioelements vary between different rock types, natural gamma ray logging provides an important tool for lithologic mapping and stratigraphic correlation (Bernius, 1996). For example, in sedimentary rocks, sandstones can be easily distinguished from shales due to the low potassium content of the sandstones compared to the shales. The greatest value of the gamma ray log in uranium exploration, however, is in determining equivalent uranium grade.

The basis of the indirect uranium grade calculation (referred to as eU_3O_8 for equivalent U_3O_8) is the sensitivity of the detector used in the probe which is the ratio of cps to known uranium grade and is referred to as the probe calibration factor. Each detector's sensitivity is measured when it is first manufactured and is also periodically checked throughout the operating life of each probe against a known set of standard test pits, with various known grades of uranium mineralization or through empirical calculations. Application of the calibration factor, along with other probe correction factors, allows for immediate grade estimation in the field as each drill hole is logged.

Down-hole total gamma data are subjected to a complex set of mathematical equations, taking into account the specific parameters of the probe used, speed of logging, size of bore hole, drilling fluids, and presence or absence of any type of drill hole casing. The result is an indirect measurement of uranium content within the sphere of measurement of the gamma detector. A Denison in-house computer program, known as GAMLOG, converts the measured counts per second of the gamma rays into 10 cm increments of equivalent percent U_3O_8 (percent eU_3O_8). GAMLOG is based on the Scott's Algorithm developed by James Scott of the Atomic Energy Commission (AEC) in 1962 and is widely used in the industry (Scott, 1962).

The conversion coefficients for conversion of probe counts per second to percent eU_3O_8 equivalent uranium grades used by Denison are based on the calibration results obtained at the Saskatchewan Research Council (SRC) uranium calibration pits (sodium iodide crystal) and empirical values developed in-house (Petrie & Sweet, 2010) for the triple-gamma probe (Figure 10-1).

SRC down-hole probe calibration facilities are located in Saskatoon, Saskatchewan. The calibration facilities test pits consist of four variably mineralized holes, each approximately four metres thick. The gamma probes are calibrated a minimum of two times per year, usually before and after both the winter and summer field seasons.

Drilling procedures, including collar surveying, down-hole Reflex surveying, and radiometric probing are standard industry practice.

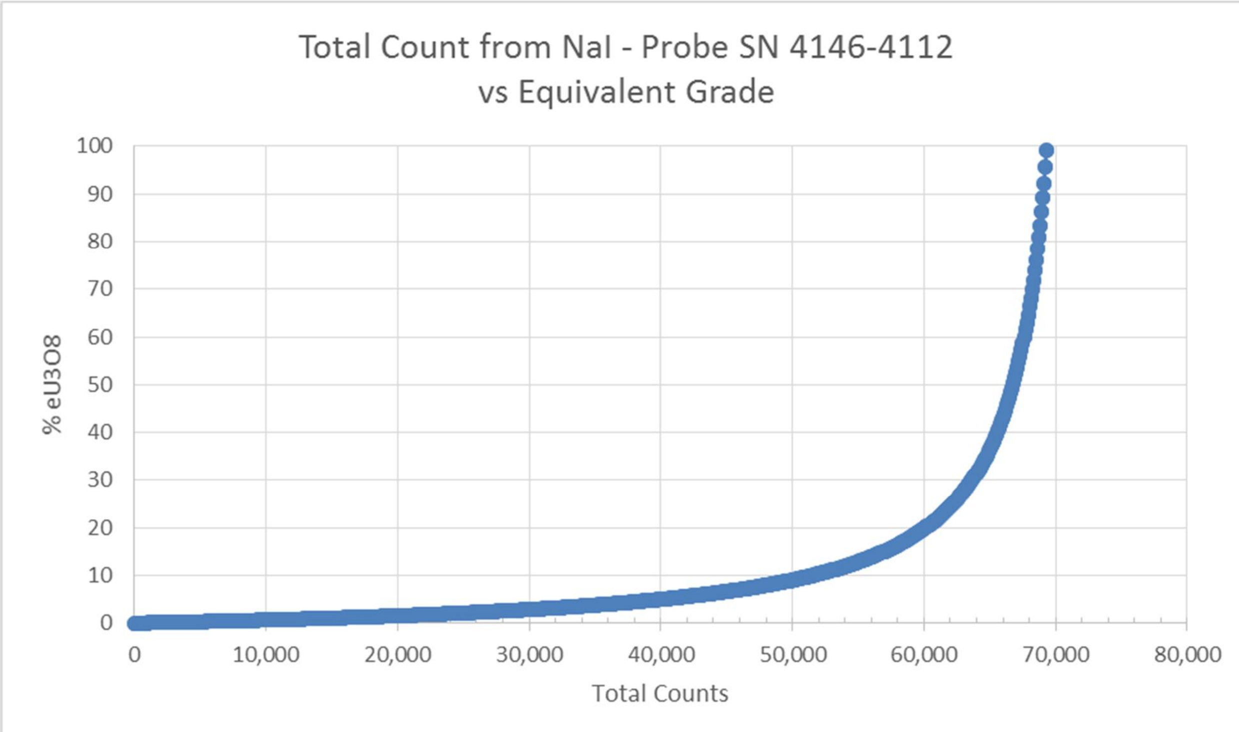


Figure 10-1: Calibration curve for the NaI scintillation crystal in Mount Sopris probe SN 4146-4112.

10.4 Drill Core Handling and Logging Procedures

10.4.1 Tthe Heldeth Túé

From 2010 onward, Fission used individual logging sheets specifically designed for capturing lithology, alteration, structure and geotechnical data. All drill cores were logged by a geologist onsite at the Waterbury Lake logging facilities.

The geotechnical logging protocols used at the Tthe Heldeth Túé changed several times by Fission between 2006 and 2007. For the 2010 drill programs and onward, individual sheets were used to record core recovery per run, fractures per meter and the number of core breaks per run where core could not be pieced back together, as well as the depths of core breaks. The updated logging sheets were designed to allow for importing of the data into computer modelling and database software.

Core photos were taken after the geological logging, geotechnical logging and sample mark-up were completed. Sets of three core boxes were placed on a stand in order from top to bottom and photographed together. Details of the core included in each photo (drill hole number, from – to depths and box numbers) were clearly marked on a whiteboard. The core was wet before being photographed as this generally allows subtle geological features or colours to be more easily discerned.

Radioactivity from core was measured with a handheld Exploranium GR-110 total count gamma ray scintillometer or a handheld Terraplus RS-125 total count Super Gamma-Ray Scintillometer. The scintillometers read up to a maximum of 9,999 cps.

For core with background levels of radiation, the maximum reading was recorded every two meters over the entire length. In mineralized zones (> 300 cps) drill core was removed sequentially in 50-centimetre sections and measured away from the core shack to ensure high-grade material did not influence readings from lower grade material. Scintillometer readings from mineralized core were recorded as maximum and minimum values over each 50cm core length and were recorded on the core boxes as well as the geotechnical logging sheets. Intervals of core that gave scintillometer readings of over 9,999 cps (off-scale) were separated out as detailed high-grade zones for the full extent of the off-scale radioactive zone. Scintillometer readings were recorded in the technical logging sheet for each drill hole.

Once core photos and sample splitting were completed, metal tags inscribed with the drill hole number, box number and from / to meterage were stapled on the front of each core box. Typically, the last 50 boxes of each hole were placed into core racks to allow for easy access while the remaining boxes were cross stacked on levelled ground.

10.4.2 Huskie

At each drill site, core is removed from the core tube by the drill contractors and placed directly into three-row wooden core boxes with standard 1.5 meters length (4.5 metres total) for NQ core or two-row wooden boxes with standard 1.5 meters length (3 metres total) for HQ core. Individual drill runs are identified with small wooden blocks, onto which the depth in metres is recorded. Diamond drill core is transported at the end of each drill shift to an enclosed core handling facility at Denison's Waterbury Lake core storage. The core handling procedures at the drill site were industry standard. Drill holes are logged at the Waterbury Lake logging facilities by Denison personnel.

Before the core is split for assay, the core is photographed, descriptively logged, measured for structures, surveyed with a handheld scintillometer, and marked for sampling. Sampling of the holes for assay is guided by the observed geology, radiometric logs, and readings from a handheld scintillometer. The data was entered directly into Datamine Software Fusion geological data management software. Fusion is a comprehensive data repository and management suite for geological, geochemical, geotechnical, geophysical, quality control and quality assurance (QC/QA), mapping, surveying and other field data.

The general concept behind the scintillometer is similar to the gamma probe except the radiometric pulses are displayed on a scale on the instrument and the respective count rates are recorded manually by the technician logging the core or chips. The handheld scintillometer provides quantitative data only and cannot be used to calculate uranium grades; however, it does allow the geologist to identify uranium mineralization in the core and to select intervals for geochemical sampling, as described below.

Scintillometer readings are taken throughout the hole as part of the logging process, usually over three metre intervals, and are averaged for the interval. In mineralized zones, where scintillometer readings are above five times background (approximately 500 cps depending on the scintillometer being used), readings are recorded over 10 centimetre intervals and tied to the run interval blocks. The scintillometer profile is then plotted on strip logs to compare and adjust the depth of the down-hole gamma logs. Core boxes are marked with aluminum tags as well as felt marker and placed into core racks at the Waterbury core storage.

10.5 Drill Core Sampling for Lithogeochemical Analyses

10.5.1 Historical

Limited information is available for drill core samples collected before 2006. Most historic Asamera Oil Corp drill holes from drill programs conducted during the 1980s have limited sample records that document sample number, depth and ppm values for U_3O_8, Cu, Ni, Ag and As. These samples are noted as being analysed by ICP multi element analysis but there is no record of the laboratory. Cogema samples from 1988 have detailed sample descriptions, depths and 28 element analysis data, but the analysis method is not noted. Cameco samples from 1996 have 11 element analysis data as well as clay proportion analysis data (% illite, chlorite, kaolinite), but no documentation of the sampling protocols or procedures is available. Historical holes did not intersect any mineralization associated with the Tthe Heldeth Túé and Huskie deposits.

10.5.2 Tthe Heldeth Túé

10.5.2.1 Mineralized Sandstone and Basement

Mineralized zones in drill core were identified using a handheld Exploranium GR-110 total count gamma ray scintillometer. Drill core that gave readings of greater than or equal to 300 cps was considered mineralized and was therefore sampled for uranium assay (as well as multi-element geochemistry). Sampling protocol applied through mineralized zones was the same in both the Athabasca sediments and basement rocks. In zones of elevated radioactivity greater than 300 cps, continuous 50 cm samples were taken over the entire interval. A series of continuous 50 cm shoulder samples of nonradioactive rock were also taken above and below each mineralized zone. Typically, four 50 cm shoulder samples were taken on each side of the mineralized zone, however in zones of particularly weak mineralization (> 300 cps, < 500 cps) the number of shoulder samples taken was typically reduced.

10.5.2.2 Non-mineralized Sandstone and Basement

During the 2006-2007 drill programs, sampling of drill core was limited to a combination of point sampling in areas of interest and regular composites throughout the length of each drill hole. After the discovery of the Roughrider deposit in 2008, Fission Energy Corp instituted a more structured sampling system in order to identify zones of elevated pathfinder elements that may serve as a vector to ore. This included regular composite samples at 10 metre intervals and point samples through all faulted and altered zones. This sampling protocol was further refined by MSC (Mineral Services Corp) to provide a more systematic and thorough approach to sampling each drill hole. The new protocol was implemented during the 2010 winter and summer drill programs. All geochemistry samples have been analysed by multi-element ICP-OES and uranium analysis by fluorimetry.

The Athabasca sediments are relatively uniform throughout the project area and therefore sampling methods do not need to account for the effect of varying lithology on the chemical composition of the material being analysed. The sediments are assumed to be relatively permeable, allowing for fairly wide-scale alteration and mineralization halos associated with circulating fluids to develop. As a result, geochemical anomalies associated with alteration and mineralization is expected to occur on a relatively large scale and hence do not require high resolution sampling to detect and map.

For the 2010 drill programs and onward, 10 metre composite samples were collected continuously throughout each intersection of the Athabasca sediments. Small subsamples were taken from the top of each row of core in each core box and combined over 10 metre intervals to make up each composite sample. In zones of strong to intense alteration, the composite sample intervals were shortened to 5 metres to provide tighter resolution. The final composite sample was ended at the last recognizable Athabasca material to ensure there was no chance of including basement rock in the sample. The proportion of shale and conglomerate and the alteration style and intensity were recorded for each composite sample.

During pre-2010 drill programs, continuous 10 metre composite samples were taken throughout the sandstone column to 20 metres above the unconformity, below which the sample density increased to a series of three 5 metre composite samples, two 1-metre composite samples and six 50 cm half split samples. In addition, 50 centimetres to 1 metre half split samples were taken of strongly altered or faulted zones throughout the sandstone at the logging geologists' discretion.

The basement is characterized by significant, relatively small-scale lithological variation that has a considerable impact on the geochemical character of the material being analysed. Due to the relatively low permeability of the basement lithologies, alteration and mineralization effects are typically more localized than in the Athabasca and higher resolution sampling is therefore required in order to properly characterize them.

For the 2010 drill programs and onward, representative sampling of the basement was in the form of 50-centimetre samples of split (half) core taken every 10 metres throughout each intersection, starting immediately below the last recognizable Athabasca sediments. Where necessary, the sample positions were adjusted to ensure there were no overlaps with lithological boundaries. Representative samples were not taken where the interval in question was covered by mineralization, fault, pegmatite or alteration samples as described below. The rock type, alteration type and alteration intensity were recorded for each representative basement sample. Significant faults were sampled as 50-centimetre split core intervals directly over the fault and/or any associated intense alteration. Zones of strong to intense alteration that were not already covered by mineralization (see below) or fault samples were sampled as 50 cm split core intervals. Basement alteration samples were collected from the beginning of the alteration zone and their spacing varied with the width of the alteration zone as follows: 1 m spacing for alteration zones ≤ 5 m long; 2 m spacing for alteration zones between 5 and 30 m long; 5 m spacing for alteration zones > 30 m long. Lithological contacts were avoided by shifting the sample positions slightly and when necessary reducing the sample interval width as low as 30 cm. Alteration zones less than 50 cm long that were not covered by mineralization or fault samples were not sampled. Representative samples of pegmatites were taken in zones not already covered by any of the other sample types.

During pre-2010 drill programs, six 50 cm samples were routinely collected directly below the unconformity regardless of alteration, mineralization or structure. Basement composite samples were taken in the same fashion as the Athabasca composite samples: a collection of core chips from each row of the core box over a 10 m interval. This sampling method was deemed ineffective as it often grouped different basement lithologies in the same sample, and it was therefore abandoned prior to the 2010 drill programs. Pre 2010 point samples were taken in zones of interest which included fault zones and zones of elevated radioactivity or alteration.

10.5.3 Huskie

10.5.3.1 Mineralized Sandstone and Basement

Denison submits assay samples for geochemical analysis for all the cored sections through mineralized intervals, where core recovery permits. All mineralized core is measured with a handheld scintillometer as described above by removing each piece of drill core from the ambient background, noting the most pertinent reproducible result in counts per second, and carefully returning it to its correct place in the core box. Any core registering over 500 cps is flagged for splitting and sent to the laboratory for assay. All mineralized intervals were sampled using 0.5 m lengths. Barren samples are taken to flank both ends of mineralized intersections, with flank sample lengths at least 0.5 m on either end, which, however, may be significantly more in areas with strong mineralization.

All core samples are split with a hand splitter according to the sample intervals marked on the core. One half of the core is returned to the core box for future reference and the other half is bagged, tagged, and sealed in a plastic bag. Bags of mineralized samples are sealed for shipping in metal or plastic pails depending on the radioactivity level. Samples collected on 0.5 m spacing through the mineralized zone are analyzed using inductively coupled plasma optical emission spectroscopy ("ICP-OES") (Section 11.3.5).

10.5.3.2 Non-mineralized Sandstone and Basement

Three other types of drill core samples are collected as follows:

1. Composite geochemical samples are collected over approximately 10 m intervals in the upper Athabasca sandstone and in fresh lithologies beneath the unconformity (basement) and over 5 m intervals in the basal sandstone and altered basement units. The samples consist of 1 cm to 2 cm disks of core collected at the top or bottom of each row of core in the box over the specified interval. Care is taken not to cross lithological contacts or stratigraphic boundaries.
2. Representative/systematic core disks (1 to 5 centimetres in width) are collected at regular 5 m to 10 m intervals throughout the entire length of core until basement lithologies become unaltered. These samples are analyzed for clay minerals using reflectance spectroscopy.
3. Select spot samples are collected from significant geological features (i.e., radiometric anomalies, structure, alteration etc.). Core disks 1 cm to 2 cm thick are collected for reflectance spectroscopy and split core samples, over the desired interval, are sent for geochemical analysis. Ten centimetre wide core samples may also be collected for density measurement.

These sampling types and approaches are typical of uranium exploration and definition drilling programs in the Athabasca Basin. The drill core handling and sampling protocols are industry standard.

10.6 Drill Core Sampling for Spectral Clay Analyses

At the Tthe Heldeth Túé, Fission collected samples for PIMA clay analysis at regular intervals throughout the entire length of each drill core. A small chip was cut from the first piece of core in each box and placed into a sealable plastic sample bag with the appropriate sequential sample number. One PIMA sample per core box roughly corresponds to one sample every 4.5 metres.

Denison collected systematic samples for Short wave near infrared (SWIR) spectral analysis. A small chip sample was taken at the end of each systematic geochemical sampling interval in sandstone or crystalline basement. Samples were air or oven dried prior to analysis in order to remove any excess moisture.

10.7 Drill Core Sampling for bulk density

10.7.1 Tthe Heldeth Túé

For the majority of drill holes designed to test and delineate the Tthe Heldeth Túé, bulk density samples were taken at 40 metre intervals throughout the entire length of the Athabasca sediments in each drill core. Approximately 10 cm of core was split (halved) and placed into a sequentially numbered sample bag and then submitted for bulk density measurements.

Bulk density samples were taken at 20 metre intervals throughout the basement intersection in each drill core. Because the bulk density samples in the basement occurred within the same depth intervals as the representative, fault, pegmatite or alteration samples, a 10 cm subsample of core was split and placed in a secondary sample bag inside the primary sample bag with the rest of the sample. The subsample was removed first at the laboratory and measured for bulk density, after which it was returned to the primary sample bag for geochemical analysis along with the remainder of the core sample.

Bulk density samples were taken at 2.5 metre intervals through any mineralized zones giving scintillometer readings of greater than or equal to 300 cps. The sampling procedure was the same as for regular basement bulk density samples, whereby a 10-centimetre subsample was placed into a smaller secondary bag inside the larger primary sample bag and returned to the primary bag for analysis once the bulk density measurement was complete.

Drill core samples collected for bulk density measurements were sent to SRC. Samples were first weighed as received and then submerged in de-ionized water and re-weighed. The samples were then dried until a constant weight was obtained. The sample was then coated with an impermeable layer of wax and weighed again while submersed in de-ionized water. Weights were entered into a database and the bulk density of each sample was calculated. Water temperature at the time of weighing was also recorded and used in the bulk density calculation.

10.7.2 Huskie

Denison collected a total of 12 mineralized bulk density samples representing a range of grades from the mineralized zones at Huskie. An approximately 10 centimetre long split core sample was taken at each predetermined depth interval. Samples were placed into pre-labeled plastic bags to be shipped to the lab for analyses.

The samples were analyzed using the same method at SRC as described above for Tthe Heldeth Túé.

10.8 Core Recovery and Use of Probe Data

10.8.1 Tthe Heldeth Túé

The mineralized rock of the Tthe Heldeth Túé is altered sandstone and basement gneisses. Locally, the core can be broken and blocky, but recovery was generally good averaging approximately 90% overall recovery. Core recovery was recorded for all drill holes in 3m intervals. Intervals where core loss was greater than 50% over 3m runs were rare forming approximately 2% of total assay database.

Due to the high rate of core recovery within the mineralized zone, chemical assays are considered reliable. In rare cases, some mineralization may have washed out during the drilling process. In these instances, close correlation of the down hole gamma probe and the observed chemical analyses can be undertaken. In such instances, a more accurate measurement of the pitchblende content should be determined by the gamma logging probe which was run in every hole.

10.8.2 Huskie

Core recovery at Huskie was generally excellent. For mineral resource estimation purposes, wherever core recovery was poor, the radiometric equivalent uranium values (“eU_3O_8”) were substituted for chemical assays where possible. For the Huskie 1, Huskie 2 and Huskie 3 zones mineral resource estimates, reported herein, 28%, 8% and 17% of the assay intervals respectively, relied on eU_3O_8 grades.

Denison is not aware of any drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results.

10.9 Drilling Results

10.9.1 2006 Drilling

The 2006 drill program began on April 24 and ended on June 20. Eight drill holes totalling 2,666 m of drill core were completed during the program. All the holes were drilled vertically. WAT06-01, -03, -04 and -05B drill targets were primarily based on a combination of historic ground geophysical anomalies and EM anomalies identified from an airborne MEGATEM survey conducted in winter 2006. WAT06-02 was drilled west of three Asamera Oil Corp drill holes from the 1980s that intersected anomalous uranium and nickel concentrations at the unconformity as well as pelitic basement. No significant uranium mineralization was intersected.

10.9.2 2007 Drilling

The 2007 drill program began on November 1 and was completed on November 22. Eight drill holes recovered a total of 2,222 m of core. The 2007 drill program concentrated on triangular claim block S-107367 located 2 km southeast of Discovery Bay. WAT07-001 and WAT07-002 targeted an east-west fault zone interpreted from airborne geophysics to the south of the claim block. WAT07-003, -007 and -008 targeted an historic conductive zone and coincident magnetic low identified by a geophysical survey. WAT07-008 intersected an average of 12,393 cps over 70 cm on the 2PGA-1000 down hole gamma probe. WAT07-004, -005 and -006 targeted an interpreted NW-SE trending fault zone along the flank of a magnetic high to low transition. No other significant mineralization was intersected.

10.9.3 2008 Drilling

A spring drill program took place at Waterbury Lake from March 26 to April 13, 2008. Five drill holes recovered a total of 1,303 m of core. The program aimed to target resistivity and magnetic anomalies on the S-107367 grid and to follow up promising alteration and down hole gamma probe readings obtained in several 2007 drill holes. WAT08-009 was drilled to test for further mineralization around WAT07-008 but no significant mineralization was intersected.

A summer drill program took place at Waterbury Lake from May 13 to August 23, 2008. Nineteen drill holes were completed, recovering a total of 7,995 m of core. The initial three drill holes were planned to target the possible extension of the Roughrider deposit into the Waterbury Lake property. The third of these holes, WAT08-017, intersected just over 1,800 ppm U_3O_8 over a half meter interval, the highest uranium concentration recorded on the property up to that point in time. Eleven additional follow up holes were drilled in order to trace out mineralization in the vicinity. Holes WAT08-022C, WAT08-024, WAT08-031 and WAT08-032 intersected elevated uranium concentrations of between 300 and 1,200 ppm U_3O_8 over half meter intervals. No other significant mineralization was intersected in these holes. Three drill holes targeted resistivity and magnetic anomalies throughout the property. A further two drill holes tested a possible down dip extension of a mineralized structure northwest of the Roughrider zone.

10.9.4 2009 Drilling

The 2009 winter drill program at Waterbury Lake began on January 13 and ended on March 17. A total of 23 drill holes were completed, totalling 7,356 m of core. Thirteen drill holes targeted gravity, resistivity and magnetic lows throughout the property. Two drill holes followed up historic ‘Esso North’ grid drill holes to the far west of the as yet undiscovered Tthe Heldeth Túé, within the Discovery Bay Corridor in an area referred to as Talisker. Anomalous uranium was intersected in one of the Talisker holes, WAT09-044, hosted in strongly graphitic pelitic gneiss but only over a half meter interval. Lastly, eight holes were drilled around the eastern property line of claim S-107370, targeting the possible extension of the Roughrider deposit into the Waterbury Lake property. Intervals of weakly anomalous radioactivity and hydrothermal alteration were encountered, but no significant uranium mineralization was intersected.

The 2009 Waterbury Lake summer drill program began on July 30 and was completed on August 21. A total of seven holes recovered 2,726 m of core. Five of the drill holes targeted the possible western extension of the Roughrider deposit high-grade ore onto the Waterbury Lake property. Again, intervals of well-developed hydrothermal alteration and weakly anomalous radioactivity were intersected, but the holes failed to intersect any significantly anomalous uranium mineralization. Two drill holes targeted a resistivity and magnetic low coincident with uranium MMI anomalies southwest along strike of the Midwest deposit in claim S-107359. No anomalous uranium was intersected.

10.9.5 2010 Drilling

The 2010 winter program began on January 18 and ended on March 26. Thirty-five holes were drilled, recovering 11,250 m of core. The first hole of the program targeted the possible southwest extension of the Roughrider deposit high-grade zone but did not intersect any significant uranium mineralization. The second hole, WAT10-063A, was drilled to target the up-dip extension of a radioactivity anomaly identified from previous drill holes and intersected over 10 m of high-grade uranium mineralization in what is now known as the Tthe Heldeth Túé. Twenty-five additional holes were drilled in order to provide initial delineation of the mineralized zone. Of the 27 holes targeting mineralization in the Tthe Heldeth Túé, 21 intersected moderate to strong uranium mineralization around the unconformity. A second Bryson drill rig was brought in to test the Talisker/Highland resistivity low to the west of the Tthe Heldeth Túé, within the Discovery Bay corridor. Nine holes were drilled in the area with the final hole, WAT10-092A (Highland area), intersecting moderate basement hosted uranium mineralization over a total length of 8.5 m. One additional drill hole targeted the possible southwest extension of the Roughrider high-grade zone and a nickel anomaly from historic holes, but no anomalous uranium or nickel mineralization was intersected.

The 2010 summer drill program began on July 22 and ended on September 7. Sixteen holes were drilled, recovering a total of 5,172 m of core. Three ‘geology holes’ were drilled to test the location of the poorly constrained north side orthogneiss / pelite contact. Seven holes targeted mineralization near holes drilled during the winter. Six of the seven holes intersected moderate to strong uranium mineralization. Three holes targeted mineralization in the J-East area near the eastern property boundary of claim S-107370. Two of these holes intersected weak to moderate uranium mineralization; the northernmost drill hole did not intersect any anomalous radioactivity. Finally, three holes were drilled to test for additional mineralization in Highland around WAT10-092A. WAT10-107A and WAT10-108 were vertical drill holes collared south where WAT10-092A intersected anomalous uranium mineralization. Both holes cored strongly altered lower sandstone and metasedimentary basement with weak to moderate intermittent uranium mineralization. The final hole was drilled to target the western extension of mineralization intersected in WAT10-092A. Weak, sporadic basement hosted uranium mineralization was intersected but of lower grade than that seen in WAT10-092A.

10.9.6 2011 Drilling

The winter 2011 drill program began on January 8 and ended on April 6. 82 holes were drilled during the program totalling 25,717 m of core. The main objectives of the drill program were to infill around the mineralization defined at the Tthe Heldeth Túé during 2010 drilling and expand the deposit along strike to the west using two drill rigs. Thirty-three out of 50 infill drill holes at the Tthe Heldeth Túé intersected uranium mineralization which effectively extended the deposit from 120 m in length to 370 m. The best grade x thickness intersected at the property to date was drilled in hole WAT11-131 which averaged 7.84 wt% U_3O_8 over 14.5 m. Thirteen holes were drilled in the Highland target area directly along strike of the high-grade mineralization seen in holes WAT11-143, WAT11-170 and WAT11-188 but no significant mineralization was intersected.

Another four drill holes followed up mineralization seen in drill hole WAT10-102 in J-East but failed to intersect mineralization of a similar thickness or grade. The PKB discovery, 200 m to the west of the Tthe Heldeth Túé, within the Discovery Bay corridor, was made early in the winter program by analysing the relationship between the location of a redefined Discovery Bay EM conductor and the Tthe Heldeth Túé. The EM survey directly over the Tthe Heldeth Túé showed the conductor, interpreted to reflect the graphitic cataclasite proximal to mineralization, occurring approximately 40 m to the south of the actual ore deposit. Drill hole WAT11-122 was collared 40 m north of the EM conductor trace in the PKB zone along the flank of a large resistivity low. The drill hole intersected 5.0 m of mineralization straddling the unconformity grading 0.52 wt% U_3O_8. An additional seven drill holes in the PKB area defined an ore lens approximately 50 m east-west and 30 m north-south roughly on strike with the Tthe Heldeth Túé. The same EM conductor and resistivity low relationship was applied 1.5 km west of the Tthe Heldeth Túé in drill hole WAT11-153A, which returned 1.5 m of mineralization averaging 0.23 wt% U_3O_8 and an additional 1.0 m of 0.09 wt% hosted in strongly altered metasediments, in an area now referred to as Summit.

A third drill rig, mobilized in February, tested geophysical anomalies along the Discovery Bay corridor and significant EM conductors with coincident resistivity anomalies in the Oban target area. Thin, intermittent uranium mineralization was intersected in five of seven exploration drill holes along the central O2 conductor at Oban with the strongest mineralization present in drill hole WAT11-172 hosted in hematized lower sandstone.

The summer 2011 drill program at Waterbury Lake began on June 16 and finished on July 21. A total of 7,584 m was drilled in 21 drill holes. Two drill rigs were utilized during the summer program with one rig testing for a mineralized corridor between the western extent of the Tthe Heldeth Túé eastern lens and the PKB mineralized lens, and the second drill rig testing exploration targets in the area around drill hole WAT11-153A, and in the Oban and Murphy Lake areas. The Tthe Heldeth Túé drill rig intersected unconformity mineralization in 11 of 12 drill holes and successfully established a mineralized corridor between the Tthe Heldeth Túé and PKB, defining the Tthe Heldeth Túé western lens. Five of the Tthe Heldeth Túé holes tested the metasedimentary corridor to the west of PKB and continued to intersect unconformity mineralization suggesting the deposit remains continuous along strike. The best mineralized intercept returned during the summer program was in drill hole WAT11-200 which intersected 11.5 m averaging 0.32 wt% U_3O_8. The second drill rig began in the 153A area (renamed as Summit) testing along strike of the mineralization intersected in hole WAT11- 153A. Drill hole WAT11-199, a 30 m step out to the west of 153A intersected 13.5 m of mineralization averaging 0.17 wt% U_3O_8 hosted in pervasively altered metasediments.

Three test holes were drilled in Oban testing the O1, O2 and O3 conductors along the flanks of resistivity lows interpreted to be caused by hydrothermal alteration associated with a mineralizing fluid. None of the Oban holes intersected uranium mineralization.

Three holes were drilled at the Murphy Lake target area testing a significant resistivity low and an offset series of strong EM conductors. No significant uranium mineralization was intersected in any of the Murphy Lake drill holes.

10.9.7 2012 Drilling

The winter 2012 drill program began on January 8 and ended on April 6. A total of 86 holes (32,770) were drilled during the program including 49 holes in and around the Tthe Heldeth Túé (Figure 10-2). The main objectives of the drill program in the Tthe Heldeth Túé area were to infill around the mineralization defined at the Tthe Heldeth Túé during 2010 drilling and expand the deposit along strike to the west. Forty of the 49 infill and step-out drill holes at the Tthe Heldeth Túé intersected uranium mineralization which successfully widened the lateral north-south mineralized dimensions by up to 55m and confirmed continuity of wide widths of mineralization in areas tested by earlier programs. Uranium mineralization was intersected all along the Tthe Heldeth Túé's east-west strike length, which now extends for 667 metres. Generally, wider intervals of discrete mineralization were intersected in the Tthe Heldeth Túé areas as compared to previous drilling, including widths up to 23.0m (WAT12-226), 18.5m (WAT12-293), 12.5m and 13.5m (WAT12-229) and 14.0m (WAT12-237B) (as measured down-hole; not necessarily true width).

Significant results include:

- Hole WAT12-242 (Line 300W): 9.0m of 1.37% U_3O_8, including 1.50m of 3.72% U_3O_8 and 1.50m of 2.64% U_3O_8 (unconformity).

- Hole WAT12-244 (Line 300W): 5.50m of 1.97% U_3O_8, including 1.0m of 9.61% U_3O_8; 4.0m of 0.28% U_3O_8 (unconformity).
- Hole WAT12-247 (Line 300W): 8.0m of 1.05% U_3O_8, including 3.0m of 2.22% U_3O_8 (unconformity).
- Hole WAT12-229 (Line 270W): 12.5m of 0.36% U_3O_8; 13.5m of 0.47% U_3O_8, including 1.0m of 1.66% U_3O_8.
- Hole WAT 12-237B (Line 285W): 14.0m of 0.27% U_3O_8, including 2.50m of 0.63% U_3O_8 (sandstone and unconformity).
- Hole WAT12-253B (Line315W): 5.50m of 0.42% U_3O_8 (unconformity).
- Hole WAT12-300 (Line375W): 12.0m of 0.21%U_3O_8, including 5.0m of 0.41% U_3O_8 (unconformity).
- Hole WAT12-293 (Line 390W): 18.5m of 0.10% U_3O_8; 0.50m of .11% U_3O_8 (unconformity).
- Hole WAT12-295 (Line 390W): 13.5m of 0.13% U_3O_8; 1.50m of 0.19% U_3O_8 (unconformity).
- Hole WAT12-226 (Line 480W): 23.0m of 0.20% U_3O_8, including 3.0m of 0.64% U_3O_8 (unconformity); 3.0m of 0.27% U_3O_8 (basement).
- Hole WAT12-228 (Line 480W): 12.5m of 0.31% U_3O_8, including 1.0m of 1.22% U_3O_8 (unconformity); 1.5m of 0.66% U_3O_8 (basement).
- Hole WAT12-284C (Line525W): 3.0m of 1% U_3O_8 (basement).
- Hole WAT12-221 (Line 465W): 5.0m of 0.44% U_3O_8; 1.0m of 0.20% U_3O_8 (sandstone); 2.50m of 0.13% U_3O_8; 1.50m of 0.06% U_3O_8; 4.0m of 0.24% U_3O_8 (unconformity).

10.9.8 2013 Drilling

A total of 68 drill holes and 11 restarts were completed during the 2013 winter drill program, which totaled 21,012.9 meters (Figure 10-3). The 2013 program focused on the delineation and growth of the Tthe Heldeth Túé. Drilling was segregated into areas A, B and C (Tthe Heldeth Túé East, Central and West) within the Tthe Heldeth Túé and the primary objective was expansion of the zone both west and north of the known mineralized area.

The following is a description of the results from the winter drill program. Results include radioactive readings. Natural gamma radiation in drill core that is reported were measured in counts per second (cps) using a handheld Exploranium GR-110G total count gamma-ray scintillometer. The relevant Qualified Persons caution that scintillometer readings are not directly or uniformly related to uranium grades of the rock sample measured and should be used only as a preliminary indication of the presence of radioactive materials. The degree of radioactivity within the mineralized intervals is highly variable and associated with visible pitchblende mineralization.

All intersections are down-hole, core interval measurements and true thickness is yet to be determined.

Tthe Heldeth Túé Area A drill hole highlights:

Area A is the eastern most section of the Tthe Heldeth Túé located between lines L120E and L210W. A total of 20 holes were drilled in this region of which 4 were mineralized (Table 10-1), intersecting weak to off-scale radioactivity. Drilling in Area A focused on testing for the extension of basement hosted mineralization adjacent to Rio Tinto's Roughrider deposit and further delineating the northern boundary of the Tthe Heldeth Túé for unconformity associated mineralization.

WAT13-359 (line 070E) was drilled along the eastern boundary of the Tthe Heldeth Túé and intersected a 4.0m wide zone (209.5 – 213.5m) of weak to off-scale basement hosted radioactivity, including a 0.1m interval of off-scale (>9999 cps) radioactivity. Two subordinate zones of weak to moderate basement hosted radioactivity occurred to a depth of 226.5m. Hole WAT13-359 intersected 4.0m (209.5 - 213.5m) grading 0.443% U_3O_8 including 0.5m of 2.14% U_3O_8.

WAT13-345 (line 150W) intersected a 12.0m wide zone (184.5 – 196.5m) of weak to moderate uranium mineralization straddling the unconformity (190.0m). This intersection extends the Tthe Heldeth Túé boundary approximately 10m to the north on line 150W. Hole WAT13-345 intersected 7.5m (185.5m - 193m) grading 0.108% U_3O_8.

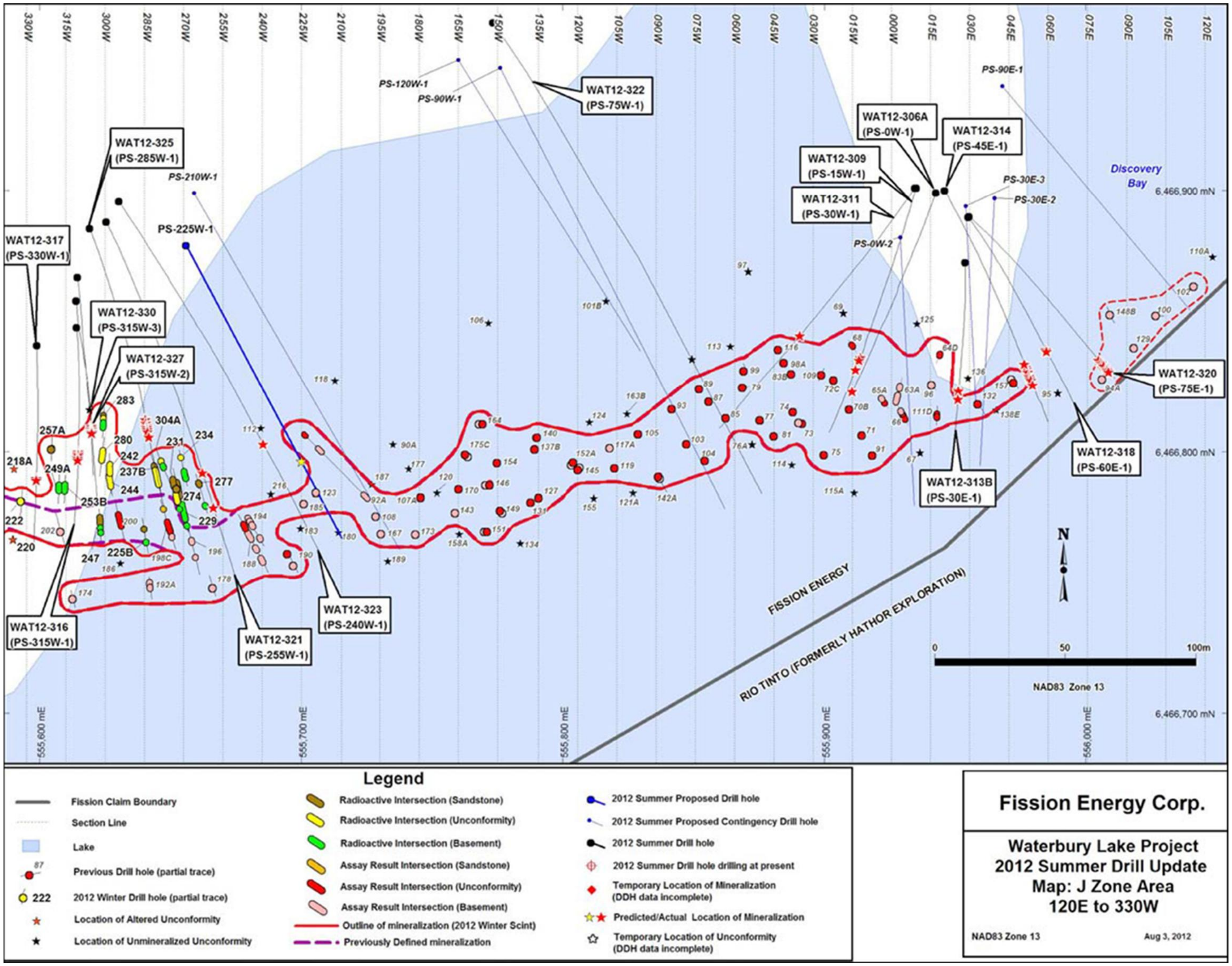


Figure 10-2: Tthe Heldeth Túé (J Zone) Summer 2012 drill holes (from Fission 2012 Assessment Report).

WAT13-373 (line 120W) intersected a 3.0m interval of weak to moderately radioactive basement mineralization 45m to the north of the current delineated boundary. This intersection represents the northernmost mineralized intersection of the Tthe Heldeth Túé. Hole WAT13-373 intersected 2.5m (213.5m - 216m) grading 0.088% U_3O_8.

Tthe Heldeth Túé Area B drill hole highlights:

Area B is the central section of the Tthe Heldeth Túé located between lines 210W and 435W. A total of 18 holes were drilled in this region of which 11 were mineralized (Table 10-1). Drilling in Area B focused on drill testing open areas to the north and south of the Tthe Heldeth Túé Deposit delineated boundary.

- WAT13-338 (line 405W) intersected a 5.0m wide interval (199.5 – 204.5m) of weak to strongly radioactive unconformity associated mineralization, including a 0.1m wide interval of off-scale (>9999 cps) radioactivity. Hole WAT13-338 intersected 1.5m (203.5m - 204.5m) grading 0.859% U_3O_8.
- WAT13-352A (line 250W) intersected a 19.0m wide zone (204.5 – 223.5m) of weak to moderate radioactivity straddling the unconformity (206.0m). This intersection fills in a gap to the south on line 255W. Hole WAT13-352A intersected 15m (204m - 219m) grading 0.174% U_3O_8.
- WAT13-398 (line 260W) intersected a 15.0m wide zone (195.5 – 210.5m) of weak to moderate radioactivity straddling the unconformity (197.0m). This intersection extends the Tthe Heldeth Túé boundary to the north on line 255W. Hole WAT13-398 intersected 10m (198m - 208m) grading 0.132% U_3O_8.

Tthe Heldeth Túé Area C drill hole highlights:

Area C is the western most section of the Tthe Heldeth Túé and is located west of (and including) line 435W. The Tthe Heldeth Túé had previously been delineated westward to line 540W (hole WAT12-289). Winter 2013 drilling in Area C was designed to test for additional associated mineralization between line 435W and line 540W as well as test westward to line 660W along trend to assess the potential for mineralization beyond the currently defined western boundary.

A total of 30 holes were drilled in Area C. Fifteen holes were mineralized (Table 10-1) including two westward step-out drill holes (WAT13-380 and 383) which extended the Tthe Heldeth Túé mineralized boundary an additional 20m west to line 560W (WAT13-380). Several holes in Area C intersected wide zones of mineralization, confirming the potential of Area C as a significant part of the Tthe Heldeth Túé Deposit.

Nine holes between lines 495W to 510W (WAT13-346, 350, 354, 357A, 361A, 364, 368, 371 and 374) were drilled with a collar azimuth of approximately 275°, in order to optimally intersect mineralization where a complex north-south fault was interpreted to off-set mineralization. Several of these holes intersected significant widths of mineralization higher up in the sandstone above the unconformity than previous proximal north-south oriented holes had encountered.

- WAT13-346 (line 500W) intersected a 22.5m wide interval (196.0 – 218.5m) of weak to strong radioactive mineralization, including a 0.1m interval of off-scale (>9999 cps) radioactivity, that straddles the unconformity (209.5m). Hole WAT13-346 intersected 7.0m (197 - 204m) grading 0.599% U_3O_8 and 5.0m (206.5 – 211.5m) grading 0.178% U_3O_8.
- WAT13-368 (line 500W) intersected an 18.0m wide interval (188.5 – 206.5m) of weak to strong radioactive mineralization, including a 0.1m interval of off-scale (>9999 cps) radioactivity, occurring dominantly in the sandstone directly above the unconformity (203.9m). This intersection is approximately 10m north of the currently defined boundary of the Tthe Heldeth Túé. Hole WAT13-368 intersected 17m (189.0 – 206m) grading 0.360% U_3O_8 including 0.5m (203.5 - 204m) grading 2.0% U_3O_8.
- WAT13-366 (line 490W) intersected a 12.5m wide interval (187.0 – 199.5m) of weak to strong radioactive mineralization, including a 0.2m interval of off-scale (>9999 cps) radioactivity, primarily hosted in the lower sandstone directly above the unconformity (198.4m). Hole WAT13-366 intersected 10.5m (189 – 199.5m) grading 0.640% U_3O_8 including 4.0m (190.5 – 194.5m) grading 1.252% U_3O_8.
- WAT13-377 (line 525W) intersected a 12.0m wide interval (218.5 – 230.5m) of weak to strong radioactive basement mineralization, including several narrow intervals totaling 0.31m of off-scale (>9999 cps) radioactivity. Hole WAT13-377 intersected 17m (219.0 – 236.0m) grading 0.374% U_3O_8, including 3.0m (219.5 – 222.5m) grading 1.252% U_3O_8.

Table 10-1: Tthe Heldeth Túé Winter 2013 Assay Results (>0.05% U_3O_8 cut-off), (Armitage & Sexton, 2013).

AREA	Hole ID	Grid Line	From (m)	To (m)	Interval (m)	U_3O_8 (%)	Unconformity Depth (m)
A	WAT13-343	135W	No significant mineralization				210.3
A	WAT13-345	150W	185.5	193.0	7.5	0.108	190.0
			196.0	196.5	0.5	0.077	
A	WAT13-348	105E	302.0	306.0	4.0	0.080	197.1
A	WAT13-351	090E	No significant mineralization				199.9
A	WAT13-353A	105E	No significant mineralization				198.4
A	WAT13-356	075E	No significant mineralization				200.9
A	WAT13-359	070E	209.5	213.5	4.0	0.443	203.2
			219.5	220.0	0.5	0.060	
			225.0	226.0	1.0	0.097	
A	WAT13-362	060E	No significant mineralization				204.1
A	WAT13-365	045E	No significant mineralization				199.7

AREA	Hole ID	Grid Line	From (m)	To (m)	Interval (m)	U_3O_8 (%)	Unconformity Depth (m)
A	WAT13-367	045E	No significant mineralization				209.7
A	WAT13-370	035E	No significant mineralization				213.9
A	WAT13-372	025E	No significant mineralization				209.0
A	WAT13-373	120W	213.5	216.0	2.5	0.088	203.9
A	WAT13-375	105W	No significant mineralization				201.5
A	WAT13-376	0	No significant mineralization				203.5
A	WAT13-379	085W	No significant mineralization				198.9
A	WAT13-381	080W	No significant mineralization				208.5
A	WAT13-384	105W	No significant mineralization				198.8
A	WAT13-387	150W	No significant mineralization				195.3
A	WAT13-389B	175W	No significant mineralization				194.0
B	WAT13-331	275W	229.5	231.5	2.0	0.157	206.9
B	WAT13-333	375W	213.5	214.0	0.5	0.074	209.9
B	WAT13-336	390W	No significant mineralization				215.0
B	WAT13-338	405W	199.5	200.0	0.5	0.238	203.5
			203.0	204.5	1.5	0.859	
B	WAT13-347A	225W	206.5	210.5	4.0	0.051	197.1
B	WAT13-349A	235W	No significant mineralization				197.3
B	WAT13-352A	250W	204.0	219.0	15.0	0.174	206.0
			221.5	223.5	2.0	0.069	
B	WAT13-355	235W	226.0	232.5	6.5	0.111	206.0
B	WAT13-382	380W	No significant mineralization				201.0
B	WAT13-385	360W	No significant mineralization				20.7
B	WAT13-388	315W	No significant mineralization				200.0
B	WAT13-390	435W	No significant mineralization				202.2
B	WAT13-391	300W	No significant mineralization				205.9
B	WAT13-393	255W	No significant mineralization				199.2
B	WAT13-394	265W	No significant mineralization				197.4
B	WAT13-395	245W	No significant mineralization				203.0
B	WAT13-397	280W	224.0	226.5	2.5	0.087	203.5
B	WAT13-398	260W	198.0	208.0	10.0	0.132	197.0
C	WAT13-332	605W	No significant mineralization				210.1
C	WAT13-334	615W	No significant mineralization				206.3
C	WAT13-335	615W	No significant mineralization				210.2
C	WAT13-337	660W	No significant mineralization				217.9
C	WAT13-339	445W	No significant mineralization				211.0

AREA	Hole ID	Grid Line	From (m)	To (m)	Interval (m)	U_3O_8 (%)	Unconformity Depth (m)
C	WAT13-340A	660W	No significant mineralization				215.8
C	WAT13-341	450W	205.0	215.5	10.5	0.152	204.9
C	WAT13-342	660W	No significant mineralization				200.3
C	WAT13-344A	615W	No significant mineralization				209.1
C	WAT13-346	500W	197.0	204.0	7.0	0.599	209.5
			206.5	211.5	5.0	0.178	
			225.0	225.5	0.5	0.155	
C	WAT13-350	500W	202.5	207.5	5.0	0.245	207.1
			211.0	211.5	0.5	0.139	
			215.0	224.5	9.5	0.239	
C	WAT13-354	495W	194.5	203.0	8.5	0.700	206.1
C	WAT13-357A	510W	No significant mineralization				207.2
C	WAT13-358	470W	198.5	203.0	4.5	0.079	203.0
C	WAT13-360	465W	190.0	201.0	11.0	0.147	198.0
C	WAT13-361A	505W	215.5	216.5	1.0	0.142	210.0
C	WAT13-363	480W	No significant mineralization				220.9
C	WAT13-364	505W	198.0	198.5	0.5	0.170	206.8
			201.0	203.0	2.0	0.088	
			206.5	209.5	3.0	0.241	
C	WAT13-366	490W	189.0	199.5	10.5	0.640	198.4
			208.0	208.5	0.5	0.095	
C	WAT13-368	500W	189.0	206.0	17.0	0.360	203.9
C	WAT13-369	495W	191.0	192.5	1.5	0.335	201.8
			195.5	202.5	7.0	0.364	
C	WAT13-371	505W	194.5	197.5	3.0	0.078	204.1
C	WAT13-374	490W	No significant mineralization				203.0
C	WAT13-377	525W	219.0	236.0	17.0	0.374	212.0
			239.0	239.5	0.5	0.094	
C	WAT13-378A	580W	No significant mineralization				205.7
C	WAT13-380	560W	246.5	248.0	1.5	0.047	220.3
C	WAT13-383	540W	214.0	220.0	6.0	0.304	207.5
C	WAT13-386	570W	No significant mineralization				206.8
C	WAT13-392	465W	No significant mineralization				206.4
C	WAT13-396	490W	No significant mineralization				197.2

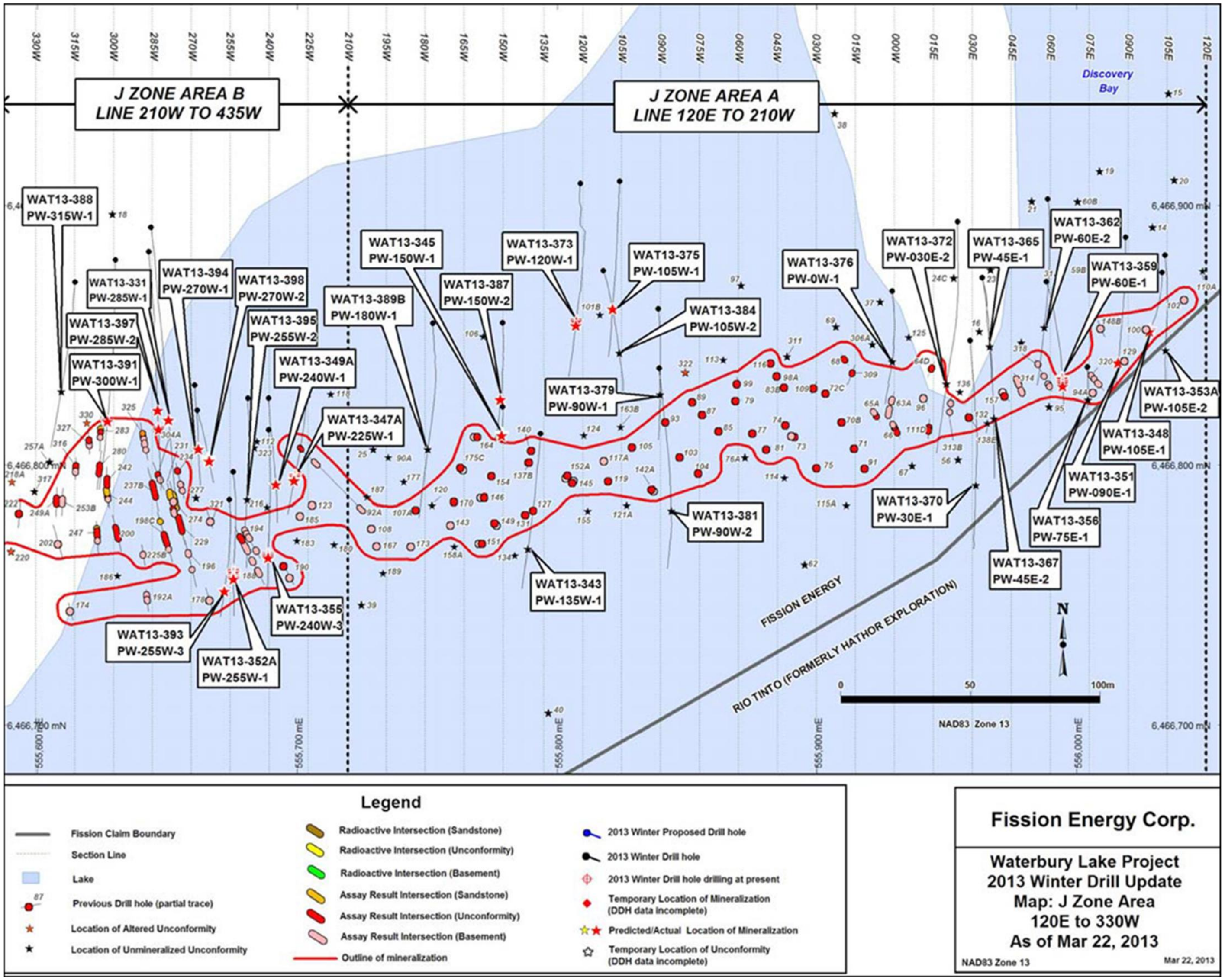


Figure 10-3: Plan view map showing the approximate Tthe Heldeth Túé (J Zone) deposit outline and unconformity drill hole pierce points (from Fission 2013).

10.9.9 2014 Drilling

A total of nine diamond drill holes for a total of 3,100 metres were completed in 2014. Drilling followed up on existing drilling results in the Oban and Discovery Bay areas. Within the Oban area, drill holes WAT14-406A and WAT14-407 intersected weak mineralization (up to 1,700 ppm partial U over 0.5 metres), while in the Discovery Bay area WAT14-411A intersected 1,215 ppm U-p over 1.0 metre (Carmichael, 2014).

10.9.10 2015 Drilling

A total of 12 drill holes for a total of 4,420.8 metres were completed in 2015. Four holes focused on testing DC-IP resistivity low anomalies in the Summit area northwest of the Tthe Heldeth Túé. Eight holes tested similar DC-IP resistivity low targets along the Oban North and South conductors on the WAT15-G1 grid. No significant alteration or structure was noted from the drilling in the Summit area. Weak anomalous uranium mineralization was noted from drilling on line 1200E of the WAT15-G1 grid in the Oban area which was worthy of further follow-up drilling (Carmichael, 2015).

10.9.11 2016 Drilling

A total of 8 drill holes for a total of 3,153 metres were completed in 2016. Six of the holes (WAT16-426 through WAT16-431) were completed over the Oban are on grids WAT15-G1 and WAT16-G1 and two holes of the holes (WAT16-432A to WAT16-433) were completed over the Hamilton Lake area on grid WAT16-G2. WAT16-433 intersected 389 ppm partial U from 421.5 to 422.0 metres depth and 299 ppm partial U from 422.0 to 422.5 metres depth immediately above the unconformity on Line 30+00N of the WAT16-G2 grid. (Burry 2016)

10.9.12 2017 Drilling

Work completed during the 2017 exploration season included the drilling of 18 drill holes for a total of 8,524.5 metres. The drilling was completed in two phases: nine drill holes, WAT17-434 through WAT17-442, for a total of 4,802.8 metres were drilled during a winter program on the WAT16-G2 grid and a further nine holes, WAT17-443 through WAT17-451, for a total of 3,721.7 metres were drilled during a summer program on the Discovery Bay 2008 grid.

The winter drilling on the WAT16-G2 grid (Hamilton Lake area) was testing targets derived from a 2016 DC-IP ground resistivity survey, targets were primarily the coincidence of the modelled robust edges of several prominent north-south trending basement resistivity lows which were defined along the western margin of the survey and the interpreted unconformity contact. Drill hole WAT17-436 intersected 934 ppm partial U from a 0.5 metre spot sample taken at 522.3 metres depth in a granite located footwall to a prominent fault structure defined on Line 33+00N of the WAT16-G2 grid. Follow-up drill hole WAT17-438, which targeted the fault structure near the unconformity, intersected 381 ppm U partial over 0.5 metres from 412.9 metres depth, 2,330 ppm partial U over 0.5 metres from 414.1 metres depth, 140 ppm partial U over 0.5 metres from 416.6 metres depth and 140 ppm partial U over 0.5 metres depth from 431.7 metres depth. The remainder of the drill holes from the winter 2017 drill program did not intersect any anomalous geochemistry.

The summer 2017 drilling was following up on historic drill holes WAT08-029, which had anomalous uranium in the basal sandstone and WAT09-053, which had intersected anomalous structure and alteration in the basement suggesting there was the possibility that a uranium mineralization system had been overshot by WAT08-029 and undershot by WAT09-053. A 2008 DC-IP ground resistivity survey on the Discovery Bay 2008 grid had provided the initial basement resistivity low targets for drill holes WAT08-029 and WAT-09-053.

Drill holes WAT17-443 through WAT17-451 were drilled along the south-eastern margin of disposition S-107370 targeting a weak east-west trending airborne magnetics low trend roughly 1500 metres to the northeast of the Tthe Heldeth Túé deposit. Drilling intersected the unconformity around an elevation of 290 metres above sea level and a fault bounded package of graphitic metasediments. Hanging-wall to the metasedimentary package is granite and footwall to the metasedimentary package is a granitic gneiss unit. The hanging-wall contact fault is interpreted to be the primary off-set fault with as much as 14 metres of off-set at the unconformity. The basement lithologies are interpreted to strike roughly east-west and dip moderately steep to the north (foliation and lithological contacts indicate and dip averaging around -65° to the north).

A summary of the drill hole results for WAT17-443 to WAT17-451 is provided below and drill hole collar coordinates, azimuth and dip is provided in Table 10-2. As the drill holes are oriented steeply toward the south-southeast and the mineralized lenses are interpreted to dip moderately to the north, the true thickness of mineralization is expected to be approximately 75% of the intersection lengths.

Drill hole WAT17-443 intersected 0.173% U_3O_8 over 4.5 metres from 284.1 to 288.6 metres depth, 0.085% U_3O_8 over 1 metre from 290.2 to 291.2 metres depth and 1.183% U_3O_8 over 1 metre from 298 to 299 metres depth. Drill hole WAT17-444 which was drilled as a 50 metre step down dip on section from WAT17-443 intersected 0.072% U_3O_8 over 1 metre from 341.3 to 342.3 metres depth, 0.585% U_3O_8 over 1 metre from 347.4 to 348.4 metres depth and 0.174% U_3O_8 over 1 metre from 362 to 363 metres depth. Drill holes WAT17-445 through WAT17-448 were drilled as a fence of drill holes 50 metres along strike to the west of drill holes WAT17-443 and WAT17-444. Drill hole WAT17-445 intersected 0.058% U_3O_8 over 1 metre from 271.5 to 272.5 metres depth and 0.168% U_3O_8 over 1 metre from 278 to 279 metres depth. Drill hole WAT17-446A, which ended up being a 65 metre step down dip from drill hole WAT17-445, intersected 9.103% U_3O_8 over 3.7 metres (including 16.78% U_3O_8 over 2 metres) from 306.5 to 310.2 metres depth, 0.225%

U_3O_8 over 1 metre from 336.1 to 337.1 metres depth and 0.084% U_3O_8 over 1.5 metres from 342.3 to 343.8 metres depth.

Drill holes WAT17-449 through WAT17-451 were drilled as a fence of drill holes 50 metres along strike to the west of drill holes WAT17-445 through WAT17-448. Drill hole WAT17-449 intersected 0.108% U_3O_8 over 1 metre from 321.5 to 322.5 metres depth, 0.065% U_3O_8 over 1 metre from 345.1 to 346.1 metres depth, 0.052% U_3O_8 over 1 metre from 349.4 to 350.4 metres depth, 1.72% U_3O_8 over 7.5 metres (including 8.172% U_3O_8 over 1.5 metres) from 369 to 376.5 metres depth and 0.289% U_3O_8 over 5 metres (including 1.004% U_3O_8 over 1 metre) from 379.3 to 384.3 metres depth. Drill hole WAT17-450A, which was a 50 metre step up-dip of WAT17-449, intersected 0.179% U_3O_8 over 1 metre from 279 to 280 metres depth, 0.406% U_3O_8 over 1 metre from 314.5 to 315.5 metres depth and 1.487% U_3O_8 over 4.5 metres (including 3.895% U_3O_8 over 1m and 2.0% U_3O_8 over 1m) from 318.5 to 323 metres depth and 0.1% U_3O_8 over 1 metre from 335 to 336 metres depth. Drill hole WAT17-451, which was drilled as a 50 metre step down dip from WAT17-449, intersected 0.282% U_3O_8 over 3.5 metres from 402 to 405.5 metres depth and 0.179% U_3O_8 over 1 metre from 420.5 to 421.5 metres depth. (Burry 2017)

Table 10-2: Drill hole parameters for drill holes WAT17-443 to WAT17-451.

Hole ID	UTM NAD83-13		Elev. (m a.s.l.)	Length (m)	Azimuth (True)	Dip (Deg.)	UC Depth (m)
	Easting	Northing					
WAT17-434	540207	6467689	476.5	481.4	265	-81	376.5
WAT17-435	540142	6467370	477	645.8	272	-77	375.9
WAT17-436	540042	6467370	477	532.6	272	-67	429.6
WAT17-437	540028	6467972	465	575	268	-70	419
WAT17-438	540084	6467370	477	495	268	-71	416.8
WAT17-439	540770	6467375	493	537	265	-70	384.8
WAT17-440	540015	6468595	481	480	265	-70	437.9
WAT17-441	540000	6466775	483	531	265	-70	458.8
WAT17-442	540015	6468595	481	525	265	-82	409.5
WAT17-443	556852.55	6467761.81	492.20	425.7	152	-73	212.89
WAT17-444	556835.20	6467799.75	492.84	420	152	-73	211.98
WAT17-445	556803.58	6467742.11	492.45	375	152	-73	210.65
WAT17-446	556791.58	6467769.09	491.61	33	152	-75.5	---
WAT17-446A	556791.58	6467769.09	491.61	390	152	-75.5	206.5
WAT17-447	556830.97	6467685.25	490.10	321	155	-85	216.3
WAT17-448	556773.92	6467805.47	493.00	446	155	-75	207.65
WAT17-449	556729.18	6467793.76	494.18	420	153	-73.3	212.3
WAT17-450	556744.63	6467760.94	490.81	39	153	-74	---
WAT17-450A	556744.63	6467760.94	490.81	387	153	-74	210.7
WAT17-451	556709.97	6467827.98	500.74	465	153	-72.5	218.5

10.9.13 2018 Drilling

A 13,110 metre, 28 drill hole drilling program was completed during 2018, including 21 holes completed during the winter on the Huskie zone, and seven holes completed during the summer; three of which were on the Huskie zone and the remaining four were testing regional targets along strike of the inferred Midwest Structure as it cross-cut the Oban grid area.

The winter drill program on the Waterbury Lake Project focused on testing for possible extensions to the Huskie zone mineralization, which was discovered during a summer 2017 drill program on the property. Of the 21 holes completed during the winter program, significant mineralization was encountered in drill hole WAT18-452, which included 4.5% U_3O_8 over 6.0 meters (including 5.8% U_3O_8 over 4.5 meters) and 1.9% U_3O_8 over 1 metre. Drill holes WAT18-453 through WAT18-472 thoroughly tested the immediate and along strike potential of the Huskie zone. Although significant structure and alteration was frequently intersected, significant uranium mineralization was absent in these holes.

A total of three drill holes were completed as part of the summer 2018 program at the Huskie zone, with targets located both up-dip and down-dip of the known mineralization, with a view to test for high-grade extensions related to northeast striking cross-cutting faults associated with the regional Midwest structure. Drill hole WAT18-475A, completed as a 50 metre step up-dip of the know mineralization, intersected 0.12% eU_3O_8 over 1.0 metre from 277.5 metres and 0.15% eU_3O_8 over 1.0 metre from 285.5 metres. Due to core loss, the interval is reported as radiometric equivalent U_3O_8 (“e U_3O_8”) derived from a calibrated total gamma downhole probe. The two holes designed to test for extensions down-dip of Huskie, WAT18-473 and WAT18-474 intersected the targeted structure but no significant mineralization was encountered.

Drill hole WAT18-475A would be the last hole drilled into the Huskie zone in 2018. The 28 drill holes completed over the Huskie zone at a 50 metre by 50 metre spacing had defined a mineralized zone between 50 and 225 metres vertically below the sub-Athabasca unconformity (265 and 435 metres vertically below surface) and measures approximately 250 metres along strike, up to 170 metres along dip, with individual lenses varying in interpreted true thickness between approximately 2 and 7 metres. Summary of highlights from the 2017- 2018 drilling at Huskie are presented in Table 10-3 and drill hole collar coordinates, azimuths and dips are provided in Table 10-4. (Burry 2018)

Table 10-3: Summary of Highlights from the 2017 and 2018 Drilling at Huskie.

Hole ID	From	To	Length	Sample	%U_3O_8	Lens
WAT17-443	298	298.5	0.5	S060512	1.52	Huskie 1
WAT17-444	347.4	347.9	0.5	S060517	1.17	Huskie 2
WAT17-446A	307.7	308.2	0.5	S060527	12.3	Huskie 2
WAT17-446A	308.2	308.7	0.5	S060528	10.6	Huskie 2
WAT17-446A	308.7	309.2	0.5	S060529	40.7	Huskie 2
WAT17-446A	309.2	309.7	0.5	S060530	3.52	Huskie 2
WAT17-449	375	375.5	0.5	S060558	8.81	Huskie 2
WAT17-449	376	376.5	0.5	S060560	15.4	Huskie 2
WAT17-449	381.3	381.8	0.5	S060567	1.53	Huskie 1
WAT17-450A	319	319.5	0.5	S060593	1.54	Huskie 2
WAT17-450A	319.5	320	0.5	S060594	6.25	Huskie 2
WAT17-450A	321.5	322	0.5	S060598	2.61	Huskie 2
WAT17-450A	322	322.5	0.5	S060599	1.39	Huskie 2
WAT17-451	402	402.5	0.5	S060609	1.15	Huskie 2
WAT18-452	419.5	420	0.5	S060766	4.84	Huskie 2
WAT18-452	421.5	422	0.5	S060770	13.5	Huskie 2
WAT18-452	422	422.5	0.5	S060771	12.9	Huskie 2
WAT18-452	422.5	423	0.5	S060772	1.14	Huskie 2
WAT18-452	423	423.5	0.5	S060773	8.41	Huskie 2
WAT18-452	423.5	424	0.5	S060774	10.5	Huskie 2
WAT18-452	438	438.5	0.5	S060787	3.19	Huskie 1
WAT18-460A	303.5	304	0.5	S060802	1.24	Huskie 2

Notes:

1. U_3O_8 is the chemical assay of mineralized split core samples.
2. As the drill holes are oriented steeply toward the south-southeast and the mineralized lenses are interpreted to dip moderately to the north, the true thickness of mineralization is expected to be approximately 75% of the intersection lengths.

A total of four holes were completed during the summer 2018 program on regional targets approximately 2.5 to 3.0 kilometres to the northeast of the Huskie deposit, where the regionally interpreted Midwest structure is projected to intersect the geologically favourable GB and Oban trends. The regional exploration drilling was highlighted by two drill holes along the GB trend, completed approximately 100 metres apart on a north-south fence, which both intersected basement-hosted uranium mineralization. The mineralization occurred as structurally-controlled disseminations of uraninite (pitchblende) associated with massive clay replacement. Highlight intersections included: 0.43% U_3O_8 over 1.0 metre (including 0.73% U_3O_8 over 0.5 metre) from 262.5 to 263.5 metres in drill hole WAT18-478 and 0.20% U_3O_8 over 0.5 metre from 372.0 to 372.5 metres, 0.45% U_3O_8 over 0.5 metre from 410.5 to 411.0 metres and 0.31% U_3O_8 over 0.5 metre from 420.0 to 420.5 metres in drill hole WAT18-479.

Table 10-4: Summary of 2018 diamond drill hole parameters.

Hole ID	UTM NAD83-13		Elev. (m a.s.l.)	Length (m)	Azimuth (True)	Dip	UC Depth (m)
	Easting mE	Northing mN					
WAT18-452	556758.57	6467841.59	495.10	541.0	153°	-75.3°	213.35
WAT18-453	556672.58	6467794.45	500.56	59.0	156°	-73.3°	---
WAT18-453A	556672.58	6467794.45	500.56	557.0	154°	-73.3°	216.80
WAT18-454	556693.13	6467867.51	505.00	53.0	151°	-72.5°	---
WAT18-454A	556693.13	6467867.51	505.00	506.0	151°	-72.6°	224.50
WAT18-455	556664.19	6467834.33	504.54	585.3	151°	-73.3°	219.80
WAT18-456	556646.57	6467868.85	508.04	539.0	151°	-73.3°	224.50
WAT18-457	556747.57	6467880.92	501.14	62.0	151°	-76.3°	---
WAT18-457A	556747.57	6467880.92	501.14	36.0	155°	-76.5°	---
WAT18-457B	556747.57	6467880.92	501.14	581.0	153°	-76.3	220.40
WAT18-458	556626.26	6467906.47	510.03	563.0	152°	-73.3°	230.85
WAT18-459	556816.77	6467834.93	494.13	122.0	151°	-74.5°	---
WAT18-459A	556816.77	6467834.93	494.13	451.4	152°	-74.5°	208.20
WAT18-460	556690.02	6467759.57	495.41	41.0	152°	-73.3°	---
WAT18-460A	556690.02	6467759.57	495.41	407.0	152°	-73.3°	215.00
WAT18-461	556899.84	6467777.14	490.54	240.7	151°	-74.0°	208.60
WAT18-462	556899.84	6467783.00	490.54	401.0	154°	-75.5°	208.60
WAT18-463	556674.87	6467766.13	497.65	428.0	176°	-74.0°	215.00
WAT18-464	556673.27	6467724.60	493.66	38.0	173°	-74.0°	---
WAT18-464A	556673.27	6467724.60	493.66	392.0	173°	-74.0°	212.00
WAT18-465	556880.10	6467818.73	493.13	155.0	151°	-75.5°	---
WAT18-466	556893.29	6467790.96	491.28	44.0	154°	-81.5°	---
WAT18-466A	556893.29	6467790.96	491.28	398.0	154°	-81.8°	---
WAT18-467	556575.22	6467764.71	503.88	407.0	173°	-74.0°	226.80
WAT18-468	556324.39	6467905.64	498.05	533.0	180°	-75.0°	223.10
WAT18-469	556574.60	6467722.82	500.74	380.0	180°	-73.5°	224.15
WAT18-470	556326.45	6467780.95	495.23	428.0	180°	-75.0°	209.50
WAT18-471	556575.42	6467651.53	496.06	266.0	180°	-82.0°	212.60
WAT18-472	556791.94	6467891.32	496.51	581.0	153°	-76.3°	217.70
WAT18-473	556776.08	6467860.90	494.64	515.0	154°	-76.3°	215.00
WAT18-474	556861.50	6467840.20	494.01	185.0	154°	-75.5°	---
WAT18-474A	556853.77	6467832.39	494.01	455.0	155°	-75.5°	210.60
WAT18-475	556745.80	6467699.71	489.69	38.0	154°	-81.0°	---
WAT18-475A	556745.80	6467699.71	489.69	327.0	154°	-81.0°	204.00
WAT18-476	557037.78	6470098.45	484.96	356.6	180°	-71.0°	215.60
WAT18-477	557445.00	6470105.50	478.61	431.0	180°	-70.0°	208.60
WAT18-478	557649.45	6470577.68	498.91	407	0°	-72.0°	216.20
WAT18-479	557648.61	6470498.85	488.28	494.4	0°	-74.0°	215.70

10.9.14 2019 Drilling

A 5,735 metre, 15 drill hole drilling program was completed during Q1, 2019. Drilling focused on testing target areas associated with the regional Midwest Structure, which is interpreted to be located along the eastern portion of the Waterbury Lake property. . Target areas tested included the GB Zone (3,385 metres, 9 drill holes), Oban South (1,127 metres, 3 drill holes), GB Northeast (323 metres, 1 drill hole) and the WAT18-G1 grid (900 metres, 2 drill holes) (Burry, 2019), with highlight results described as follows:

- *GB Zone* – Nine drill holes were completed to follow-up on basement-hosted mineralization discovered during the summer 2018 drilling program within disposition S-107370 (see Denison's press release dated September 17, 2018). The winter 2019 drill holes were oriented steeply to the northeast on an approximate 100 x 100 metre spacing to test the faulted graphitic basement sequence which dips steeply to the southwest. Basement-hosted mineralization was intersected in drill hole WAT19-480, highlighted by 0.15% U_3O_8 over 6.0 metres, including 0.26% U_3O_8 over 3.0 metres. Additional basement-hosted mineralized intercepts were obtained approximately 100 metres to the southeast of WAT19-480 in drill hole WAT19-486 highlighted by 0.25% U_3O_8 over 2.0 metres and 0.22% U_3O_8 over 1.5 metres. The remainder of the holes encountered variable amounts of basement structure and alteration, often associated with anomalous geochemistry. The up-dip projection of the mineralized faults was tested at the unconformity, where two drill holes encountered significant hydrothermal alteration but no significant mineralization.

- *Oban South* – The target area at Oban South comprises the interpreted intersection of the east-west trending Oban South graphitic conductor and the north-northeast trending regional Midwest structure within disposition S-107370. Three drill holes were completed as an initial test of the geological concept. The drilling successfully identified a faulted graphitic unit within the basement, which was hydrothermally altered, and a broad zone of desilicification within the lower sandstone, which included 10 ppm uranium and over 100 ppm boron within the basal 12.5 metres of sandstone immediately overlying the unconformity.

- *GB Northeast* – A single reconnaissance drill hole was completed to test a coincident airborne electromagnetic conductor and magnetic low approximately 2.5 kilometres to the northeast of the GB Zone with disposition S-107373. The drill hole intersected moderately to locally strong sandstone alteration and an altered and faulted graphitic pelite unit immediately below the unconformity. The drill hole was highlighted by a discrete spike in basement radioactivity of 1,520 counts per second ("cps"), measured with an RS-125 gamma hand-held spectrometer, within the faulted graphitic pelite unit accompanied by elevated uranium (up to 200 ppm over 0.5 metres) and pathfinder geochemistry.

- *WAT18-G1 grid* - Two drill holes totalling 899.5 metres were completed during the 2019 winter program over the Midwest Extension area on disposition S-107363 in an area 6 kilometres to the southwest of the J Zone deposit. Drill holes WAT19-494 and WAT19-495 both intersected a competent sandstone column overlying mixed pelitic gneiss assemblages; no significant basement faulting or alteration was noted in either drill hole. (Burry 2019)

11 SAMPLE PREPARATION, ANALYSIS AND SECURITY

11.1 Sample Preparation and Security

11.1.1 Tthe Heldeth Túé

The field program was supervised on-site by an experienced geologist with the role of Project Manager. The Project Manager oversaw all quality control aspects from logging, to sampling to shipment of the samples. Drill core was split once geological logging, sample mark up and photographing were completed. All drill core samples were marked out and split at the Fission splitting shack by Fission employees, put into 5-gallon sample pails and sealed and transported to Points North, Saskatchewan only prior to shipment. The samples were then transported directly to SRC Geoanalytical Laboratories (“SRC”) located in Saskatoon Saskatchewan by Marsh Expediting. Samples were prepared for analysis by SRC upon arrival. Beyond the marking, splitting and bagging conducted at the project site, Fission employees were not involved in sample preparation. No special security measures are enforced during the transport of core samples apart from those set out by Transport Canada regarding the transport of dangerous goods. Mineralized pulp material sent back to the Waterbury Lake Project from SRC Laboratories and were used as field reference material.

Sample data were recorded in typical three tag sample booklets provided by Alltech Mining Solutions. One tag was stapled into the core box at the start of the appropriate sample interval, one tag was placed into the sample bag and the final tag was retained in the sample booklet for future reference. For each sample, the date, drill hole number, project name and sample interval depths were noted in the sample booklet. The data were transcribed to excel spread sheet and stored on the Fission data server. Sample summary files were checked for accuracy against the original sample booklets after the completion of each drill program. The digital sample files also contain alteration and lithology information.

All geochemical, assay and bulk density samples were split using a manual core splitter over the intervals noted in the sample booklet. Half of the core was placed in a plastic sample bag with the sample tag and taped closed with fibre tape. The other half of the core was returned to the core box in its original orientation for future reference. After the completion of each sample, the core splitter, catchment trays and table were cleaned of any dust or rock debris to avoid contamination. Samples were placed in sequentially numbered 5-gallon plastic pails. Higher grade samples were generally packed into the centre of each pail and surrounded by lower grade or non-mineralized core in order to shield the radioactivity emitted.

All drill core samples were evenly and symmetrically split in half in order to try and obtain the most representative sample possible. Mineralized core samples which occur in drill runs with less than 80% core recovery are flagged for review prior to the resource estimation process. Core photos of the flagged samples are examined and individual samples showing a significant amount of core loss within the interval are removed from the resource estimate in order to avoid including samples which may have assay grades artificially increased through the removal of lower-grade matrix material. Recovery through the mineralized zone is generally good however and assay samples are assumed to adequately represent in situ uranium content.

All geochemical, assay and bulk density core samples were submitted to SRC. Samples are first dried and then sorted according to matrix (sandstone / basement) and then radioactivity level. Red line and ‘1 dot’ samples are sent to the geoanalytical laboratory for processing while samples ‘2 dot’ or higher (> 2,000 cps) are sent to a secure radioactive sample facility for preparation.

SRC is licensed by the Canadian Nuclear Safety Commission (CNSC) to safely receive process and archive radioactive samples. The facility is ISO/IEC 17025:2005 accredited by the Standards Council of Canada. Core sample residues are retained at the SRC sample storage facility after being analysed. Samples taken for short wave infrared spectroscopy” (SWIR) analysis using a Portable Infrared Mineral Analyser (PIMA) analyzer for clay analysis were sent to Ken Wasyliuk of Northwind Resources Ltd. (Northwind) of Saskatoon, an independent geological consultant with significant SWIR analytical experience. SRC is independent of Fission.

A series of blank and reference pulp samples were included with the samples from each drill hole for ICP-OES and uranium assay analysis. Duplicate samples of Athabasca mineralized, and basement rocks were also submitted as part of the project’s quality assurance / quality control (QA/QC) program (see Section 12.2 below). Results obtained for the QA/QC samples are compared with the original sample results to monitor data quality (Section 12.3).

11.1.2 Huskie

Denison has incorporated industry-standard sampling procedures for the drilling programs undertaken at Huskie in 2017 and 2018. Drill core is monitored by Denison staff from the time it is taken out of the ground until it is split, and the samples are delivered to the laboratory. Unauthorized personnel are not permitted access to the drill rigs or the core logging and splitting facility at all times. Routine core handling and sampling procedures comprised the following:

1. Core was placed in directly in wooden core boxes at the drill site and transported to Denison’s Waterbury Lake core yard by the authorized field personnel at the end of every shift.
2. Upon arrival, core from the drill is marked logged, photographed, marked for sampling and split by Denison geologists.
3. All samples are placed sealed clear plastic bags along with a pre-printed sample tag with sample number and barcode.

4. Sealed samples bags are placed in sealed and labelled 5-gallon plastic pails or steel drums before transported to the Saskatchewan Research Council Geoanalytical Laboratories (SRC) in Saskatoon, Saskatchewan for analyses.
5. All samples for U3O8 assays are transported directly in sealed containers by land to the SRC laboratory by Denison personnel.
6. A sample transmittal form that identifies each batch of samples is prepared and presented to the receiving lab personnel.
7. SRC performs sample preparation on all samples submitted.

11.2 Laboratory Sample Preparation Procedures

11.2.1 Sample Receiving

Samples are received at the SRC laboratory as either dangerous goods (qualified Transport of Dangerous Goods [TDG] personnel required) or as exclusive use only samples (no radioactivity documentation attached). On arrival, samples are assigned an SRC group number and are entered into the Laboratory Information Management System (LIMS).

All received sample information is verified by sample receiving personnel: sample numbers, number of pails, sample type/matrix, condition of samples, request for analysis, etc. The samples are then sorted by radioactivity level. A sample receipt and sample list are then generated and e-mailed to the appropriate authorized personnel at Denison. Denison is notified if there are any discrepancies between the paperwork and samples received.

11.2.2 Sample Sorting

To ensure that there is no cross-contamination between sandstone and basement, non-mineralized, low level, and high-level mineralized samples, they are sorted by their matrix and radioactivity level. Samples are firstly sorted in their group into matrix type (sandstone and basement/mineralized).

The samples are then checked for their radioactivity levels. Using a Radioactivity Detector System, the samples are classified into one of the following levels:

- “Red Line” (minimal radioactivity) <500 cps
- “1 Dot” 500 – 1,999 cps
- “2 Dots” 2000 – 2,999 cps
- “3 Dots” 3000 – 3,999 cps
- “4 Dots” 4000 – 4,999 cps

- “UR” (unreadable) >5,000 cps

The samples are then sorted into ascending sample numerical order and transferred to their matrix designated drying oven.

11.2.3 Sample Preparation

After the drying process is complete, “Red line” and “1 Dot” samples are sent for further processing (crushing and grinding) in the main SRC laboratory. All radioactive samples at “2 Dots” or higher are sent to a secure radioactive facility at SRC for the same sample preparation. Plastic snap top vials are labelled according to sample numbers and sent with the samples to the appropriate crushing room. All highly radioactive materials are kept in a radioactive bunker until they can be transported by TDG trained individuals to the radioactivity facility for processing.

Rock samples are jaw crushed to 60% passing -2 mm. Samples are placed into the crusher (one at a time) and the crushed material is put through a splitter. The operator ensures that the distribution of the material is even, so there is no bias in the sampling. One portion of the material is placed into the plastic snap top vial and the other is put in the sample bag (reject). The first sample from each group is checked for crushing efficiency by screening the vial of rock through a 2 mm screen. A calculation is then carried out to ensure that 60% of the material is -2 mm. If the quality control (QC) check fails, the crushing is redone and checked for crushing efficiency; if it still fails, the QC department is notified, and corrective action is taken.

The crusher, crusher catch pan, splitter, and splitter catch pan are cleaned between each sample using compressed air.

The reject material is returned to its original sample bag and archived in a plastic pail with the appropriate group number marked on the outside of the pail. The vials of material are then sent to grinding; each vial of material is placed in pots (six pots per grind) and ground for two minutes. The material is then returned to the vials. The operator shakes the vial to check the fineness of the material by looking for visible grains and listening for rattling. The sample is then screened through a 106-micron sieve, using water. The sample is then dried and weighed; to pass the grinding efficiency QC, there must be over 90% of the material at minus 106 micron. The material is then transferred to a labelled plastic snap top vial.

The pots are cleaned out with silica sand and blown out with compressed air at the start of each group. In the radioactive facility, the pots are cleaned with water. Once sample pulps are generated, they are returned to the main laboratory to be chemically processed prior to analysis. All containers are identified with sample information and their radioactivity status at all times. When the preparation is completed, the radioactive pulps are returned to a secure radioactive bunker, until they can be transported back to the radioactive facility. All rejected sample material not involved in the grinding process is returned to the original sample container. All highly radioactive materials are stored in secure radioactive designated areas.

Sample preparation methods for the samples used in the Huskie mineral resource estimate meet or exceed industry standards.

11.3 Analytical Methods

All mineralized assay core samples from the Tthe Heldeth Túé and the Huskie deposit were analysed by the ICP1 package offered by SRC, which includes 62 elements determined by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Boron analysis and uranium by fluorimetry (partial digestion) have also been conducted on all samples. Non-mineralized core samples from the Huskie drilling were analyzed using the ICP-MS1 with a lower detection limit (SRC, 2007).

11.3.1 Method: ICP1

(Uranium multi-element exploration analysis by ICP-OES)

11.3.2 Method Summary

In ICP-OES analysis, the atomized sample material is ionized, and the ions then emit light (photons) of a characteristic wavelength for each element, which is recorded by optical spectrometers. Calibrations against standard materials allow this technique to provide a quantitative geochemical analysis.

The analytical package includes 62 analytes (46 total digestion, 16 partial digestion), with nine analytes being analyzed for both partial and total digestions (Ag, Co, Cu, Mo, Ni, Pb, U, V, and Zn) plus boron. These samples are also sometimes analyzed for Au by fire assay.

11.3.3 Partial Digestion

For partial digestion analysis, samples were crushed to 60% -2 mm and a 100 g to 200 g sub-sample was split out using a riffler. The sub-sample pulverized to 90% -106 µm using a standard puck and ring grinding mill. The sample was then transferred to a plastic snap top vial. An aliquot of pulp is digested in a digestion tube in a mixture of HNO3:HCl, in a hot water bath for approximately one hour, then diluted to 15 mL using de-ionized water. The samples were then analyzed using a Perkin Elmer ICP-OES instrument (models DV4300 or DV5300).

11.3.3.1 Total Digestion

An aliquot of pulp is digested to dryness in a hot block digestor system using a mixture of concentrated HF:HNO_3:$HClO_4$. The residue is dissolved in 15 mL of dilute HNO3 and analyzed using the same instrument(s) as above.

11.3.4 Method: ICP-MS

(The multi-element determination by ICP-MS)

11.3.4.1 Method Summary

The analytical package includes the analysis of 47 elements and oxides using a three acid (HF/HNO3/HClO4) “total” digestion and a suite of 42 elements using a two acid (HNO3/HCl) “partial” digestion. Analysis of the lead isotopes (204Pb, 206Pb, 207Pb, and 208Pb) are also included in the package. Boron is determined by ICP-OES analysis after fusion with NaO2/NaCO3. PerkinElmer instruments (models Optima 300DV, Optima 4300DV, and Optima 5300DV) are currently in use. The samples generally analyzed by this package are non-radioactive, non-mineralized sandstones and basement rocks with low concentrations of uranium (<100 ppm).

11.3.4.2 Partial Digestion

An aliquot of pulp is digested in a mixture of ultra-pure concentrated nitric and hydrochloric acids (HNO3:HCl) in a digestion tube in a hot water bath then diluted to 15 mL using de-ionized water prior to analysis. As, Ge, Hg, Sb, Se and Te are subject to partial digestion only, as these elements are not suited to total digestion analysis. The ICP-MS instruments used are PerkinElmer Elan DRC II.

11.3.4.3 Total Digestion

An aliquot of pulp is digested to dryness in a hot block digestor system using a mixture of ultra-pure concentrated acids HF:HNO3:HClO4. The residue is dissolved in 15 mL of 5% HNO3 and made to volume using de-ionized water prior to analysis.

11.3.5 Method: U_3O_8 wt% Assay (ICP-OES)

(The determination of U_3O_8 wt% in solid samples by ICP-OES)

11.3.5.1 Method Summary

When ICP1 U partial values are ≥1,000 ppm, sample pulps are re-assayed for U_3O_8 using SRC’s ISO/IEC 17025:2005-accredited U_3O_8 (wt%) method. In the case of uranium assay by ICP-OES, a pulp is already generated from the first phase of preparation and assaying (discussed above).

11.3.5.2 Aqua Regia Digestion

An aliquot of sample pulp is digested in a 100 mL volumetric flask in a mixture of 3:1 HCl:HNO3, on a hot plate for approximately one hour, then diluted to volume using de-ionized water. Samples are diluted prior to analysis by ICP-OES.

11.3.5.3 Instrument Analysis

Instruments in the analysis are calibrated using certified commercial solutions. The instruments used were PerkinElmer Optima 300DV, Optima 4300DV, or Optima 5300DV.

Detection Limits: 0.001% U_3O_8

11.3.6 Method: U_3O_8 wt% Assay (DNC)

(The determination of U_3O_8 wt% in solid samples by delayed neutron counting)

SRC in 2009 documented the method summary for the Delayed Neutron Counting ("DNC") technique as follows.

Samples previously prepared as pulps for ICP total digestion are used for the DNC analysis. The pulps are irradiated in a Slowpoke 2 nuclear reactor for a given period of time. After irradiation, the samples are pneumatically transferred to a counting system equipped with six helium-3 detectors. After a suitable delay period, neutrons emanating from the sample are counted. The proportion of delayed neutrons emitted is related to the uranium concentration. For low concentrations of uranium, a minimum of one gram of sample is preferred, and larger sample sizes (two to five grams) will improve precision. Several blanks and certified uranium standards are analyzed to establish the instrument calibration. In addition, control samples are analyzed with each batch of samples to monitor the stability of the calibration. At least one in every ten samples is analyzed in duplicate. The results of the instrument calibration, blanks, control samples, and duplicates must be within specified limits otherwise corrective action is required.

Analysis for uranium by DNC incorporates four separate flux/site conditions of varying sensitivity to produce an effective range of analysis from zero to 150,000 µg U per capsule (samples of up to 90% U can be analyzed by weighing a fraction of a gram to ensure that there is no more than 150,000 µg U in the capsule). Each condition is calibrated using between three and seven reference materials. For each condition, one of these materials is designated as a calibration check sample. As well, there is an independent control sample for each condition.

11.3.7 Drill Core Bulk Density Analysis

Drill core samples collected for bulk density measurements were sent to SRC. Samples were first weighed as received and then submerged in de-ionized water and re-weighed. The samples were then dried until a constant weight was obtained. The sample was then coated with an impermeable layer of wax and weighed again while submersed in de-ionized water. Weights were entered into a database and the bulk density of each sample was calculated. Water temperature at the time of weighing was also recorded and used in the bulk density calculation.

11.3.8 Reflectance Clay Analyses

11.3.8.1 Tthe Heldeth Túé

Core chip samples for clay analysis were sent to Northwind, a private facility in Saskatoon, for analysis on a PIMA spectrometer using short wave infrared spectroscopy. Samples are air or oven dried prior to analysis in order to remove any excess moisture. Reflective spectra for the various clay minerals present in the sample are compared to the spectral results from Athabasca samples for which the clay mineral proportions have been determined in order to obtain a semi-quantitative clay estimate for each sample.

11.3.8.2 Huskie

Core chip samples for clay reflectance analysis are analyzed using an ArcSpectro FT-NIR (Fourier transform near-infrared) ROCKET spectrometer. This included all analyses performed on samples from the Huskie deposit. Samples were air or oven dried prior to analysis in order to remove any excess moisture. The transmission spectra of the reflectance samples were sent to AusSpec, based in New Zealand. The spectra are interpreted using an aiSIRIS automated spectral interpretation system. The mineral assemblage for each sample is listed in order of spectral dominance and represents the spectral contribution of the mineral to the spectrum.

11.4 Quality Assurance and Quality Control

Quality assurance/quality control ("QA/QC") programs provide confidence in the geochemical results and help ensure that the database is reliable to estimate mineral resources. Denison has developed and documented several QA/QC procedures and protocols for all exploration projects which include the following components:

- Determination of precision – achieved by regular insertion of duplicates for each stage of the process where a sample is taken or split
- Determination of accuracy – achieved by regular insertion of standards or materials of known composition
- Checks for contamination – achieved by insertion of blanks

In the opinion of the relevant Qualified Persons, Denison's procedures and protocols are considered to be reasonable and acceptable.

11.4.1 Sample Standards and Field Duplicates

Analytical standards are routinely used to monitor analytical precision and accuracy, and field standards are used as an independent monitor of laboratory performance. The internal QA/QC sampling program used for the Tthe Heldeth Túé and Huskie drilling is detailed below.

11.4.1.1 Assay Sample Standards

Fission developed three assay standards for the Tthe Heldeth Túé drilling: Low grade (LG), medium grade (MG) and high grade (HG). The samples were each developed from samples previously assayed for % U_3O_8 by SRC with assay values of 0.049-0.052 % U_3O_8, 1.80-2.17 % U_3O_8 and 14.2-30.3 % U_3O_8, respectively. Each sample was prepared by SRC by combining 300 g of the coarse-rejects fraction of 10 basement samples falling within the required grade range into a 3 kg composite sample. Each of the three composite samples (i.e. LG, MG and HG) were blended, ground, dried and sieved at 106 microns. Sample homogeneity was tested by U_3O_8 assays on 7 subsamples and the relative standard deviations were < 1.0 %.

Table 11-1: Certified assay values of U_3O_8 for the LG, MG and HG reference samples used for the Tthe Heldeth Túé drilling.

Sample name	Element	Certified Mean (Expected Value)	Two Standard Deviations
WAT-LG	U_3O_8	540 ppm	28 ppm
WAT-MG	U_3O_8	2.05%	0.09%
WAT-HG	U_3O_8	20.96%	0.87%

Figure 11-1, Figure 11-2 and Figure 11-3 show the results of the low (32 samples), medium (16 samples) and high grade (16 samples) certified reference material used in 2013 Tthe Heldeth Túé drilling. The analysis of the reference samples returned U_3O_8 values within the acceptable limits and no significant accuracy issues were noted (Armitage & Sexton, 2013).

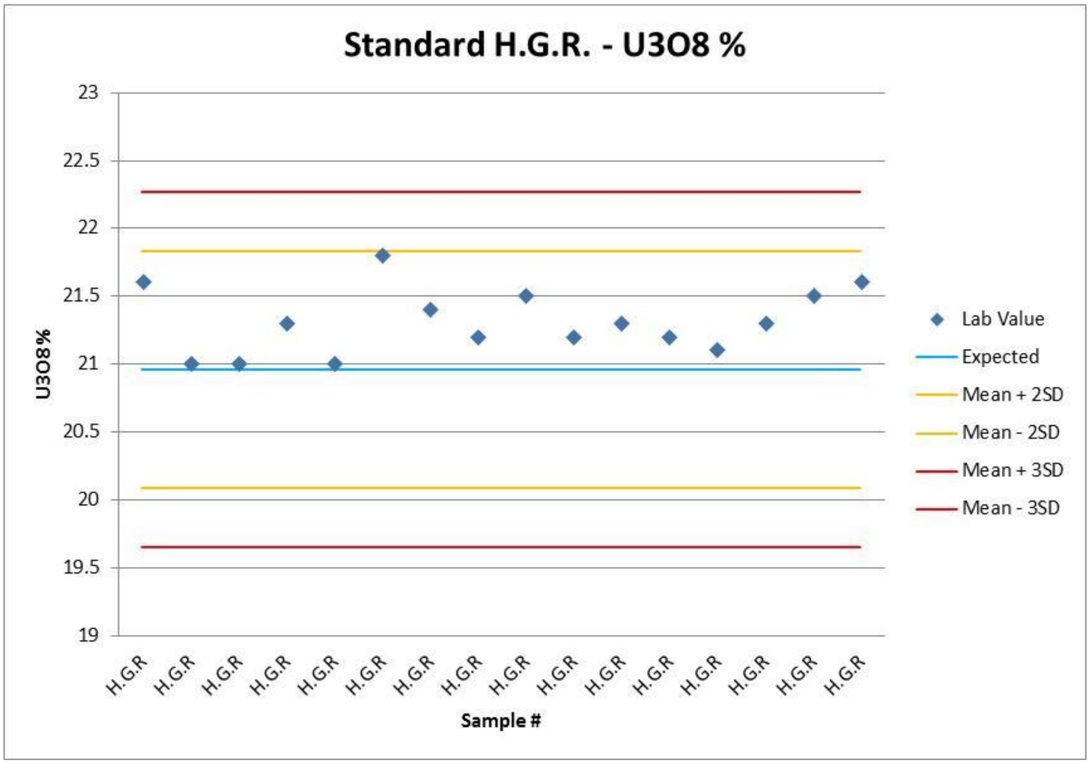


Figure 11-1: Results for analyses of 2013 certified high grade reference samples, Tthe Heldeth Túé.

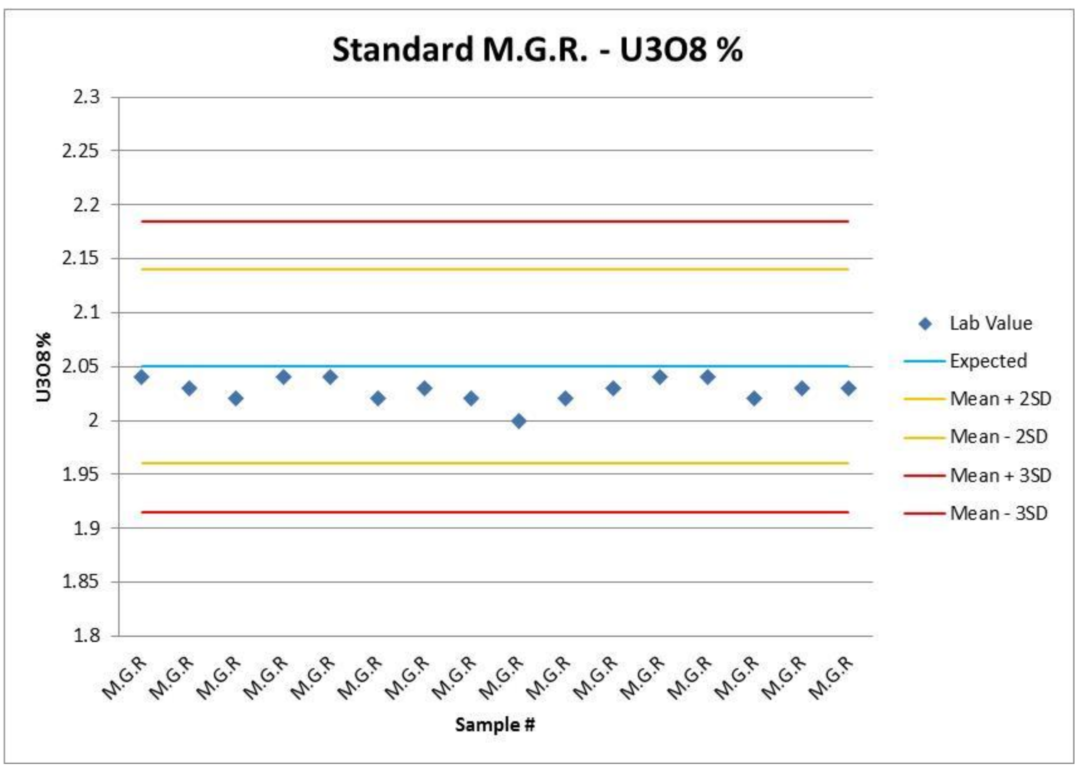


Figure 11-2: Results for analyses of 2013 certified medium grade reference samples, Tthe Heldeth Túé.

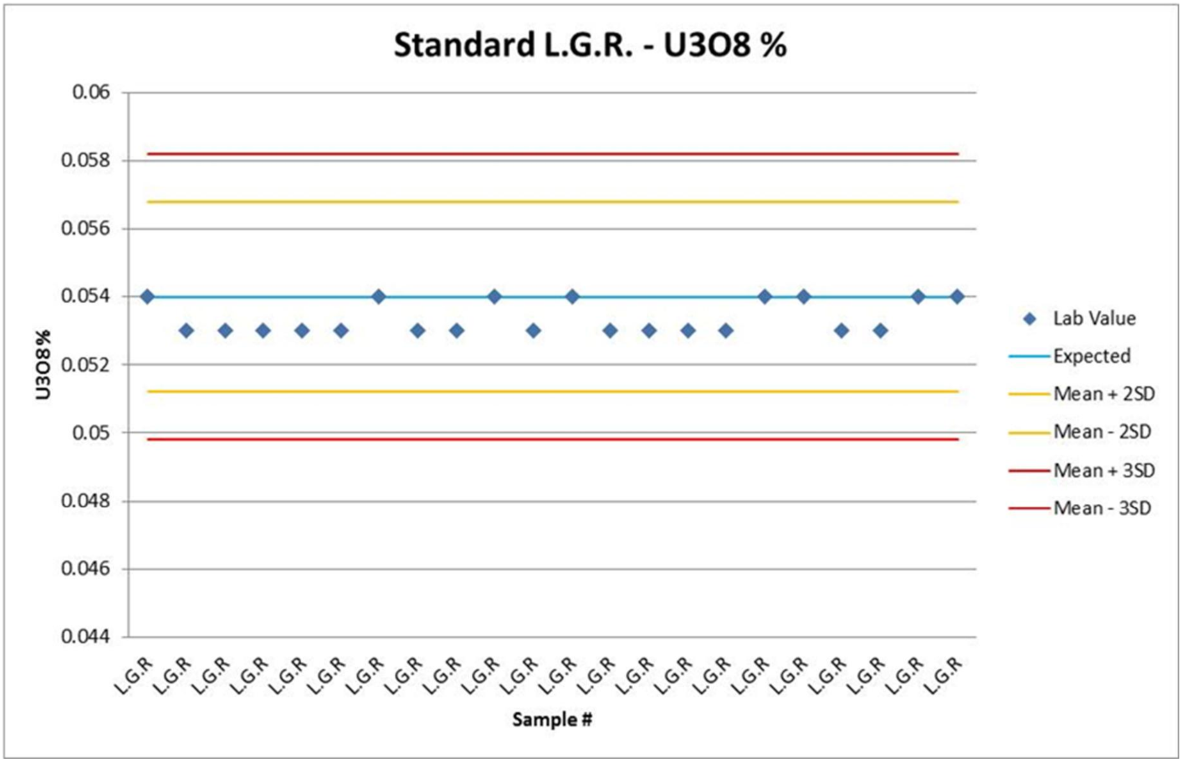


Figure 11-3: Results for analyses of 2013 certified low grade reference samples, Tthe Heldeth Túé.

Denison uses external assay standards prepared in-house by Cameco using uranium ores from Cameco's Blind River Refinery in Ontario and the Cree Extension-Millennium project in northern Saskatchewan. Due to the radioactive nature of the standard material, insertion of the standard materials is performed at SRC instead of in the field. For the Huskie deposit, the external assay standards used included USTD1, USTD2, USTD3, USTD4 and USTD6. For uranium assays SRC personnel, using the standards appropriate for each batch, added these standards to the sample groups.

Plots for the USTD-series standards are shown in Figures 11-4 to 11-8. Note that the method used to calculate the upper limit ("UL") and lower limit ("LL") for the USTD-series standards were revised from "mean plus or minus 5%" to "mean plus or minus three standard deviations". The values for the USTD-series standards were also updated in 2017, based on additional statistical data obtained by SRC since 2011.

The analysis of the reference samples returned U_3O_8 values within the acceptable limits and no significant accuracy issues were noted.

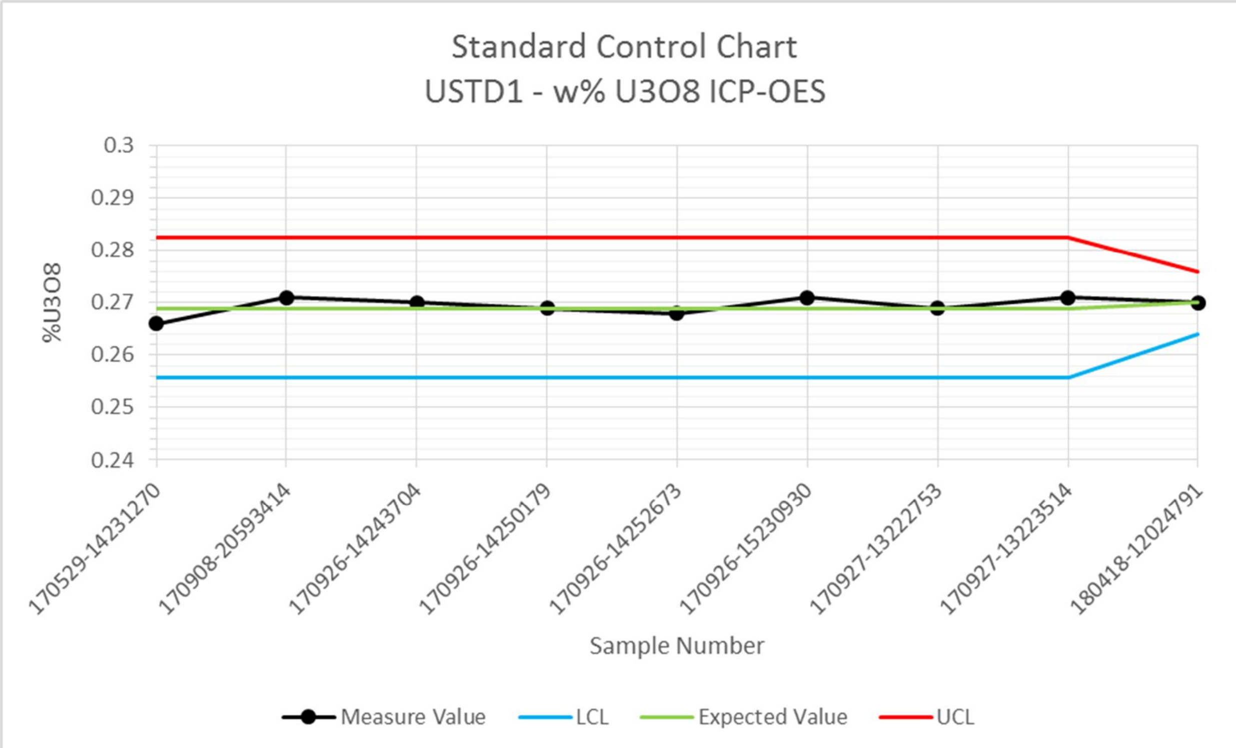


Figure 11-4: Analytical Results for Control Sample USTD1 for Huskie Assays.

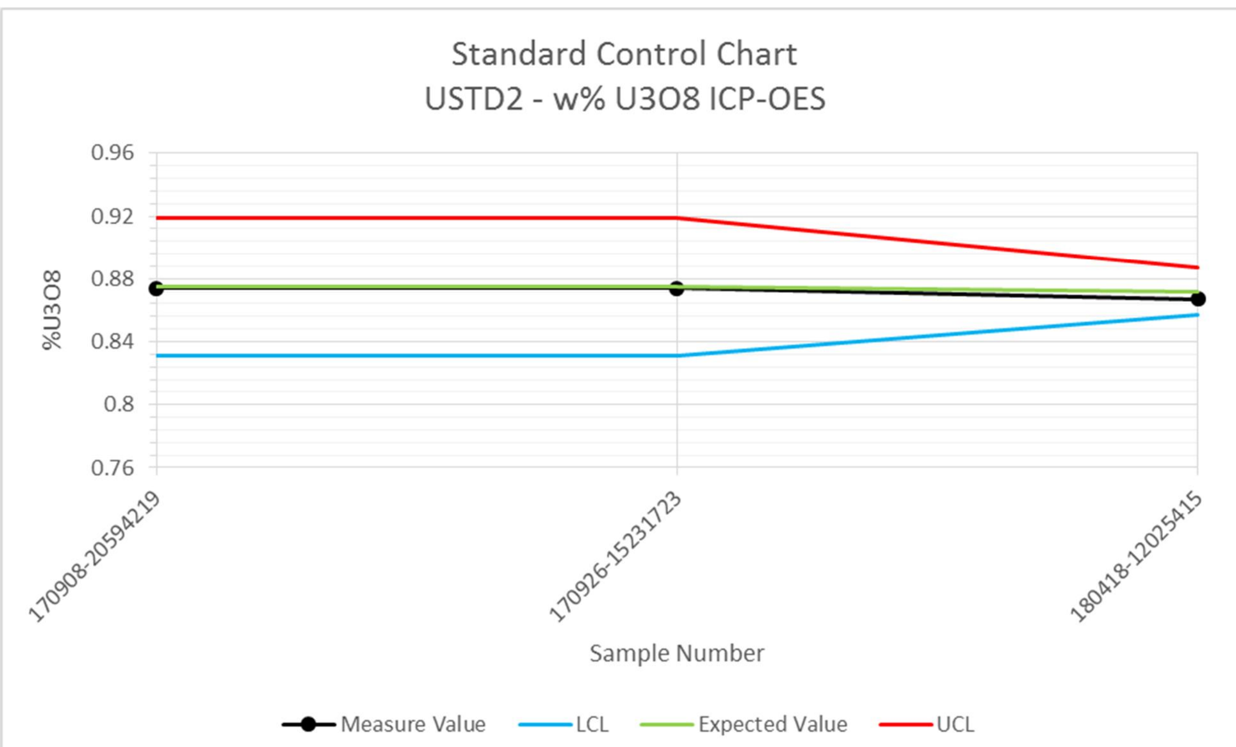


Figure 11-5: Analytical Results for Control Sample USTD2 for All Huskie Assays.

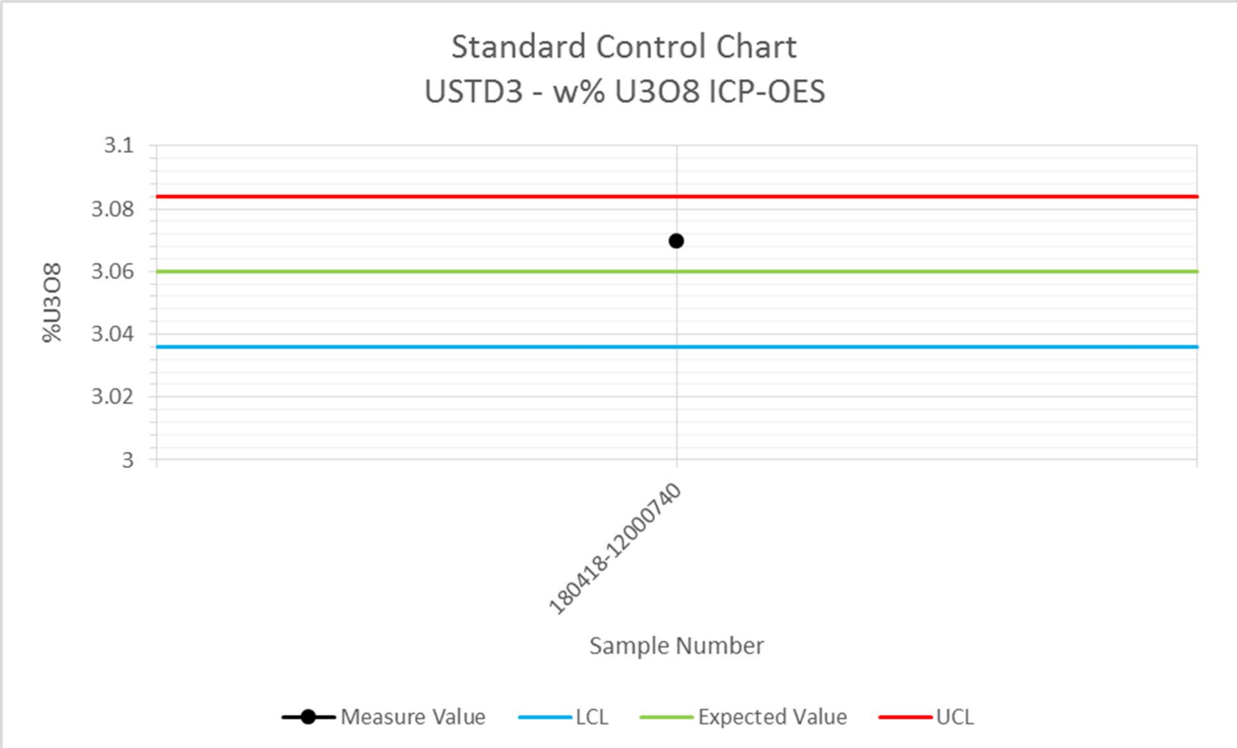


Figure 11-6: Analytical Results for Control Sample USTD3 for Huskie Assays.

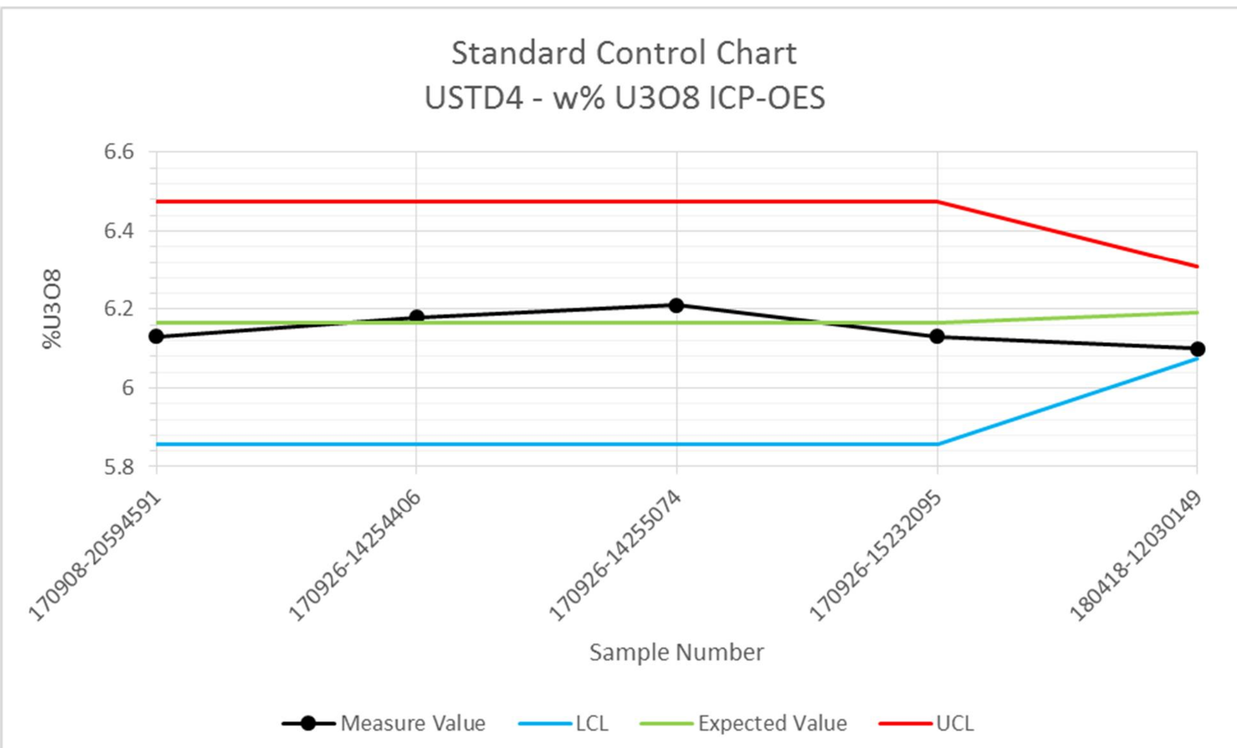


Figure 11-7: Analytical Results for Control Sample USTD4 for All Huskie Assays.

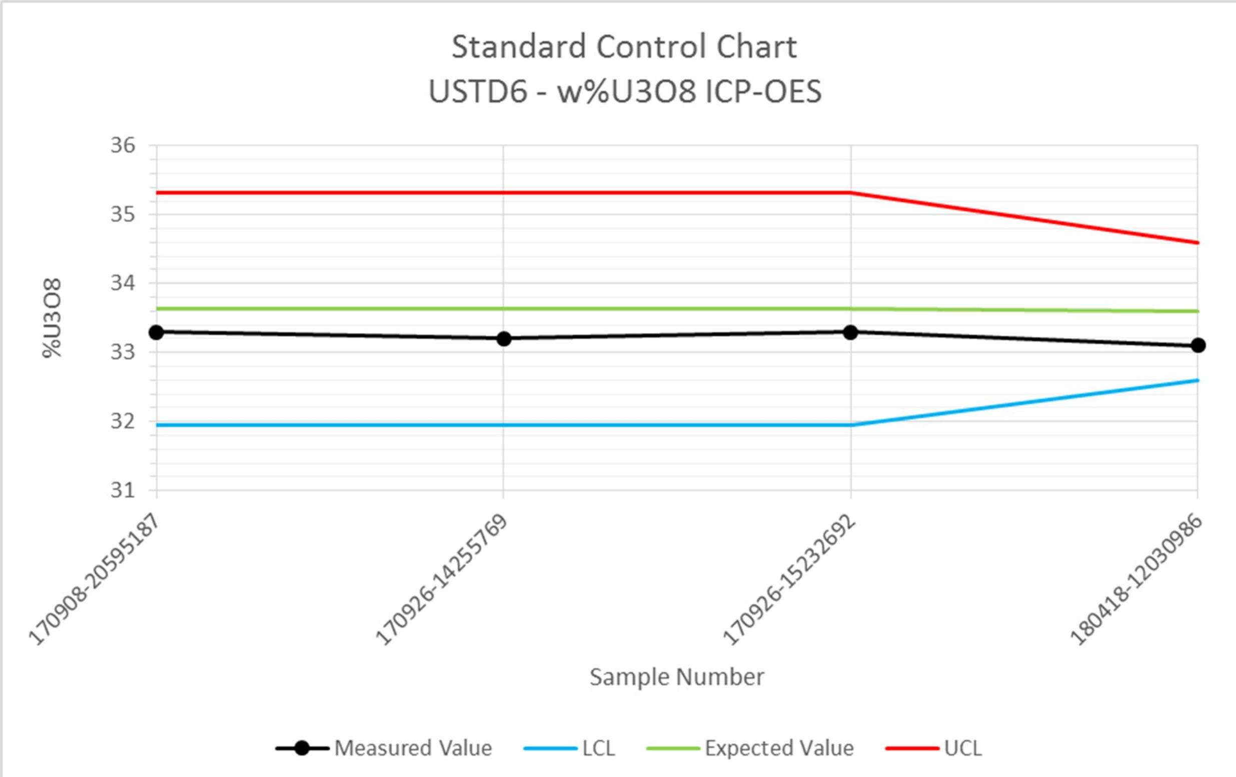


Figure 11-8: Analytical Results for Control Sample USTD6 for Huskie.

11.4.1.2 Field Assay Duplicates

Analyses of duplicate samples are an essential component of quality control. Duplicates are used to evaluate the field precision of analyses received and are typically controlled by rock heterogeneity and sampling practices. Core duplicates are prepared by collecting a second sample of the same interval, through splitting the original sample, or other similar technique, and are submitted as an independent sample to ensure they are blind to the sample preparation laboratory. Duplicates are typically submitted at a minimum rate of one per 25 samples in order to obtain a collection rate of 4%. The collection may be further tailored to reflect field variation in specific rock types or horizons.

Figure 11-9 shows the results of analyses of field core duplicates plotted against original analyses for the Tthe Heldeth Túé. A 1:1 reference line is shown in red for Tthe Heldeth Túé (Sexton & Armitage, 2013).

Figure 11-10 shows results of analyses of field core duplicates plotted against original analysis for Huskie.

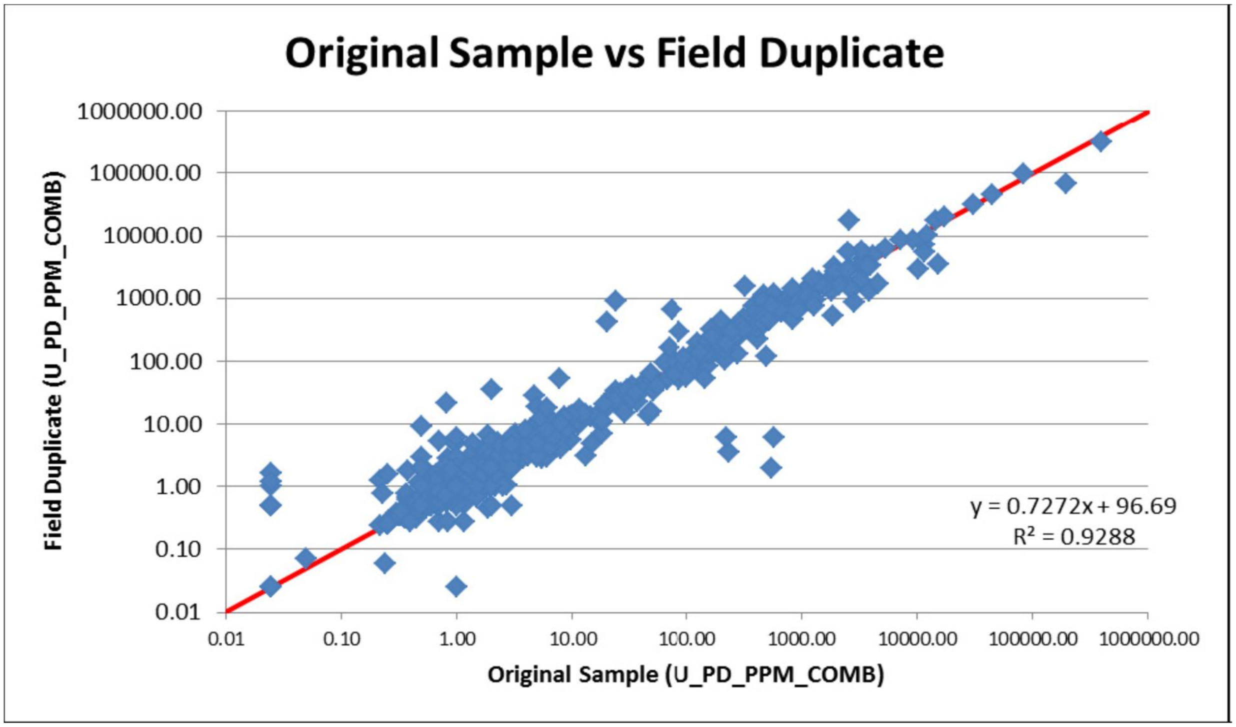


Figure 11-9: Results for original samples versus their field duplicate plotted on a log scale base 10 for Tthe Heldeth Túé

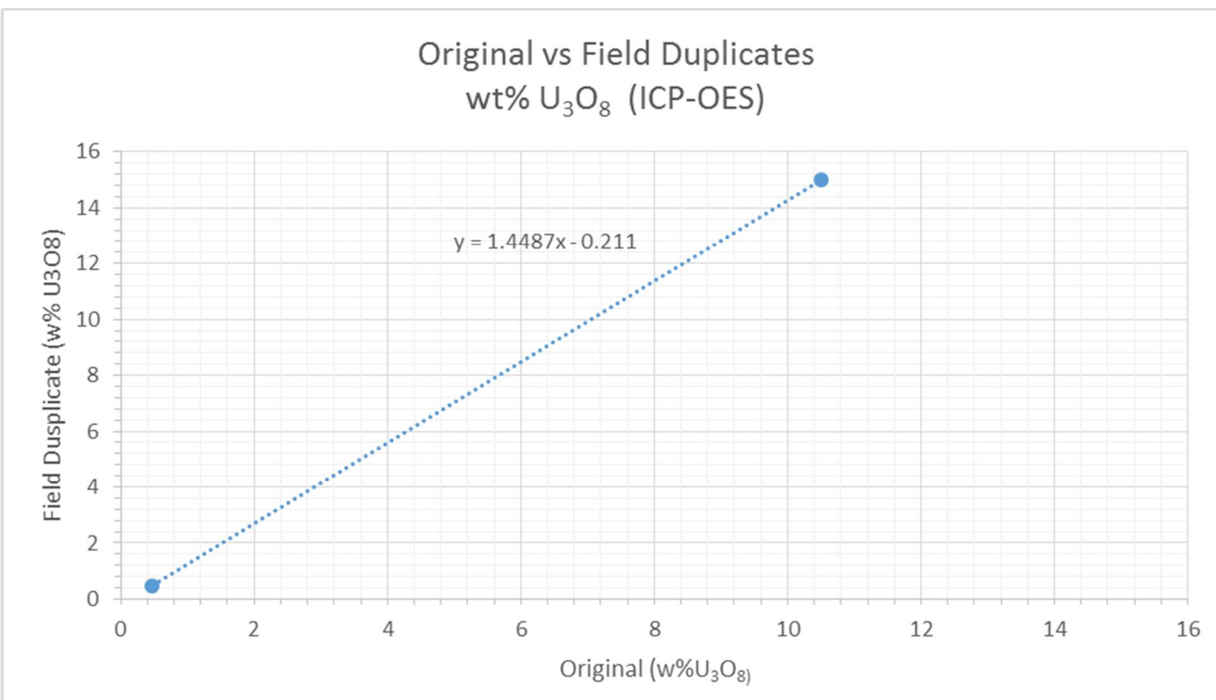


Figure 11-10: Analytical Results for Field Duplicate Samples for Huskie.

11.4.1.3 Blanks

For the 2013 Tthe Heldeth Túé drilling, Fission used twenty pulps from the winter 2010 drill program as blanks. These samples were selected to satisfy the criteria of having "U; ICP ICP1 Total" < 2 ppm and "U; Fl. ICP1 Partial" < 1 ppm. One blank pulp was inserted for each drill hole that intersected mineralization and from which samples were sent for U_3O_8 assay. The blanks were re-packaged, assigned a new sample number and inserted in sequence within the mineralized interval. The entire blank pulp sample was submitted for analysis. Blank samples were analysed by ICP-OES (ICP1 package) and assayed for U_3O_8 % and Au by fire assay. Blank samples were not inserted with samples from non-mineralized holes.

Results for the 17 field blanks used during the 2013 drill program were found to be acceptable. A blank failure is defined as any assay value greater than two times the elements detection limit.

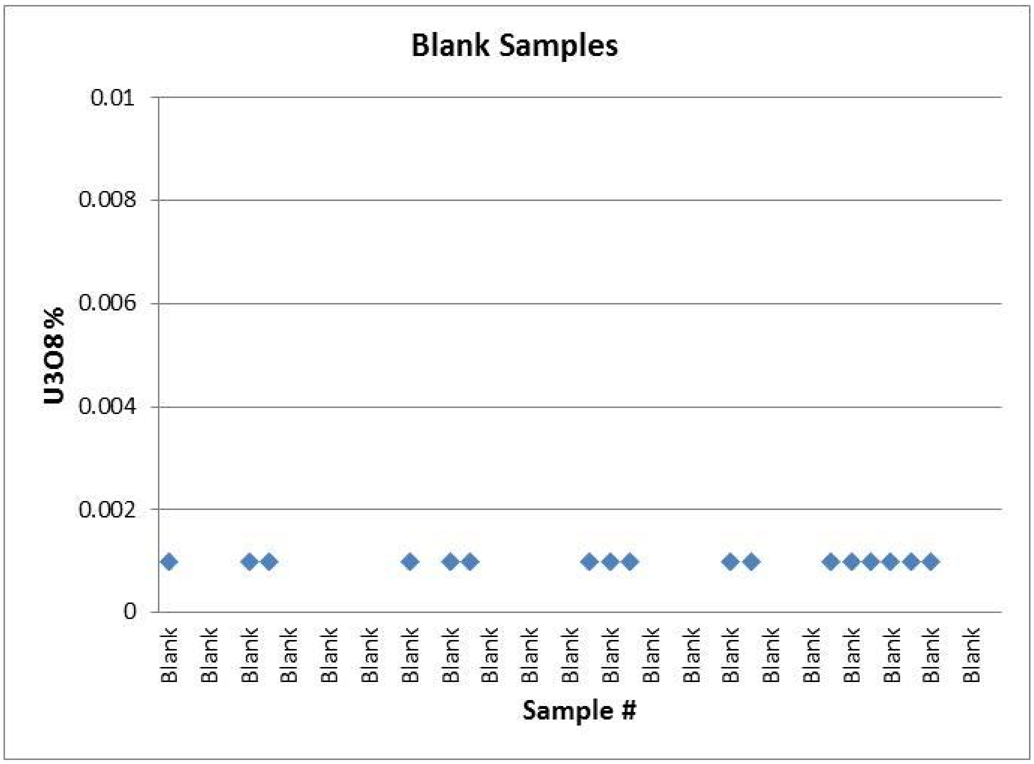


Figure 11-11: Results of the 2013 blank reference samples for U_3O_8, Tthe Heldeth Túé.

Denison did not use field blanks for the 2017 and 2018 drilling programs at Huskie. Instead, it relied on SRC's internal QA/QC sampling program to check for contamination by insertion of "blanks" at the lab.

11.4.2 Laboratory Internal Quality Assurance and Quality Control

The SRC laboratory has a quality assurance program dedicated to active evaluation and continual improvement in the internal quality management system. The laboratory is accredited by the Standards Council of Canada as an ISO/IEC 17025 Laboratory for Mineral Analysis Testing and is also accredited ISO/IEC 17025:2005 for the analysis of U_3O_8. The laboratory is licensed by the Canadian Nuclear Safety Commission ("CNSC") for possession, transfer, import, export, use, and storage of designated nuclear substances by CNSC Licence Number 01784-1-09.3. As such, the laboratory is closely monitored and inspected by the CNSC for compliance.

All analyses are conducted by SRC, which has specialized in the field of uranium research and analysis for over 30 years. SRC is an independent laboratory, and no associate, employee, officer, or director of Denison is, or ever has been, involved in any aspect of sample preparation or analysis on samples from the Tthe Heldeth Tue or Huskie deposits.

The SRC uses a laboratory management system ("LMS") for quality assurance. The LMS operates in accordance with ISO/IEC 17025:2005 (CAN-P-4E) "*General Requirements for the Competence of Mineral Testing and Calibration Laboratories*" and is also compliant to CAN-P-1579 "*Guidelines for Mineral Analysis Testing Laboratories*". The laboratory continues to participate in proficiency testing programs organized by CANMET (CCRMP/PTP-MAL).

Quality control samples (reference materials, blanks, and duplicates) are included with each analytical run, based on the rack sizes associated with the method. The rack size is the number of samples (including QC samples) within a batch. Blanks are inserted at the beginning, standards are inserted at random positions, and duplicates are analyzed at the end of the batch. Quality control samples are inserted based on the analytical rack size specific to the method (Table 11-2).

Table 11-2: Quality Control Sample Allocations.

Rack Size	Methods	Quality Control Sample Allocation
20	Specialty methods including specific gravity, bulk density, and acid insolubility	2 standards, 1 duplicate, 1 blank
28	Specialty fire assay, assay-grade, umpire and concentrate methods	1 standard, 1 duplicate, 1 blank
40	Regular AAS, ICP-AES and ICP-MS methods	2 standards, 1 duplicate, 1 blank
84	Regular fire assay methods	2 standards, 3 duplicates, 1 blank

All instruments are calibrated using certified materials. Quality control samples were prepared and analyzed with each batch of samples. Within each batch of 40 samples, one to two quality control samples were inserted.

Results for the BL2A, BL3, BL4a and BL5 standards used for the Tthe Heldeth Túé drilling are illustrated in Figures 11-12 to 11-15.

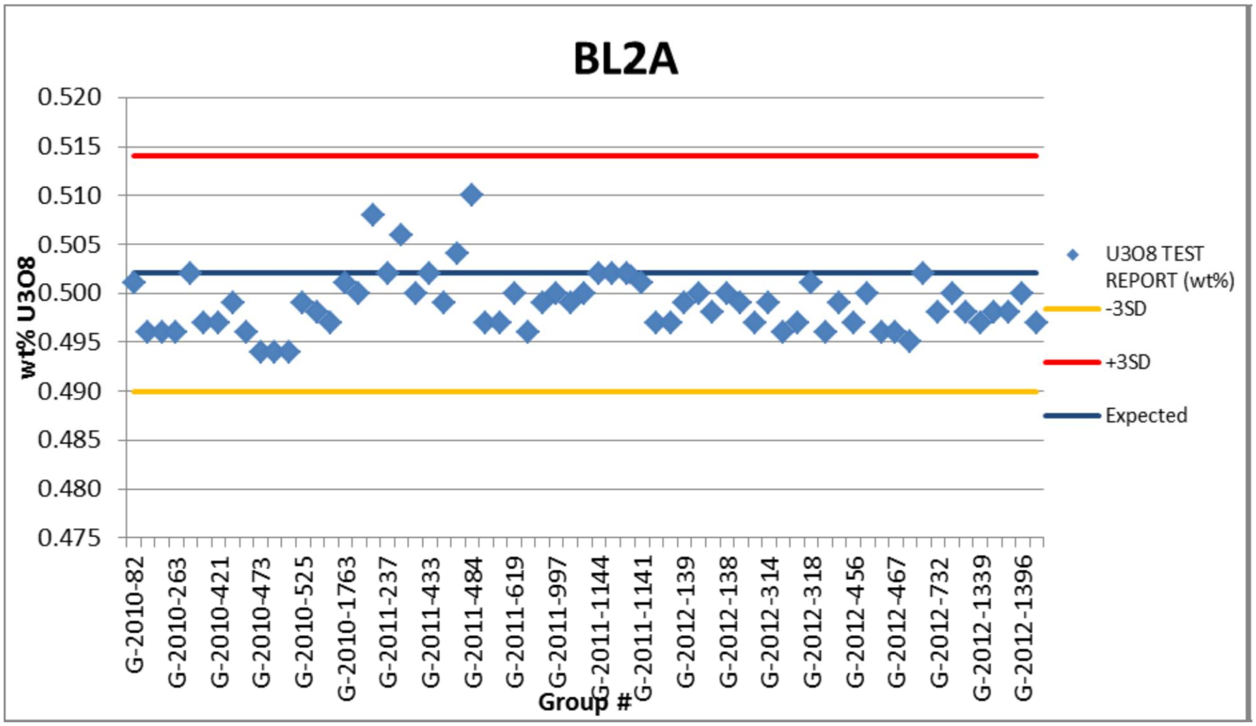


Figure 11-12: Results of the BL2A reference samples, Tthe Heldeth Túé.

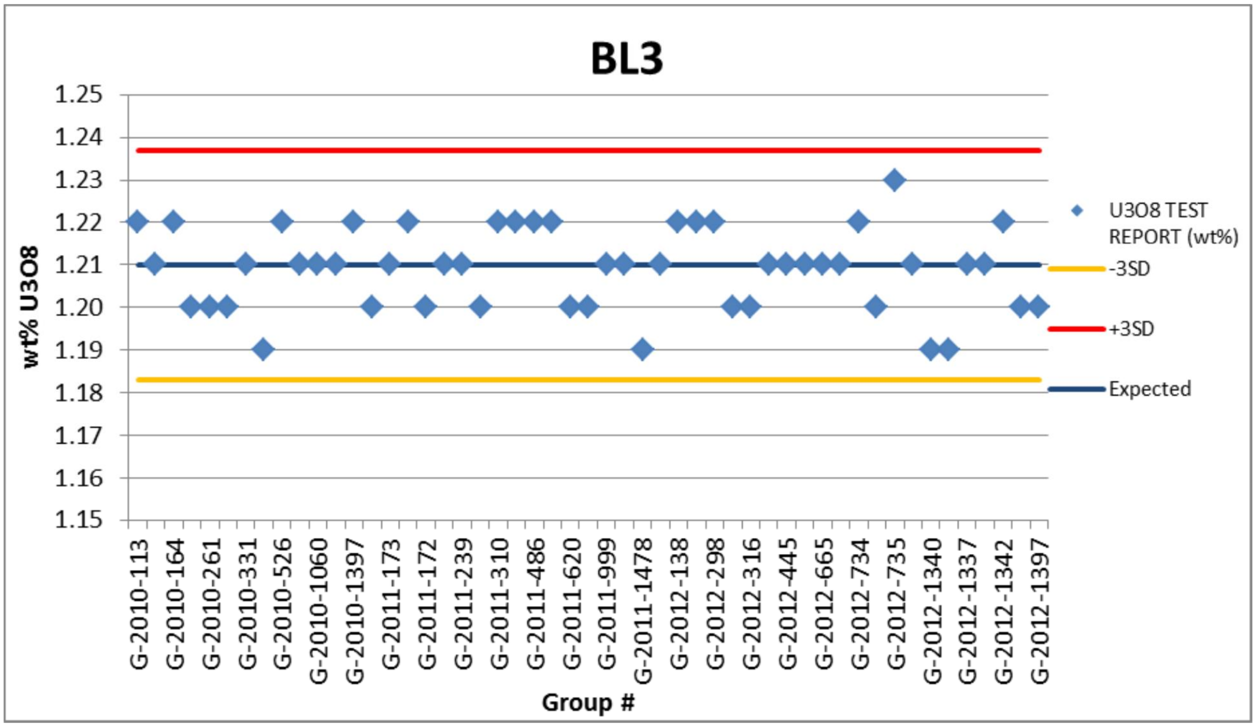


Figure 11-13: Results of the BL3 reference samples, Tthe Heldeth Túé.

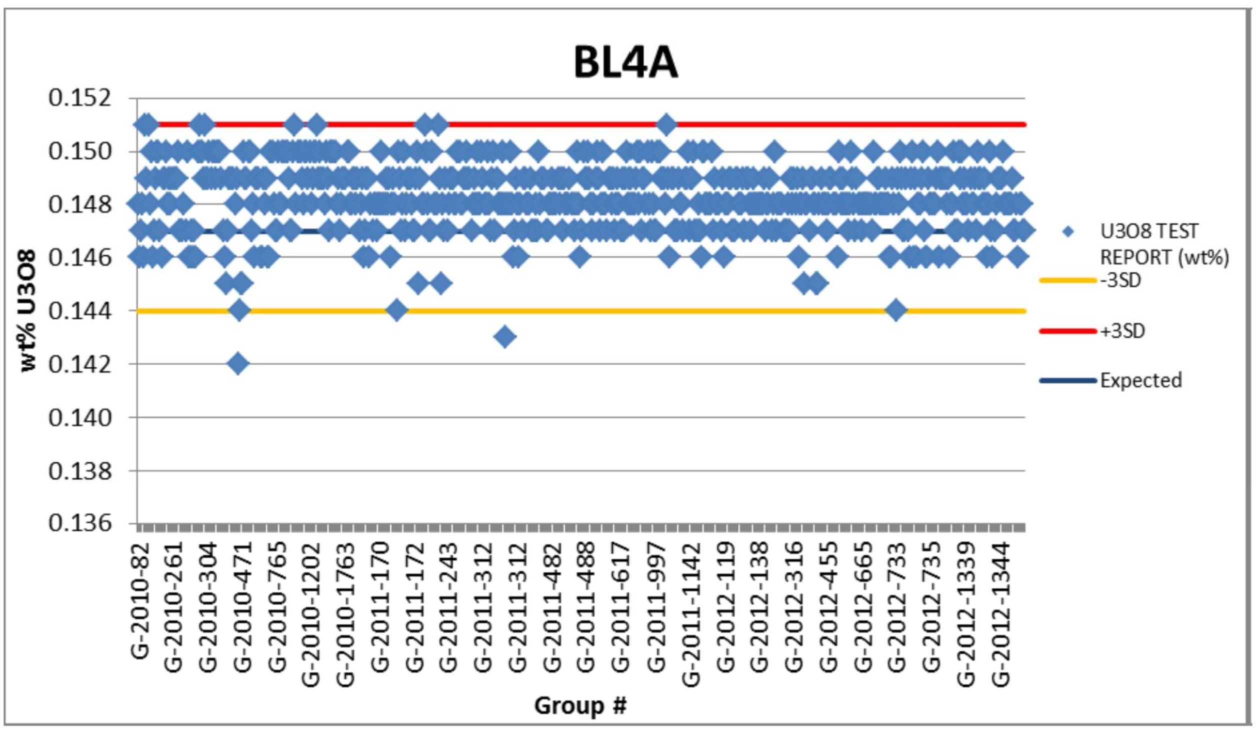


Figure 11-14: Results of the BL4A reference samples, Tthe Heldeth Túé.

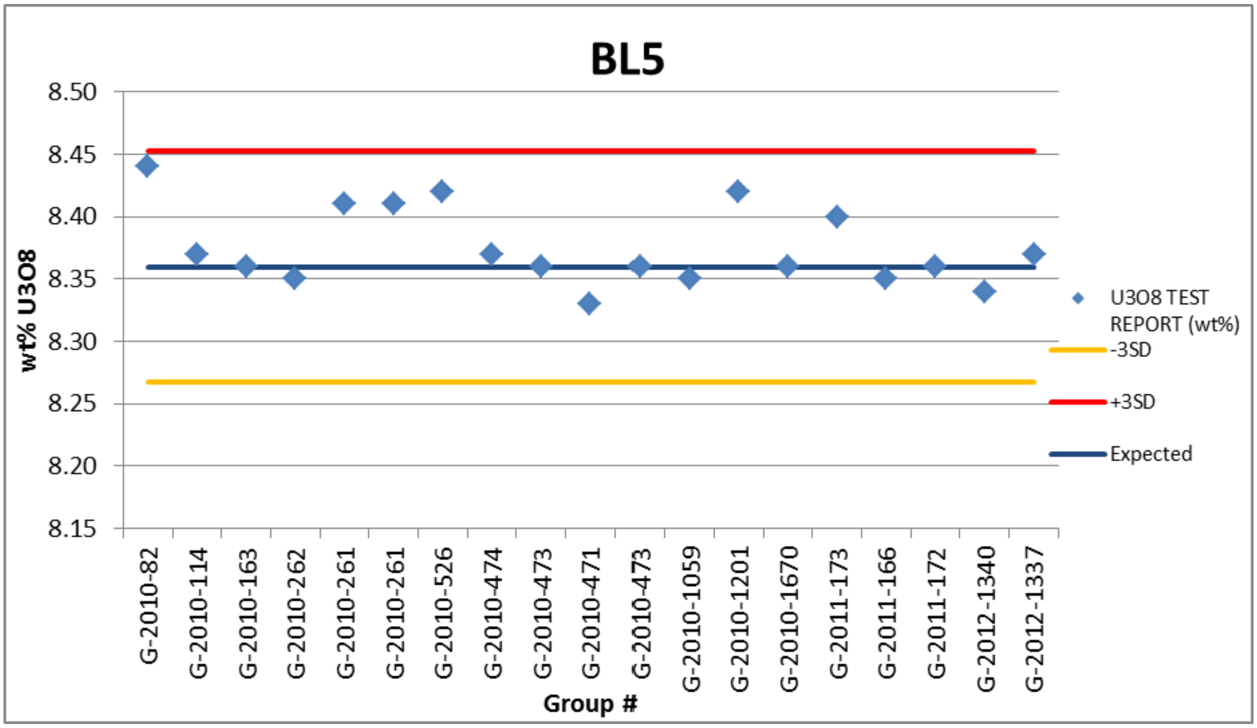


Figure 11-15: Results of the BL5 reference samples, Tthe Heldeth Túé.

For the Huskie drilling, SRC used three U_3O_8 reference standards: BL4a, BL5 and SRCUO2, which have concentrations of 0.147% U_3O_8, 8.36% U_3O_8, and 1.58 % U_3O_8, respectively. BL4a and BL5 are both prepared by CANMET and SRCUO2 is prepared in-house by SRC. A duplicate is performed at the end of each batch of samples. As well, a blank sample is inserted into each batch of samples to monitor the potential for contamination during sampling, processing, and analysis. Figure 11-16 to Figure 11-19 show results of analyses of the BL4a, BL5 and SRCUO2 standards, as well as the blank samples for the Huskie drilling.

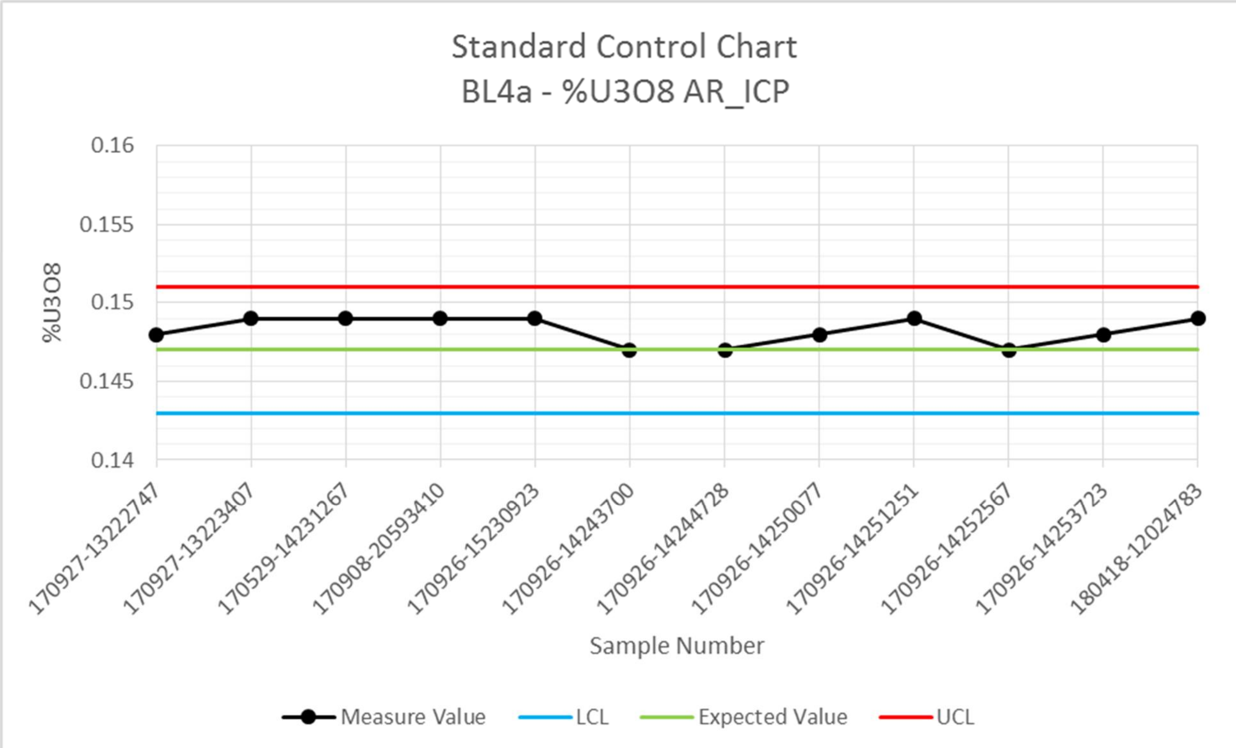


Figure 11-16: Analytical Results for Control Sample BL4a for Huskie.

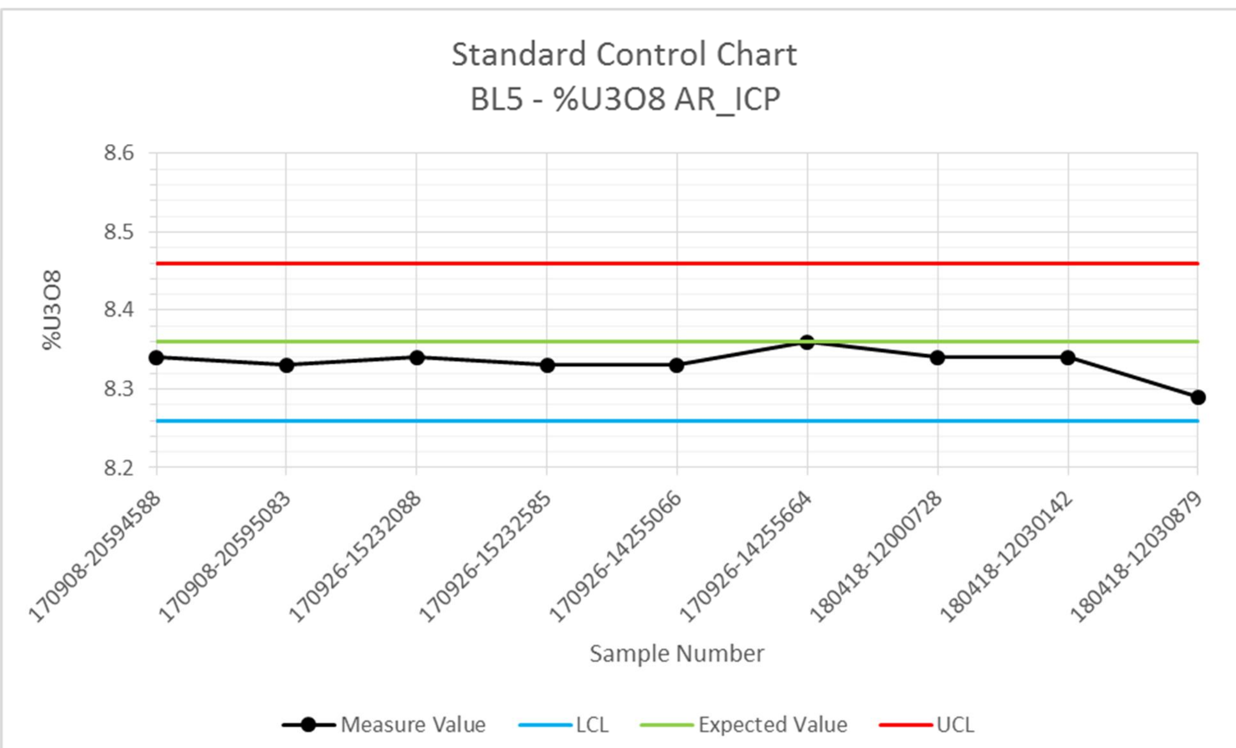


Figure 11-17: Analytical Results for Control Sample BL5 for Huskie.

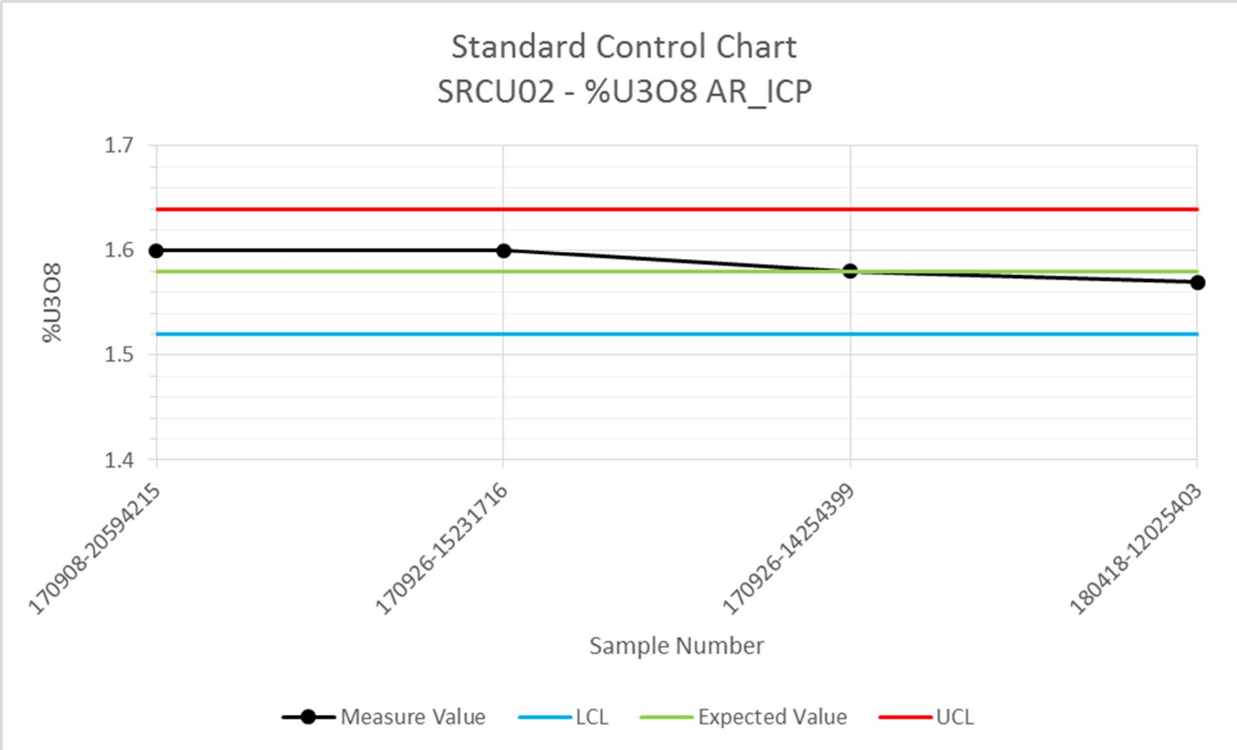


Figure 11-18: Analytical Results for Control Sample SRCU02 for Huskie.

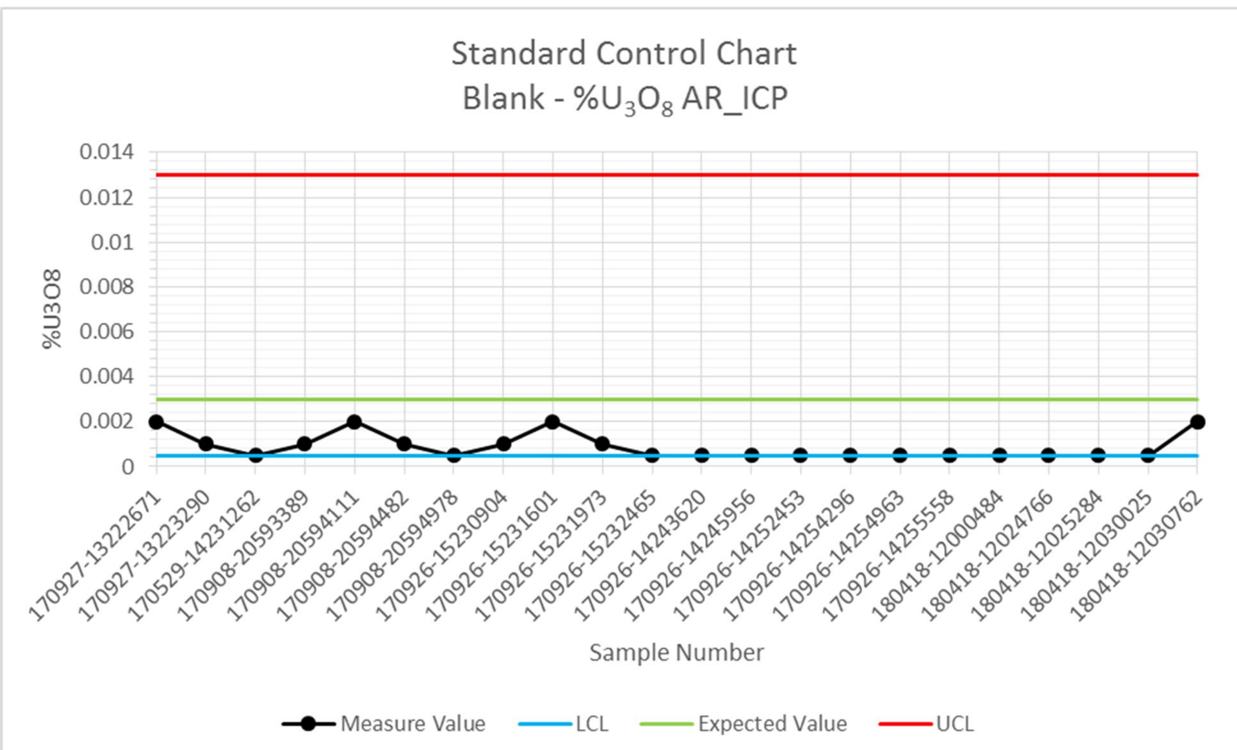


Figure 11-19: Analytical Results for Blank Control Sample for Huskie.

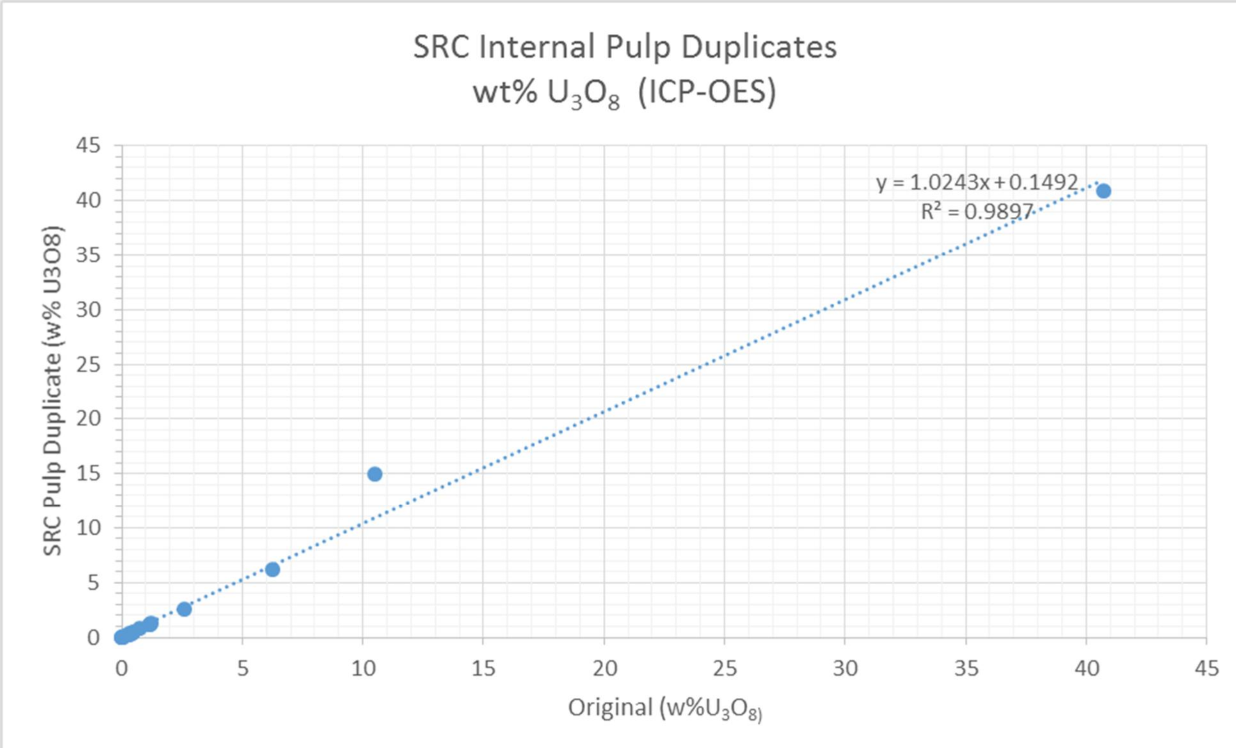


Figure 11-20: Analytical Results for the Pulp Duplicates Versus the Original Assay Samples for Huskie.

Before the results leave the laboratory, the standards, blanks, and split replicates are checked for accuracy, and issued provided the senior scientist is fully satisfied. If for any reason there is a failure in an analysis, the sub-group affected will be re-analyzed, and checked again. A corrective action report is issued, and the problem is investigated fully to ensure that any measures to prevent the re-occurrence can and will be taken. All human and analytical errors are, where possible, eliminated. If the laboratory suspects any bias, the samples are re-analyzed, and corrective measures are taken.

11.4.3 External Laboratory Check Analysis

In addition to the QA/QC described above, for the Huskie drilling, Denison sent one in every 25 to a separate facility located at SRC Analytical Laboratories in Saskatoon. These samples were analyzed using Delayed Neutron Counting ("DNC") for uranium analysis to compare the uranium values using two different methods, by two separate laboratories.

The DNC method is specific for uranium and no other elements are analyzed by this technique. The DNC system detects neutrons emitted by the fission of U-235 in the sample, and the instrument response is compared to the response from known reference materials to determine the concentration of uranium in the sample.

In order for the analysis to work, the uranium must be in its natural isotopic ratio. Enriched or depleted uranium cannot be analyzed accurately by DNC.

For the Huskie deposit, seven assay pairs were analyzed using both ICP-OES total digestion and the DNC assay technique. As it can be seen in Figure 11-21, the results obtained from the DNC laboratory compare well with those obtained from the SRC Geoanalytical laboratory. It can be seen that correlation is excellent. Uranium grades obtained with the DNC technique were used only as check assays and were not directly used for mineral resource estimation.

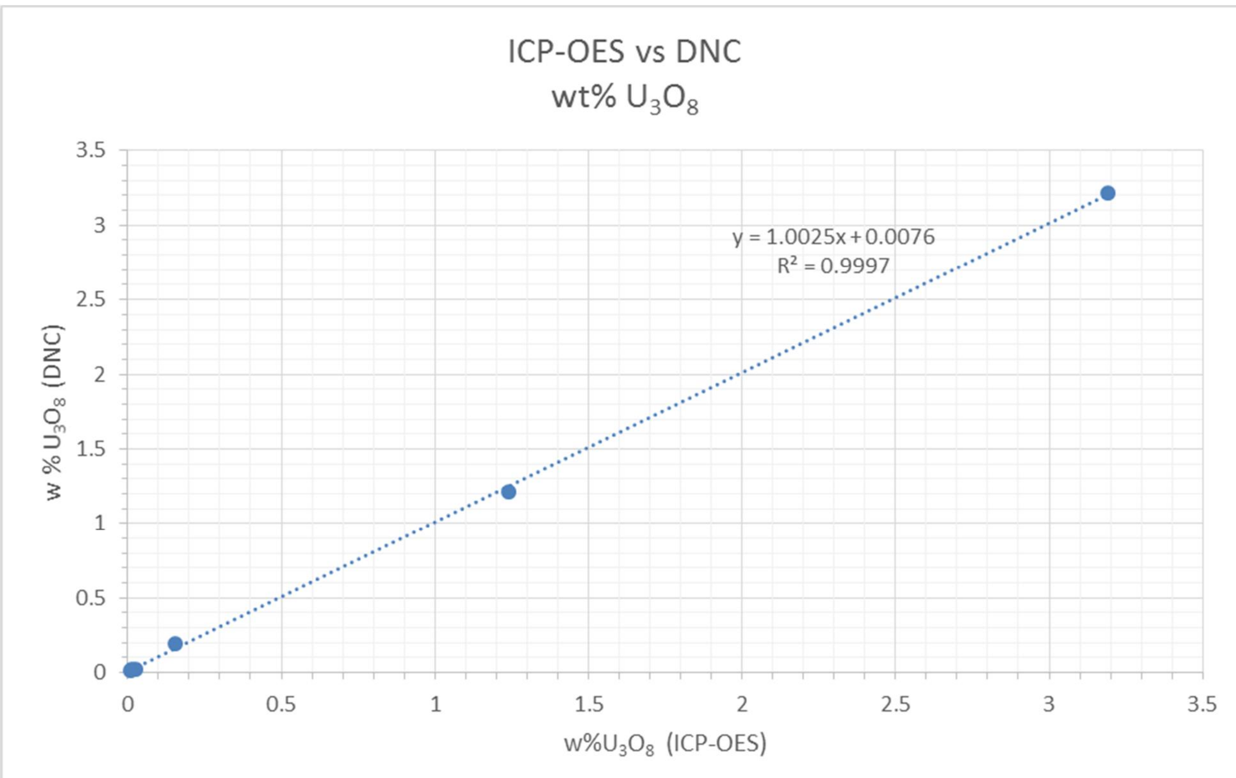


Figure 11-21: Analytical Results DNC Versus ICP-OES Assay Values for Huskie.

11.4.4 Laboratory Security and Confidentiality

SRC considers customer confidentially and security to be of utmost importance and takes appropriate steps to protect the integrity of sample processing at all stages from sample storage and handling to transmission of results. All electronic information is password protected and backed up on a daily basis. Electronic results are transmitted with additional security features. Access to SRC's premises is restricted by an electronic security system. The facilities at the main laboratory are regularly patrolled by security guards 24 hours a day.

After the analyses are completed, analytical data are securely sent using electronic transmission of the results. The electronic results are secured using WINZIP encryption and password protection. These results are provided as a series of Adobe PDF files containing the official analytical results and a Microsoft Excel file containing only the analytical results.

11.4.5 The Qualified Persons Opinion on the QA/QC Procedures

In the opinion of the relevant Qualified Persons, sample preparation, security, and analytical procedures meet industry standards, and the QA/QC programs as designed and implemented by Fission and Denison for the Tthe Heldeth Túé and Huskie are adequate; consequently, the assay results within the drill hole database are suitable for use in a mineral resource estimate.

12 DATA VALIDATION

12.1 Tthe Heldeth Túé

The following description of the data verification completed by Fission between 2010 and 2013 on the Tthe Heldeth Túé was extracted from the 2012 Technical Report for Fission titled "*Technical Report on the Waterbury Lake Uranium Project Including Resource Estimate on the J Zone Uranium Deposit, Waterbury Lake Property, Athabasca Basin, Northern Saskatchewan*", dated February 29th, 2012 and revised on May 29th, 2012 by Armitage and Nowicki, which is filed on SEDAR under Fission's profile.

The 2013 resource for the Tthe Heldeth Túé was defined by 12,551 assay samples collected from 268 drill holes totaling 88,770m completed by Fission between January 2010 and April 2013. All geological data was reviewed and verified by the relevant Qualified Persons as being accurate to the extent possible.

To complete the updated resource estimate on the Tthe Heldeth Túé, GeoVector assessed the raw drill core database that was available from the drill program completed between January and March 2013 on the Property. GeoVector was provided with an updated drill hole database which included collar locations, down hole survey data, assay data, lithology data, down hole radioactive data, core recovery data and specific gravity ("SG") data.

The database was checked for typographical errors in assay values and supporting information on source of assay values was completed. Sample overlaps and gapping in intervals were also checked. Verifications were also carried out on drill hole locations, down hole surveys, and lithologic information. Generally, the 2013 database was in good shape and was accepted by GeoVector as is. The 2013 data was added to the database used for the previous resource estimate.

The relevant Qualified Persons did not conduct check sampling of the core; were confident in the integrity of the samples collected by Fission and believe the sample preparation, analysis and security for the Tthe Heldeth Túé to have been done within the CIM Definition Standards guidelines as required by NI 43-101 and did visually inspect the core and the majority of the significant uranium intercepts from the 2010 to 2012 drill programs.

The relevant Qualified Persons also inspected the majority of the significant uranium intercepts with a handheld Exploranium GR-110G total count gamma-ray scintillometer and confirmed the presence of uranium mineralization. The relevant Qualified Persons caution that scintillometer readings are not directly or uniformly related to uranium grades of the rock sample measured and should be used only as a preliminary indication of the presence of radioactive materials.

QAQC procedures performed by Fission on assay samples are explained in detail in Section 11. In the opinion of the relevant Qualified Persons, they are in accordance with industry best practice and consider them to be reasonable and acceptable for resource estimation.

There was no verification or repeat logging of down hole orientation surveys. Gamma probe surveys are recorded while going down hole and up hole resulting in two survey files for each hole. The overall gamma probes up and down results can be compared to ensure that no spurious readings were recorded.

12.2 Huskie

Prior to mineral resource estimation, Denison performed detailed QAQC and data verification of all datasets, which in Denison's view are in accordance with industry best practice and consider them to be reasonable and acceptable for resource estimation. Denison has performed additional QAQC and data verification of the database as described in the sub sections below.

Denison conducted audits of all records to ensure that the grade, thickness, elevation, and location of uranium mineralization used in preparing the current resource estimates were accurate. Denison performed the following queries on the digital project database. No significant issues were identified.

- Header table: searched for incorrect or duplicate collar coordinates and duplicate hole IDs.
- Survey table: searched for duplicate entries, survey points past the specified maximum depth in the collar table, and abnormal dips and azimuths.
- Core recovery table: searched for core recoveries greater than 100% or less than 75%, overlapping intervals, missing collar data, negative widths, and data points past the specified maximum depth in the collar table.
- Lithology and Probe tables: searched for duplicate entries, intervals past the specified maximum depth in the collar table, overlapping intervals, negative widths, missing collar data, missing intervals, and incorrect logging codes.
- Geochemical and assay table: searched for duplicate entries, sample intervals past the specified maximum depth, negative widths, overlapping intervals, sampling widths exceeding tolerance levels, missing collar data, missing intervals, and duplicated sample IDs.

In addition, a review of selected drilling campaign reports and associated data appendices were reviewed to validate and support the drill hole database content. No inconsistencies or errors in the database were noted.

The assay table contains 201 laboratory records. Denison verified all 201 records representing 100% of the data for uranium values against five different laboratory certificates. No discrepancies were identified.

Based on the data validation by Denison and the results of the standard, blank, and duplicate analyses, Denison is of the opinion that the assay database is of sufficient quality for mineral resource estimation. Denison additionally carried out checks of the digital probe equivalent uranium database used for resource estimation by verifying the probe equivalent uranium database against original assay data. Denison verified that in instances were core recovery was less than 75%, radiometric data could be substituted for chemical assays and that the assay database was of sufficient quality for mineral resource estimation.

As outlined in Section 2.5, Cliff Revering of SRK, and Mr. Serdar Donmez and Mr. Dale Verran of Denison, visited the Waterbury Lake property on August 20th and 21st, 2018 accompanied by Mr. Paul Burry (Project Geologist, Waterbury Lake Project) of Denison. During the visit Mr. Revering, Mr. Donmez and Mr. Verran also visited several drill sites and verified the occurrence of high grade mineralization visually and by way of handheld scintillometer. Additional routine discussions were held at Denison's exploration office in Saskatoon with Denison's technical personnel.

To construct the 3D geology model and the mineralized wireframes and to complete the resource estimate for the Huskie deposit, Denison relied solely on lithological and structural data from detailed core logs and geochemical assays collected from holes drilled by Denison in 2017 and 2018 at Huskie.

In the opinion of the relevant Qualified Persons, Denison's practices are in accordance with industry best practice and consider them to be reasonable and acceptable for resource estimation.

12.3 Opinion on Adequacy of Data

The relevant Qualified Persons consider the Tthe Heldeth Túé and the Huskie deposit data to be reliable and appropriate for the preparation of a Mineral Resource estimate.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Historical testing

13.1.1 Tthe Heldeth Túé

The following description of the mineral processing and metallurgical testing completed in 2011 was extracted from the 2018 NI 43-101 technical report titled *"Technical Report with an Updated Mineral Resource Estimate for the Waterbury Lake Property, Northern Saskatchewan, Canada – Mineral Resource Estimate" (SRK, 2018)*", dated December 21, 2018, prepared by Serdar Donmez, P.Geo. E.I.T., Denison Mines Corp, Dale Verran, P. Geo. Pr. Sci.Nat., Denison Mines Corp., Paul Burry, P.Geo., Denison Mines Corp., Oy Leuangthong, P.Eng, SRK Consulting (Canada) Inc., Cliff Revering, P.Eng, SRK Consulting (Canada) Inc, Allan Armitage, P.Geo, SGS Geostat, Allan Sexton, P.Geo, GeoVector Management Inc.

In order to provide a preliminary assessment of the metallurgical characteristics of the Tthe Heldeth Túé mineralization, a sampling assessment of the mineralogical and leaching characteristics of a representative selection of drill core samples was undertaken between July and December 2011.

The study is based on a suite of 48 samples of mineralized material collected from thirty-two drill holes (2010 and 2011 programs). These were chosen to provide good spatial representation of the Tthe Heldeth Túé mineralization as well as representing a wide range of uranium content and covering a range of different settings (i.e. sandstone / conglomerate hosted, basement hosted, south-side lens). The samples were derived from the half split core remaining after the initial geochemical / assay process. The radioactivity, measured in cps, was recorded for each piece of core and a flagging tape label was stapled into the core box to mark the sample location.

All samples were submitted to the SRC for comprehensive mineralogical analysis and preparation of thin sections for petrographic analysis by MSC. The results of mineralogical work were used, in conjunction with spatial considerations, to define suitable composite samples for preliminary leaching test work undertaken by the SRC Mining and Minerals Division. Results of this work are summarised below with details provided in unpublished reports MSC11/043 and Zhang (2011).

13.1.1.1 Mineralogical Analysis

The principal objective of this study was to determine the overall mineral assemblage of the Tthe Heldeth Túé deposit and to provide a better understanding of the mineralogy and texture of the uranium-bearing phases.

Semi-quantitative Rietveld XRD analysis was undertaken on all 48 samples and, in addition, SRC determined the uranium content (in ppm U) of each sample by XRF analysis. Based on the XRD, a subset of 24 samples was selected for quantitative mineralogical analysis (Q-Min) by the SRC. This involved high-resolution compositional scanning of the sample pulps (-106 micron powder, as used for XRD and XRF analysis) by electron microprobe followed by image analysis to determine the proportion of mineral phases identified and quantitative EPMA analysis of all identified minerals. In addition to the analytical work undertaken at the SRC, MSC undertook petrographic and detailed SEM-EDS analysis of small subsamples from 30 of the mineralized samples. The results of this work are described in detail in MSC report MSC11/043.

The mineralogical analyses determined that the most abundant uranium-bearing minerals in the Tthe Heldeth Túé are uraninite and/or pitchblende, and coffinite. The gangue mineralogy is essentially comprised of various amounts of quartz, phyllosilicates (illite-sericite, chlorite, biotite, kaolinite) and (Fe, Ti)-oxides (hematite, goethite and anatase recognized by XRD analyses). Feldspars also occur in most samples and carbonates as well as a variety of sulphides are locally present. Ni-arsenides are recognized throughout the samples as well.

Uranium-bearing phases vary in size from microcrystalline to coarse-grained. Finer-grained phases occur as fracture infill or interstitial to quartz and /or phyllosilicates and are commonly associated with Ni-arsenides. Coarser-grained uranium phases form polycrystalline aggregates, variably associated with Fe-oxides (hematite and/or goethite) and microcrystalline copper-bearing sulphides. Uranium zoning is observed in some samples, in which aggregates and fractures of lead-poor uraninite are lined by lead-rich uraninite.

The results of the mineralogical analyses identified five groupings of samples with mineralogies typically dominated by either uranium oxide or uranium silicate phases. Samples taken from the PKB area (portion of Tthe Heldeth Túé western lens) were found to dominantly contain a high proportion of uranium silicate minerals with minor amounts of uranium oxides. Samples taken from the central and western portions of the Tthe Heldeth Túé eastern lens were dominated by uranium oxides with only minor amounts of uranium silicates. The central uranium oxide zone appears to be flanked to the east and west by two regions dominated by uranium silicates or a roughly even mixture of silicate and oxide phases.

13.1.1.2 Acid Leaching Tests

Leaching tests were undertaken by SRC Mining and Minerals Division on composite samples prepared from the sample set discussed in the previous section. The primary objective of the leaching test work was to provide an initial assessment of the amenability of Tthe Heldeth Túé ore to acid leaching methods and to use the recovery of uranium as an indicator of the acid leaching efficiency. Only the leaching time and rate of acid addition were considered in the tests while the other parameters (e.g. solid percentage in the slurry, temperature, pressure and agitation conditions) remained fixed. The results of the leaching test work are presented in Zhang (2011) and are summarised below.

13.1.1.2.1 Composite preparation

Composite ore samples were prepared from 47 of the samples included in the mineralogical analysis discussed above. A total of five composite samples were defined based on the location to provide spatially representative coverage of the Tthe Heldeth Túé as well as PKB. In addition, the results of mineralogical work (in particular variations in the proportion of U-silicates vs U-oxides) were considered in defining the composite samples. The composites each include samples originating from 3 to 7 different drill holes, and representing different lithologies, uranium grades and mineralogy. The uranium grade in the composite samples varies from a low of 0.71 % U_3O_8 in Composite 1 to a high of 3.23 % U_3O_8 in Composite 3. A summary of the composite sample features is presented in Table 13-1, and the assays of uranium, gold, and other significant constituents for the five composites are provided in Table 13-2.

Table 13-1: Summary of composite sample features.

Composite Sample #	Number of Samples Included	Total weight (kg)	Sample Source Area	Host Lithologies	Dominant Uranium Phase (from QMin)
1	7	2.65	PKB (Western lens)	Basal conglomerate, metasediments	Silicates >> oxides
2	7	2.11	West edge of the Tthe Heldeth Túé eastern lens	Metasediments, unknown gneisses	Oxides > silicates
3	11	3.65	Center of the Tthe Heldeth Túé eastern lens	Sandstone, basal conglomerate, metasediments	Oxides >> silicates
4	5	1.79	East edge of the Tthe Heldeth Túé eastern lens	Sandstone, metasediments	Silicates > oxides
5	5	2.05	Mid lens	Metasediments	Oxides ≈ silicates

Table 13-2: Assays for uranium, gold and other constituents for the five studied composites used for leaching tests.

Composite Sample	U_3O_8 (%)	Au (g/ton)	Ni (ppm)	As (ppm)	Mo (ppm)	Fe_2O_3 (%)
Composite 1	0.71	0.17	2,982	2,560	72	6.03
Composite 2	1.33	0.08	2,704	3,495	371	5.12
Composite 3	3.23	N/A	3,145	8,218	744	15.8
Composite 4	1.39	0.5	834	1,567	498	17.1

Composite 5	1.14	0.37	4,762	3,850	122	9.8

13.1.1.2.2 Leaching Test Methods

Acid leaching was performed on each of the composite samples for 12 hours under atmospheric pressure and at a temperature of 55-65°C. The atmospheric leach represents the circuit at the Rabbit Lake mill, one of the local area mills which could be considered for processing the Tthe Heldeth Túé mineralization. Agitation was used to create adequate turbulence. Sodium Chlorate was used as the oxidant. The tests were undertaken on the assay lab rejects from XRD analyses that were ground to 90% passing 106 microns. The percentage of solids in the slurry was set at 50%. The only variables were the acid addition and leaching residence time. Two different H_2SO_4 dosages were used to create an initial leaching environment with 25 mSc/cm and 55 mSc/cm, respectively. Each composite sample was split into two subsamples labelled A and B. The A sample was used to test high acid addition with high initial conductivity and the B sample was used to test low acid addition with low initial conductivity.

13.1.1.2.3 Leaching Test results

The results of the preliminary acid leaching tests are presented in Table 13-3 and show that maximum extraction rates of 97.6 % to 98.5 % U_3O_8 can be obtained (depending on the acid addition) within 4 to 8 hours of leaching time, and that the leaching recovery was variably affected by acid addition and leaching time.

Composite 1 has a U_3O_8 grade of 0.71 % U_3O_8. The maximum extraction rate of 98.5% was reached within an eight-hour leach time. There were no appreciable effects on extraction rate when acid addition was increased from 6.69 kg to 9.31 kg H_2SO_4 / kg U_3O_8. An acid consumption rate of 6.69 kg/kg U_3O_8 to 9.31 kg/kg U_3O_8 is in the normal consumption range for the northern Saskatchewan uranium mines.

Composite 2 and 4 have similar U_3O_8 grades of 1.33 % U_3O_8 and 1.39 % U_3O_8. Within six hours of leaching, the maximum extraction rate of 98.5% was achieved with an acid addition rate of 5.43 kg H2SO4/kg U_3O_8 for Composite 2 and 6.22 kg H2SO4 / kg U_3O_8 for Composite 4. For both samples, the leaching recovery is only slightly improved with increased acid addition.

Composite 3 is the highest-grade sample (3.23 % U_3O_8). The maximum U_3O_8 leaching recovery was 97.1% and 95.6% in a 10-hour leach for 3A and 3B. One of the reasons for the low extraction rate was considered to be the relatively coarse grain size of the composite sample. Therefore, a third split, Composite 3C was re-ground to reduce grain size and subjected to leach testing. A maximum of 98.4% leaching recovery was achieved in eight hours for this sample. The acid addition rate for this test was 2.51 kg H_2SO_4 / kg U_3O_8.

Composite 5 has a U_3O_8 grade of 1.14 % U_3O_8. The maximum recovery of 97.6% was reached within 4 hours of leaching at an acid addition rate of 8.09 kg H_2SO_4 / kg U_3O_8. The leaching of Composite 5 could be optimized to achieve high leaching recovery while minimizing the acid consumption rate.

Fire assay was performed on the leaching residues. The gold concentrations in the Composite 1 to 5 leaching residues were 0.176 g/ton, 0.291 g/tonne, 0.569 g/tonne, 0.869 g/tonne, and 0.634 g/tonne, respectively.

Table 13-3: Summary of uranium leach test results. Results are provided for extraction times at which maximum extraction rates were achieved.

Sample	Extraction Time (hours)	Acid (kg / kg)	Maximum Extraction Rate					Au in residue (g/tonne)
			U_3O_8 (%)	Ni (%)	As (%)	Mo (%)	Fe_2O_3 (%)	
1A	8	9.31	98.5	86.4	87.8	72.2	38.1	0.176
1B	8	6.69	98.5	87.4	89.5	77.8	37.5	
2A	6	5.43	98.5	88.7	84.6	68.4	34.9	0.291
2B	4	2.72	96.1	81.2	74.7	52.5	21.5	
3A	10	2.37	97.1	90.5	82.7	73.9	37.7	0.569
3B	10	1.63	95.6	85.9	79.1	72.6	37.8	
3C	8	2.52	98.4	87.8	87.4	78.1	51.6	NA
4A	6	6.22	98.5	83.8	69.8	56.8	27.2	0.869
4B	6	3.89	98.2	84.7	69.9	56.2	25.2	
5A	4	8.09	97.6	75.5	78.4	74.6	32	0.634
5B	4	4.27	96.2	77.9	79.3	77	35.4	

13.1.2 Huskie

No representative mineral processing or metallurgical testing studies have been carried out on the Huskie deposit. Based on observation of drill core and geochemical data, mineralization in the Huskie deposit is expected to have very similar mineralogical and paragenetic characteristics to mineralization in other basement-hosted deposits in the region, including Denison's Gryphon deposit, located on the Wheeler River property.

13.2 Tthe Heldeth Túé PEA Metallurgical Testing

A new composite Tthe Heldeth Túe east pod metallurgical testing sample was generated from 33 individual assay reject samples stored at the Saskatchewan Research Council (SRC) facilities in Saskatoon. The individual samples, distributed through the deposit, allowed preparation of a deposit representative sample. The composite sample assayed 2.72% U_3O_8.

13.3 Leach Tests

Metallurgical testing included acid leaching tests, using hydrogen peroxide (H_2O_2) oxidant, with initial sulphuric acid (H_2SO_4) concentration at 100, 80, 60 and 40 g/L.

Specific leach test conditions were as follows:

- 1L glass agitated reactor with water jacket to control leach temperature
- 500 g mineralized sample ground to 100% passing 425 µm
- 35 g/L hydrogen peroxide (Note: No hydrogen peroxide addition during leaching was required to maintain leach slurry oxidation reduction potential (ORP) above the 450 millivolts (mV) target.)
- Temperature 10°C (approximate temperature of the Tthe Heldeth Túe deposit)
- Leach duration of 8 hours
- The following parameters were determined every 30 minutes during the leach:
    - ORP
    - Conductivity
    - pH
    - Free acid (determined by titration)

In all tests, uranium recovery was maximum at 2 hours leach time, and declined slightly thereafter. Acid concentration had a marked effect on uranium recovery.

Table 13-4: Acid Concentration Effect on Uranium Recovery.

Initial Acid Concentration (g/L)	Uranium Recovery at 2 Hours Leach Time (%)
100	90.8
80	82.4
60	47.5
40	16.7

Further, a minimum free acid concentration of approximately 80 g/L is required to achieve a uranium recovery of approximately 90%. This requires an initial acid concentration of 100 g/L.

13.4 Conclusions

Tthe Heldeth Túé leaching solution (lixiviant) should contain 100 g/L sulphuric acid and 35 g/L hydrogen peroxide.

13.5 Recommendations for Future Work

Conduct core flood leach tests at SRC using selected Tthe Heldeth Túé drill core. These tests will provide data on the expected operational uranium concentration of the Uranium Bearing Solution (UBS) coming up from underground and provide data on the pore volume and permeability of the Tthe Heldeth Túé deposit. They could also permit investigating the effect of a lower hydrogen peroxide concentration in the leach solution (lixiviant).

14 MINERAL RESOURCE ESTIMATES

14.1 Introduction

The Mineral Resources for the Waterbury Lake Project comprise the Tthe Heldeth Túe and the Huskie deposits. The Mineral Resource Statement presented herein represents the Mineral Resource evaluation prepared for the Waterbury Lake Project in accordance with NI 43-101.

The total mineral resource estimate for the Tthe Heldeth Túé and the Huskie deposits remains unchanged from the mineral resource statement provided in the NI 43-101 technical report titled *"Technical Report with an Updated Mineral Resource Estimate for the Waterbury Lake Property, Northern Saskatchewan, Canada – Mineral Resource Estimate" (SRK, 2018)*", dated December 21, 2018, prepared by Serdar Donmez, P.Geo. E.I.T., Denison Mines Corp, Dale Verran, P. Geo. Pr. Sci.Nat., Denison Mines Corp., Paul Burry, P.Geo., Denison Mines Corp., Oy Leuangthong, P.Eng, SRK Consulting (Canada) Inc., Cliff Revering, P.Eng, SRK Consulting (Canada) Inc, Allan Armitage, P.Geo, SGS Geostat, Alan Sexton, P.Geo, GeoVector Management Inc.

14.2 Tthe Heldeth Túé

Subsequent to the release of the mineral resource estimate in December 2012, Fission Energy completed additional drilling on the Property, including step-out and infill drill holes on the Tthe Heldeth Túé during a 2013 winter (08 January to 17 March 2013) drill program. A total of 68 drill holes were completed, in a total of 20,590.20 m. Mineralization was found in 35 holes or 51% of the holes in the program. All holes were targeted to further delineate and expand the mineralized area of the Tthe Heldeth Túé. This report discloses the mineral resource estimate utilizing the additional information from the winter 2013 drill program.

The Tthe Heldeth Túé Mineral Resource Estimate for the Tthe Heldeth Túé was prepared by Allan Armitage, Ph.D., P. Geo., ("Armitage") currently of SGS Geological Services ("SGS"). Armitage is an independent Qualified Person as defined by NI 43-101. The mineral resource for the Tthe Heldeth Túé is estimated in conformity with the widely accepted CIM Estimation of Mineral Resource and Mineral Reserve Best Practice Guidelines.

Inverse distance squared interpolation restricted to a mineralized domain was used to estimate tonnes, density and U_3O_8 grades as well as gold, arsenic, cobalt, copper, molybdenum and nickel grades into the block model. Indicated mineral resources are reported in summary tables in Section 14.2.10 below. The Tthe Heldeth Túé Mineral Resource Estimate takes into consideration that the Project's deposits may be mined by underground methods.

No exploration work has been completed on the Tthe Heldeth Túé since 2013 and the 2013 Mineral Resource Estimate is still current with respect to Denison. The Mineral Resource Estimate for the Tthe Heldeth Túé deposit remains unchanged from the mineral resource statement provided in the NI 43-101 technical report titled “Technical Report on the Mineral Resource Estimate on the J Zone Uranium Deposit, Waterbury Lake Property Located in the Athabasca Basin, Northern Saskatchewan”, dated September 6th, 2013, prepared by Allan Armitage, Ph.D., P.Geo, and Alan Sexton, M.Sc., P.Geo. of GeoVector Management Inc. The effective date of the Mineral Resource Estimate for Tthe Heldeth Túé is September 6th, 2013.

14.2.1 Drill File Preparation

Preparation of the drill database prior to the 2013 drill program is described in the 2012 Technical Report titled “*Technical Report on the Revised Resource Estimate on the J Zone Uranium Deposit, Waterbury Lake Property, Athabasca Basin, Northern Saskatchewan*”, dated January 18th, 2013 by Sexton and Armitage, which is filed on SEDAR. The 2013 drill database was added to the database that was used for the previous resource number.

To complete the updated resource estimate on the Tthe Heldeth Túé, GeoVector assessed the raw drill core database that was available from the drill program completed between January and March 2013 on the Property. GeoVector was provided with an updated drill hole database which included collar locations, down hole survey data, assay data, lithology data, down hole radioactive data, core recovery data and specific gravity (“SG”) data.

The database was checked for typographical errors in assay values and supporting information on source of assay values was completed. Sample overlaps and gapping in intervals were also checked. Verifications were also carried out on drill hole locations, down hole surveys, and lithologic information. Generally, the 2013 database was in good shape and was accepted by GeoVector as is. The 2013 data was added to the database used for the previous resource estimate.

A summary of the 2013 and complete drill hole database used for the current resource estimate is presented in Table 14-1. A statistical analysis of the U_3O_8 database is presented in Table 14-2. Note that the U_3O_8 values are predominantly based on assay values. Where an assay value was not available, the uranium value determined by fluorimetry (converted to U_3O_8) was used in the resource estimate. Approximately 88% of the U_3O_8 values used to define the Tthe Heldeth Túé were determined by assay. All samples > 0.01% U_3O_8 were determined by assay.

Table 14-1: Summary of the drill hole data used in the resource modeling.

2013 Resource Drill Database	
Total Number of drill holes	68
Total metres of drilling	20,590
Total number of assay samples	2,055
Total number of specific gravity samples (WW/WA)	319
Complete Resource Drill Database	
Total Number of drill holes	268
Total metres of drilling	88,770
Total number of assay samples	12,551
Total number of specific gravity samples (WW/WA)	2,649

Table 14-2: Summary of all drill hole U_3O_8 data from the Tthe Heldeth Túé drilling.

Tthe Heldeth Túé Sample Data	**U_3O_8 (%)**
Number of samples	12,551
Minimum value	0.001
Maximum value	62.90
Mean	0.19
Median	0.001
Variance	3.33
Standard Deviation	1.83
Coefficient of variation	9.74
99 Percentile	3.19

14.2.2 Resource Modelling and Wireframing

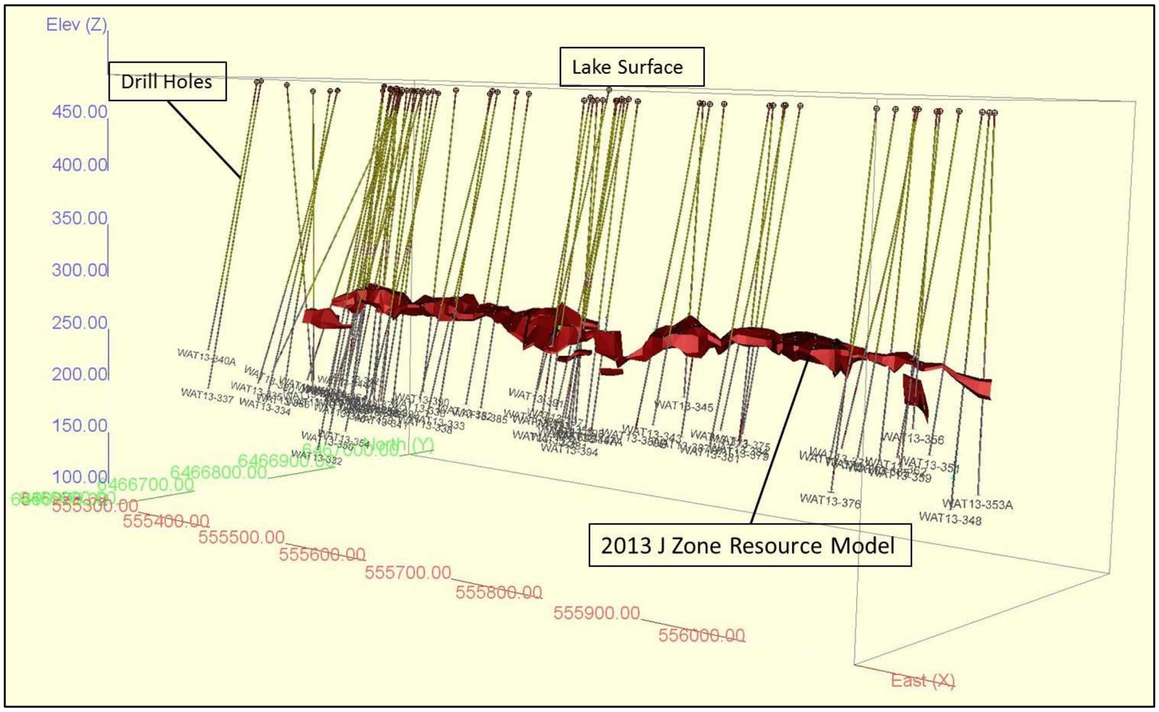
For the 2013 Mineral Resource Estimate, a grade control model or wireframe (Figure 14-1) was based generally on a cut-off grade of 0.03 to 0.05 % U_3O_8 which involved visually interpreting mineralized zones from cross sections using histograms of U_3O_8. 3D rings of mineralized intersections were made on each cross section and these were tied together to create a continuous wireframe resource model in Gemcom GEMS 6.5 software. The modeling exercise provided broad controls on the size and shape of the mineralized volume.

The Tthe Heldeth Túé uranium deposit was discovered during the winter 2010 drill program at Waterbury Lake. The second drill hole of the campaign, WAT10-063A, was an angled hole drilled from a peninsula extending into McMahon Lake. The drill hole intersected 10.5 m of uranium mineralization grading 1.91 wt% U_3O_8 including 1.0 m at 13.87 wt% U_3O_8 as well as an additional four meters grading at 0.16 wt% U_3O_8.

The Tthe Heldeth Túé deposit is currently defined by 268 drill holes (83,005.92 metres) including 68 holes (20,590 metres) completed in 2013. Uranium mineralization has been intersected over a combined east-west strike length of ~690 m and a maximum north-south lateral width of 40 m. The ore body trends roughly east-west (080°) in line with the metasedimentary corridor and cataclastic graphitic fault zone. Mineralization thickness varies widely throughout the Tthe Heldeth Túé and can range from tens of cm to over 19.5 m in vertical thickness. In cross section Tthe Heldeth Túé mineralization is roughly trough shaped with a relatively thick central zone that corresponds with the interpreted location of the cataclasite and rapidly tapers out to the north and south. A particularly high-grade (upwards of 40 wt% U_3O_8) but often thin lens of mineralization is present along the southern boundary of the metasedimentary corridor, as seen in holes WAT10-066, WAT10-071, WAT10-091, and WAT10-103. Ten meter step out drill holes to the south from these high-grade holes have failed to intersect any mineralization, demonstrating the extremely discreet nature of mineralization.

Uranium mineralization is generally found within several metres of the unconformity at depth ranges of 195 to 230 m below surface. It variably occurs entirely hosted within the Athabasca sediments, entirely within the metasedimentary gneisses or straddling the boundary between them. A semi-continuous, thin zone of uranium mineralization has been intersected in occasional southern Tthe Heldeth Túé drill holes well below the main mineralized zone, separated by several meters of barren metasedimentary gneiss. This mineralized zone is informally termed the south-side lens and can host grades up to 3.70 wt% U_3O_8 as seen in drill hole WAT11-142.

A)



B)

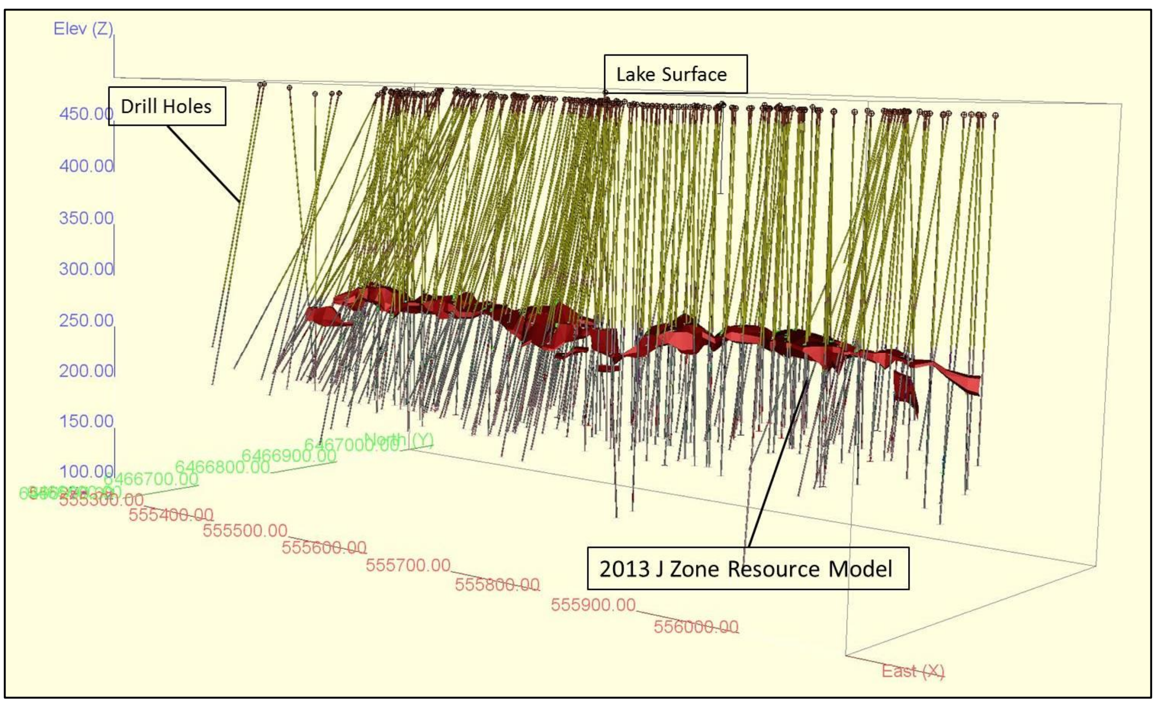


Figure 14-1: Isometric view looking northwest shows the revised Tthe Heldeth Túé (J Zone) resource model (red solid), 2013 drill hole locations (A) and drill hole locations of all holes used to define the Tthe Heldeth Túé (J Zone) (B).

14.2.3 Composites

The average width of drill core samples is 0.50 m, within a range of 0.10 m up to 4.0 m. Of the total assay population 98% were 0.5 m or less. As a result, 0.5 m composites were used for the resource.

Composites for drill holes were generated starting from the collar of each hole. For the resource, a composite population was generated for the mineralized domain and totalled 2,335 samples (Table 14-3) from 121 drill holes which intersect the resource model. These composite values were used to interpolate grade into the resource model.

Table 14-3: Summary of the drill hole composite data from within the Tthe Heldeth Túé resource model.

Tthe Heldeth Túé Composite Values (all drill holes which intersect the resource model)	U_3O_8 (%)
Number of drill holes	149
Number of samples	2,854
Minimum value	0.000
Maximum value	62.9
Mean	0.80
Median	0.09
Variance	14.12
Standard Deviation	3.76
Coefficient of variation	4.69
99 Percentile	16.9

14.2.4 Grade Capping

Based on a statistical analysis of the composite database from the resource model (Table 14-3), it was decided that no capping was required on the composite populations to limit high values for uranium. A histogram of the data indicates a log normal distribution of the metals with very few outliers within the database. Analysis of the spatial location of outlier samples and the sample values proximal to them led GeoVector to believe that the high values were legitimate parts of the population and that the impact of including these high composite values uncut would be negligible to the overall resource estimate.

14.2.5 Specific Gravity

Drill core samples collected for bulk density measurements were completed at SRC. Samples are first weighed as they are received and then submerged in deionised water and re-weighed. The samples are then dried until a constant weight is obtained. The sample is then coated with an impermeable layer of wax and weighed again while submersed in deionized water. Weights are entered into a database and the bulk density of the core waxed and un-waxed (emersion method) is calculated and recorded. Not all density samples had both density measurements recorded. Water temperature at the time of weighing is also recorded and used in the bulk density calculation. The detection limit for bulk density measurements by this method is 0.01 g/cm3.

A total of 2,584 SG measurements were recorded for un-waxed core samples (average density of 2.57) and 2,381 SG measurements of waxed core (average density of 2.45) were recorded, including samples collected in 2013. A total of 90% of the samples tested were tested by both methods and only 10% of the samples were tested by only one method.

For previous resource estimates on the Tthe Heldeth Túé, the density measurements for the un-waxed samples were used to determine an average density for the resource model. Based on an analysis of the SG values of samples from within the mineralized domain it was decided that an average SG value of 2.61 t/m3 be used for the original Tthe Heldeth Túé resource estimate. For the update resource in 2012, an additional 947 SG samples were collected from the drill core in 2012. The 2012 data included 162 samples from within the Tthe Heldeth Túé resource model. Based on an analysis of the SG data of samples from within the mineralized domains it was decided that an average SG value of 2.56 t/m3 be used for the updated Tthe Heldeth Túé resource estimate.

An additional 313 un-waxed core samples (average SG of 2.53) and 192 SG measurements of waxed core samples (average SG of 2.49) were added to the database in 2013. As SG values from waxed samples should be more robust than those on unwaxed samples, the waxed core measurements were used for the 2013 resource estimate.

For uranium deposits increasing alteration is typically associated with lower SG as the original minerals are altered to clay minerals. Increasing amounts of uranium mineralization increase SG as more of the massive metal is present. A scatter plot of uranium assays and SG measurements (waxed core) shows a flat trend for U_3O_8 grades below 3-4% (Figure 14-2). The slope of the relationship increases sharply above grades of about 4.0 percent indicating a change in the relationship between higher grade uranium mineralization and specific gravity.

Although a relationship appears to exist between U_3O_8 grades and SG there is only a small population of data points at the higher grades to provide back-up for this assessment. Therefore, some uncertainty remains as to the scale and consistency of the relationship between U_3O_8 grades and SG. Despite the uncertainty, SG values were calculated for untested assay samples using the relationship observed with the U_3O_8 grades and the measured samples. This approach is a common practice for uranium resource estimation, and this methodology was followed for the current resource estimate (Figure 14-2).

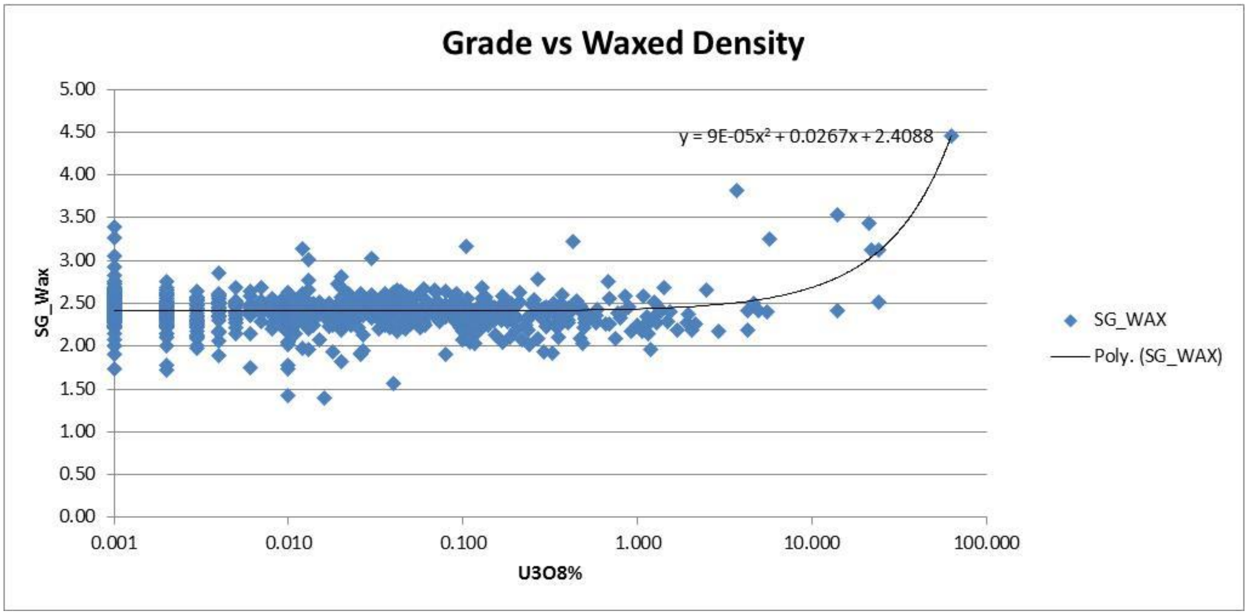


Figure 14-2: Scatter Plot Showing the Relationship between U_3O_8 and Specific Gravity (waxed core) for samples from the Tthe Heldeth Túé.

14.2.6 Block Model Parameters

A block model was created for the Tthe Heldeth Túé within UTM NAD83 Zone 13N space (Figure 14-3; Table 14-4) and an elevation of 300 m above mean sea level. The block model was constructed using 2m x 1m x 1m blocks in the x, y, and z direction, respectively. Criteria used in the selection of block size include the borehole spacing, composite assay length, and the geometry of the modelled zones.

14.2.7 Grade Estimation

For the previous resource estimates on the Tthe Heldeth Túé, U_3O_8 grade was interpolated into the blocks by the inverse distance squared (ID^2) method to generate block grades in the Indicated and Inferred category. In addition to U_3O_8, grades for gold, arsenic, cobalt, copper, molybdenum and nickel were interpolated into the blocks.

The methodology for grade estimation of U_3O_8 for the current resource was changed. The following procedure is common industry practise by uranium companies on uranium projects within the Athabasca Basin.

1. Use the regression formula ($SG = 0.00009\ U_3O_8^2 + 0.0267\ U_3O_8 + 2.4088$) to calculate an SG for every uranium composite grade that does not have a measured SG value,
2. Multiply SG x by the U_3O_8 assay value to get a Grade-SG (GD) value for each composite,
3. Interpolate GD and SG values into each block,

4. Calculate the block grade by dividing the interpolated GD values by interpolated SG value.

The SG and GD values were interpolated into the blocks by the inverse distance squared (ID2) interpolation method to generate block grades in the Indicated and Inferred category. Analysis for gold, arsenic, cobalt, copper, molybdenum and nickel were limited in the 2013 assay database. As a result, grades for gold, arsenic, cobalt, copper, molybdenum and nickel were not interpolated into the blocks and were not reported for the current resource estimate.

Two passes were used to interpolate all of the blocks in the wireframe, but 99% of the blocks were filled by the first pass. The size of the search ellipse, in the X, Y, and Z direction, used to interpolate grade into the resource blocks is based on 3D semi-variography analysis (completed in GEMS) of mineralized points within the resource model. For the first pass, the search ellipse was set at 25 x 15 x 15 in the X, Y, Z direction, respectively. The Principal azimuth is oriented at 075º, the Principal dip is oriented at 0° and the Intermediate azimuth is oriented at 0° (Table 14-4). For the second pass, the search ellipse was set at 50 x 30 x 30 in the X, Y, Z direction, respectively. The Principal azimuth is oriented at 075º, the Principal dip is oriented at 0° and the Intermediate azimuth is oriented at 0°.

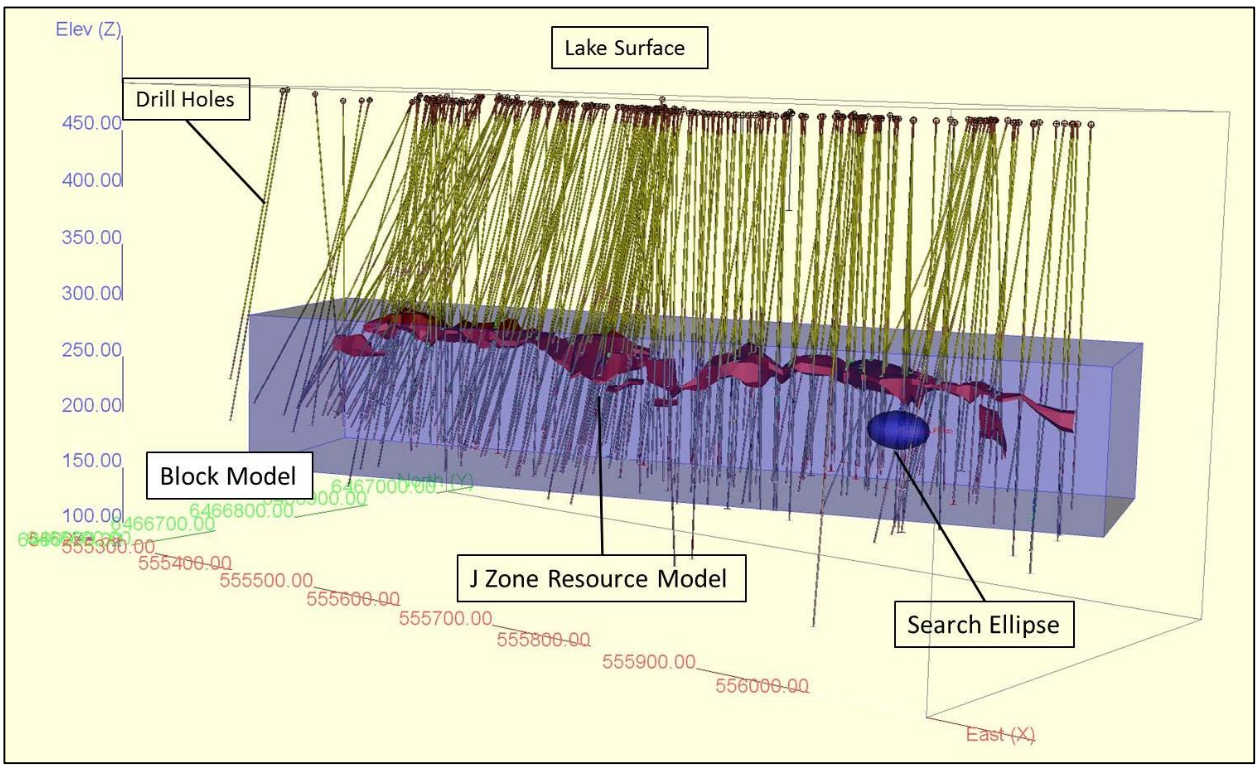


Figure 14-3: Isometric view looking northwest shows the Tthe Heldeth Túé (J Zone) resource block model, resource model, drill holes and search ellipse.

Table 14-4: Block model geometry and search ellipse orientation.

Block Model	Main Zone		
	X	Y	Z
Origin (NAD83, Zone 13N)	555420	6466590	300
# of Blocks	360	190	130
Block Size	2	1	1
Rotation	20°		
Search Type	Ellipsoid		
	Indicated	Inferred	
Principle Az.	75°	75°	
Principle Dip	0°	0°	
Intermediate Az.	0°	0°	
Anisotropy X	25	50	
Anisotropy Y	15	30	
Anisotropy Z	15	30	
Min. Samples	4	2	
Max. Samples	6	6	

14.2.8 Model Validation

The total volume of the blocks in the resource model, at a 0 cut-off grade value compared to the volume of the resource model was essentially identical. The size of the search ellipse and the number of samples used to interpolate grade achieved the desired effect of filling the resource models and very few blocks were left un-interpolated after the first pass. All were interpolated with a final pass that doubled the search radii.

Because ID2 interpolation was used, the drill hole intersection grades would be expected to show good correlation with the modelled block grades. A visual check of block grades of uranium against the composite data in 3D (Figure 14-4) and on vertical section showed excellent correlation between block grades and drill intersections. The resource model is considered valid.

14.2.9 Block Model Classification

The Mineral Resource Estimate is classified in accordance with the CIM Definition Standards (2014). The confidence classification is based on an understanding of geological controls of the mineralization, and the drill hole pierce point spacing in the resource area. The resource estimate in areas with drill spacing of ~25 m or less is classified as Indicated and in areas with drill densities of greater than 25 m is classified as Inferred. The vast majority (99%) of the total resource in the Tthe Heldeth Túé deposit was interpolated with the first pass, so the entire mineral resource is being classified as Indicated.

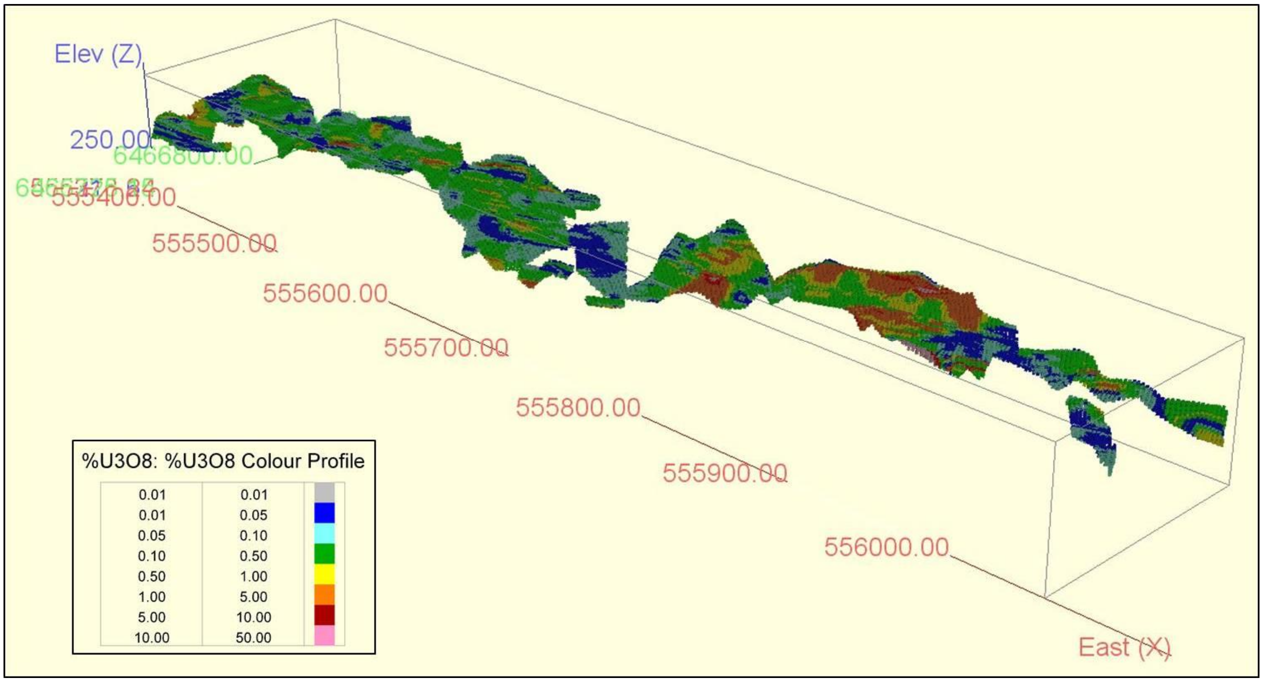


Figure 14-4: Isometric view looking northwest shows the Tthe Heldeth Túé uranium resource blocks.

14.2.10 Mineral Resource Classification Parameters

The Mineral Resource Estimate for the Tthe Heldeth Túé is prepared and disclosed in compliance with all current disclosure requirements for mineral resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects (2016). The classification of the current Mineral Resource Estimate into Indicated is consistent with current CIM Definition Standards - For Mineral Resources and Mineral Reserves (2014), including the critical requirement that all mineral resources “have reasonable prospects for eventual economic extraction”.

Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories. An Inferred Mineral Resource has a lower level of confidence than that applied to an Indicated Mineral Resource. An Indicated Mineral Resource has a higher level of confidence than an Inferred Mineral Resource but has a lower level of confidence than a Measured Mineral Resource.

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth’s crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction.

Interpretation of the word ‘eventual’ in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron, potash deposits and other bulk minerals or commodities, it may be reasonable to envisage 'eventual economic extraction' as covering time periods in excess of 50 years. However, for many gold deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time.

The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

Indicated Mineral Resource

An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit.

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

Mineralization may be classified as an Indicated Mineral Resource by the Qualified Person when the nature, quality, quantity and distribution of data are such as to allow confident interpretation of the geological framework and to reasonably assume the continuity of mineralization. The Qualified Person must recognize the importance of the Indicated Mineral Resource category to the advancement of the feasibility of the project. An Indicated Mineral Resource Estimate is of sufficient quality to support a Preliminary Feasibility Study which can serve as the basis for major development decisions.

14.2.11 Mineral Resource Statement

The general requirement that all mineral resources have “reasonable prospects for economic extraction” implies that the quantity and grade estimates meet certain economic thresholds and that the mineral resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. In order to meet this requirement, Armitage considers that the mineralization of the Tthe Heldeth Túé is amenable for underground extraction.

Armitage has estimated a range of Indicated resources at various U_3O_8 cut-off grades (COG) for the Tthe Heldeth Túé (Table 14-5). The current Indicated mineral resource is stated using a base case COG of 0.10% U_3O_8.

Using a base case COG of 0.10% U_3O_8 the Tthe Heldeth Túé deposit is currently estimated to contain:

> An Indicated resource totaling 12,810,000 lbs. based on 291,000 tonnes at an average grade of 2.00% U_3O_8.

Although Armitage considers a COG of 0.10% U_3O_8 to be reasonable and comparable to other Denison projects and other nearby uranium projects in the Athabasca basin, Table 14-5 indicates that the Tthe Heldeth Túé mineral resource is not necessarily sensitive to COG.

Table 14-5: Mineral Resource Estimate for the Tthe Heldeth Túé, September 6, 2013.

Cut-off Grade (U_3O_8 %)	Tonnes	Specific Gravity	U_3O_8 (%) Grade	U_3O_8 (%) Lbs
Indicated				
0.01 %	432,000	2.40	1.40	12,985,000
0.05 %	370,000	2.41	1.60	12,939,000
0.10 %	**291,000**	**2.42**	**2.00**	**12,810,000**
0.50 %	123,000	2.49	4.40	11,923,000
1.0 %	76,000	2.54	6.70	11,171,000
5.0 %	24,000	2.77	16.00	8,446,000
10 %	12,000	2.97	24.00	6,183,000
20 %	5,000	3.25	33.00	3,492,000

1. *The classification of the Tthe Heldeth Túé Mineral Resource Estimate into Indicated is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves*
2. *Mineral resources which are not mineral reserves do not have demonstrated economic viability.*
3. *All figures are rounded to reflect the relative accuracy of the estimate.*
4. *Resources are presented undiluted and in situ and are considered to have reasonable prospects for economic extraction by underground mining methods.*

5. *Mineral Resources are reported at a base case COG of 0.10% U_3O_8. COG is based on a long term uranium price of USD$50 per lb and a metallurgical recovery of 98 to 99%. Despite using a COG 0.10% U_3O_8, the Tthe Heldeth Túé mineral resource shows little sensitivity to COG's between 0.01% to 1.0% U_3O_8.*
6. *The Authors are not aware of any known environmental, permitting, legal, title-related, taxation, socio-political or marketing issues, or any other relevant issue not reported in the technical report, that could materially affect the Mineral Resource Estimate.*

14.2.12 Disclosure

All relevant data and information regarding the Project are included in other sections of this Technical Report. There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading.

The Authors are not aware of any known mining, processing, metallurgical, environmental, infrastructure, economic, permitting, legal, title, taxation, socio-political, or marketing issues, or any other relevant factors not reported in this technical report, that could materially affect the current Tthe Heldeth Túé Mineral Resource Estimate.

14.2.13 Previous Mineral Resource Estimates

GeoVector Management Inc. ("GeoVector") was contracted in 2011 by Fission to complete an initial resource estimate for the Tthe Heldeth Túé. The Tthe Heldeth Túé deposit was estimated to contain an Indicated resource totalling 7,367,000 lbs. based on 168,000 tonnes at an average grade of 2.00% U_3O_8. An additional 1,511,000 lbs. based on 150,000 tonnes averaging 0.50% U_3O_8 is classified as an Inferred mineral resource.

The resource was determined from the 7,377 assay results in 142 drill holes totalling 43,900 m of drilling completed by Fission between January 2010 and August 2011. General spacing of the drill holes is 10m-50m. The resource estimate is categorized as Indicated and Inferred as defined by the Canadian Institute of Mining and Metallurgy guidelines for resource reporting. Mineral resources do not demonstrate economic viability, and there is no certainty that these mineral resources will be converted into mineable reserves once economic considerations are applied.

Subsequent to the release of the first resource Fission completed additional drilling on the Property, including step-out and infill drill holes on the J-Zone, which were completed during a winter (January to April, 2012) and a summer (June to August, 2012) drill program.

GeoVector was contracted by Fission in 2012 to complete an updated resource estimates for the Tthe Heldeth Túé and to prepare a technical report on the updated resource estimate in compliance with the requirements of NI 43-101, based on the results of the 2012 drill programs, GeoVector estimated a range of Indicated and Inferred resources at various U_3O_8 cut-off grades (COG) for the Tthe Heldeth Túé. The updated Indicated and inferred resources are stated using a grade cut-off of 0.10% U_3O_8. The previous resource statement was made using a grade cut-off of 0.05% U_3O_8. A cut-off grade of 0.10% is considered a reasonable economic cut-off grade for the Tthe Heldeth Túé to maximize the grade of the resource while maintaining a coherent model of the resource.

Using a base case COG of 0.10% U_3O_8 the Tthe Heldeth Túé deposit was estimated to contain an Indicated resource totaling 10,284,000 lbs. based on 307,000 tonnes at an average grade of 1.50% U_3O_8. An additional 2,747,000 lbs. based on 138,000 tonnes averaging 0.90% U_3O_8 is classified as an Inferred mineral resource.

The resource was defined by 10,567 assay samples collected from 200 drill holes totaling 62,416 m completed by Fission between January 2010 and August 2012. General spacing of the drill holes is 5m-20m.

Fission completed drilling on the Property, including step-out and infill drill holes on the J-Zone during a 2013 winter (08 January to 17 March 2013) drill program. A total of 68 drill holes were completed totalling 21,012.9 meters (including failed holes). Mineralization was found in 35 holes or 51% of the holes in the program. All holes were targeted to further delineate and expand the mineralized area of the Tthe Heldeth Túé.

GeoVector was contracted by Denison to complete a new resource estimate for the Tthe Heldeth Túé based on all drilling completed on the property to date. However, during a review of the previous resource GeoVector identified an error in that previous resource estimate. After an in-depth evaluation of resource model, interpolation parameters and estimation parameters the error was identified. Essentially all partial resource blocks which intersected the resource model were treated as 100% blocks. This led to an overestimation of the resource volume, tonnes and ultimately the U_3O_8 lbs. Table 14-6 shows the magnitude of the error by comparing the incorrect results with a corrected re-run of the data at that time.

Table 14-6: Review of the 2012 Resource Estimate.

	Cut-off Grade (U_3O_8 %)	Tonnes	U_3O_8 (%) Grade	Lbs
	Indicated			
2012 Reported Resource	0.10%	307,000	1.50	10,284,000
2012 Corrected Resource	0.10%	221,000	1.70	8,239,000
Correction Factor		-28%	11%	-20%
	Inferred			
2012 Reported Resource	0.10%	138,000	0.90	2,747,000
2012 Corrected Resource	0.10%	69,000	0.80	1,276,000
Correction Factor		-50%	-7%	-53%

Differences between the GeoVector corrected 2012 resource model and the 2013 resource model prepared by GeoVector and reported herein are largely due to the following:

- Additional drilling completed by Fission in 2013
- Changes in the specific gravity values used for grade estimation
- Changes in the block model parameters
- Changes in the grade estimation procedures
- Changes in the interpolation parameters

14.3 Huskie Deposit

The Huskie deposit, located within the Waterbury Lake Uranium Project, was discovered by Denison in 2017 and is interpreted to comprise three parallel stacked lenses, termed herein, Huskie 1, Huskie 2 and Huskie 3. The mineral resource models for the Huskie deposit were prepared by Serdar Donmez, P. Geo., E.I.T. (APEGS # 14900), Resource Geologist, Denison, in September 2018. SRK Consulting (Canada) Inc. (SRK) was retained by Denison to perform a review and audit of the internal mineral resource model generated for the Huskie deposit.

Section 14.3 summarizes the main findings of SRK's review, following the methodology listed sequentially below:

1. Review the geological interpretation, available drilling data, mineral resource estimation, and classification methodology.

2. Validate the mineral resource model and sensitivity analyses of the mineral resources to changes in parameters and methodologies.
3. Identify any key issues that may pose a material change in the modelled mineral resource.

Cliff Revering, P.Geo. (APEGS# 9764) visited the property on August 20th to 21st, 2018 accompanied by Dale Verran and Serdar Donmez of Denison. The data, mineral resource model, and mineral resource classification were reviewed, and the audited Mineral Resource Statement was prepared by Dr. Oy Leuangthong, PEng (PEO#90563867) and Mr. Cliff Revering, P.Eng. (APGS#9764). Mr. Glen Cole, P.Geo. (APGO #1416) was the senior reviewer of this assignment. The effective date of the audited Mineral Resource Statement is October 17, 2018.

14.3.1 Geology Model

The Huskie uranium deposit is located approximately 1 kilometre northeast of Denison's unconformity-type Tthe Heldeth Túé deposit on the Waterbury Lake Project. The deposit is a basement-hosted uranium deposit, located approximately 50 metres (vertically) below the Athabasca unconformity surface and extends to a depth of approximately 225 metres into the basement stratigraphy. The mineralization consists of moderate- to steeply-dipping stacked lenses of predominately massive to semi-massive pitchblende mineralization occurring along fault/fracture planes or along foliation. The uranium mineralization is contained within an east-west striking structural corridor (which dips to the north) and appears to be controlled by north-east striking cross-cutting faults related to the interpreted regional Midwest structure.

The Huskie deposit is comprised of three discrete lenses: Huskie 1, Huskie 2 and Huskie 3, which have a strike-length of approximately 210 metres, extend about 215 metres down-dip and range up to 30 metres in overall thickness (Figure 14-5). The mineralization occurs at vertical depths ranging between 240 and 445 metres below surface.

The geology model was constructed using lithological and structural data from core logs and geochemical assays collected from 28 holes totalling 12,273.1 metres (excluding 12 abandoned holes totalling 761 metres) completed by Denison between July 2017 and October 2018. Similar to other basement-hosted uranium deposits in the Athabasca Basin, Denison used a threshold of 0.05% U_3O_8 with a minimum thickness of 1 metre to construct the mineralization wireframes for mineral resource estimation.

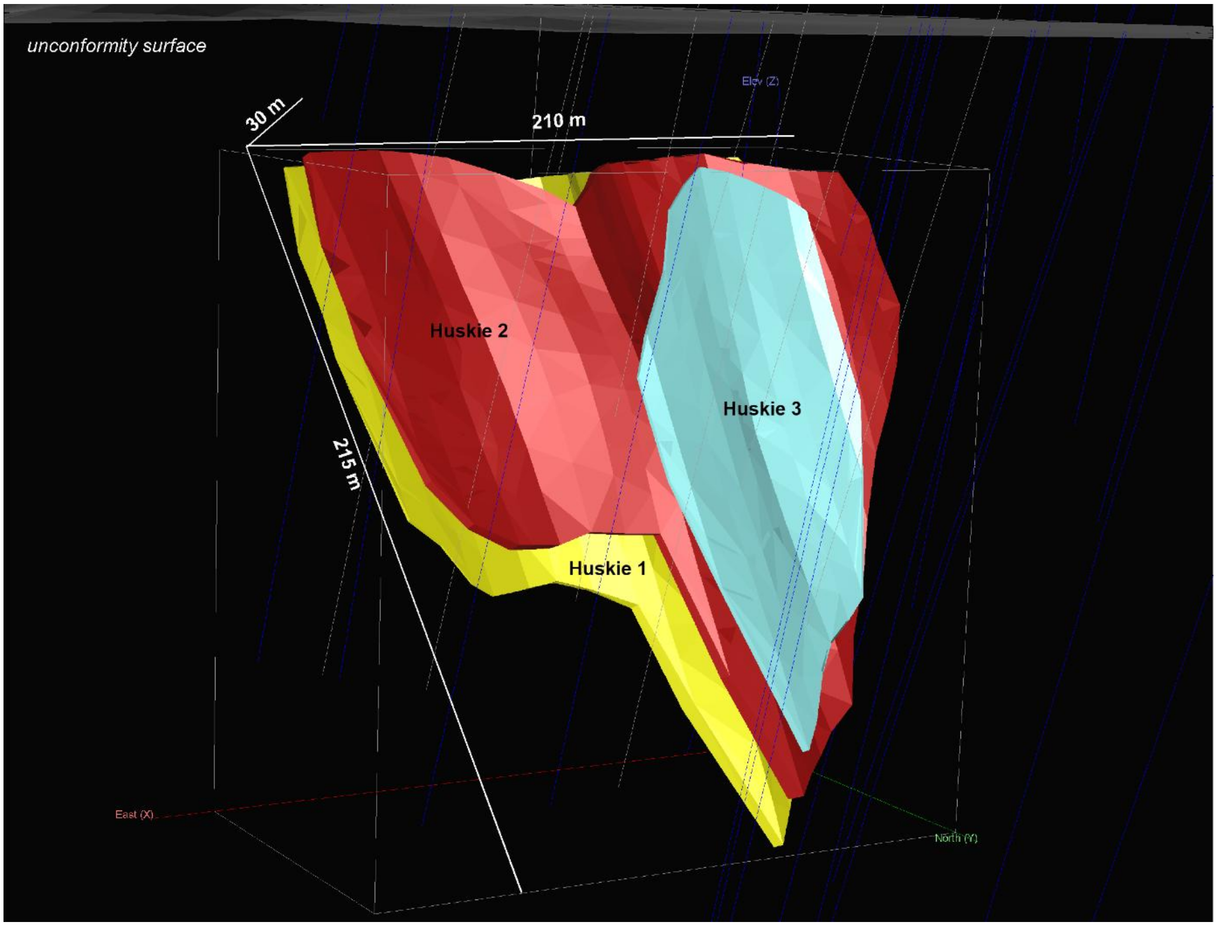


Figure 14-5: Composite Long Section of Huskie 1, Huskie 2 and Huskie 3 Zones Looking South.

14.3.2 Available Database and Resource Estimation

Core recovery at Huskie is generally excellent. For mineral resource estimation purposes, wherever core recovery was poor, the radiometric equivalent uranium values ("eU_3O_8") were substituted for chemical assays where possible. For the Huskie 1, Huskie 2 and Huskie 3 zones mineral resource estimates, reported herein, 28%, 8% and 17% of the assay intervals respectively, relied on eU_3O_8 grades.

14.3.3 Density

A dry bulk density value was estimated for each grade value in the drillhole database by using the polynomial regression for Denison's comparable Gryphon deposit, which is also an Athabasca basement-hosted uranium deposit. Denison confirmed the validity of the Gryphon grade × density regression for the Huskie deposit by plotting the 12 samples collected by SRK on the Huskie deposit (Figure 14-6).

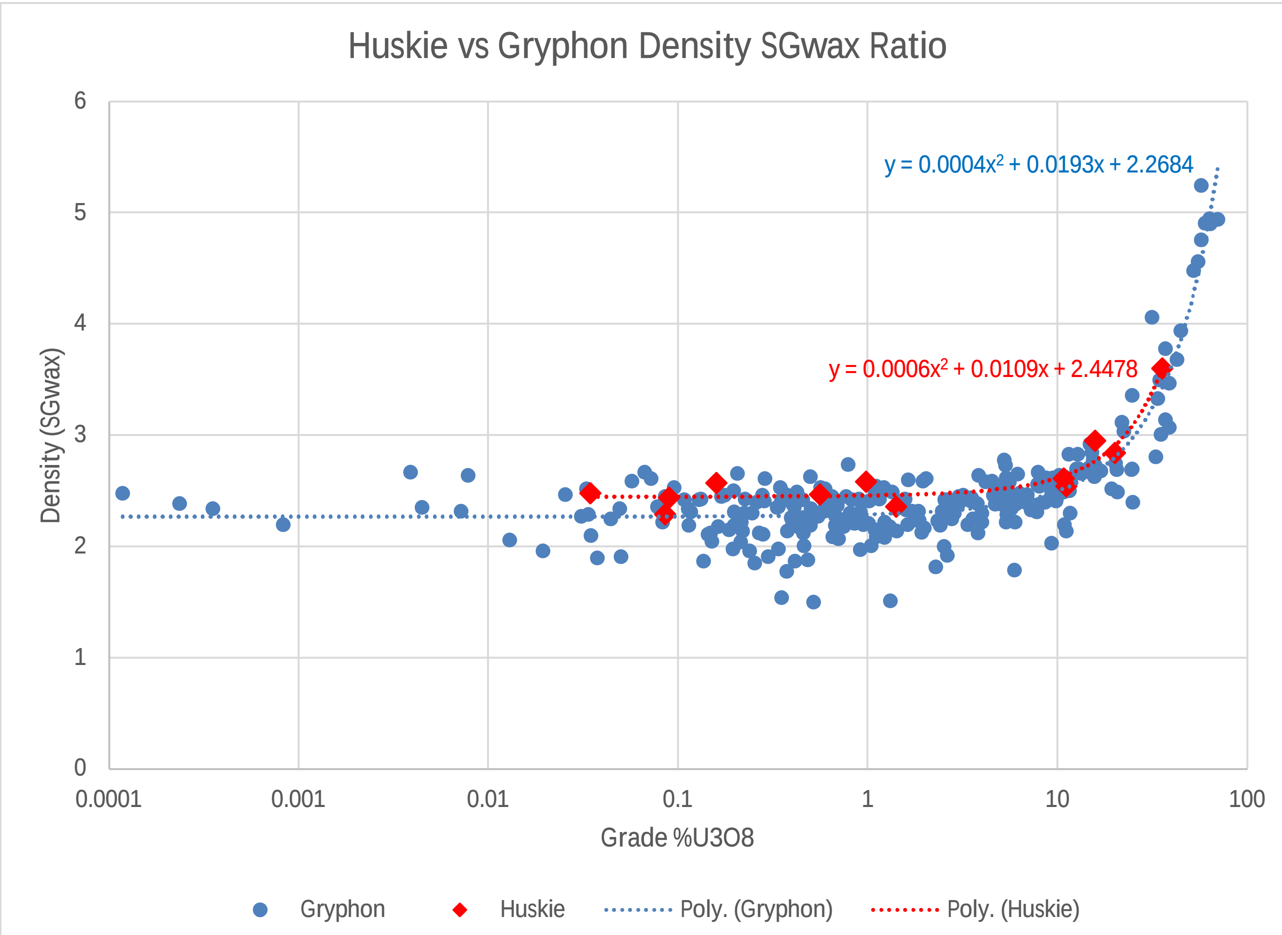


Figure 14-6: Gryphon and Huskie Deposits Grade (%U_3O_8) and Density (SGwax – g/cm3) Regression Curves.

14.3.4 Estimation Methodology and Parameters

Denison constructed the mineral resource model using GEOVIA GEMS™ software (version 6.8), constrained by mineralization wireframes generated for three domains: Huskie 1, Huskie 2 and Huskie 3. The assay database used for resource modelling consists of 201 assays from 10 boreholes, contained within these three mineralized zones. Assays for % U_3O_8 were sampled at 0.5-metre intervals and composited to 1.0-metre lengths. Capping was considered, with only assay data from Huskie 2 being capped for % U_3O_8. Density values were assigned to the database based on a regression between U_3O_8 and density data pairs using the relationship determined for Denison's Gryphon deposit, which is also hosted within comparable basement rocks. Denison modelled variograms to determine appropriate search radii for grade estimation. An accumulation-like approach was used, wherein U_3O_8 *density and density were estimated into a three-dimensional block model, constrained by wireframes in two passes using inverse distance to a power of 2 (ID^2). A % U_3O_8 grade was then calculated into each block by dividing the estimated U_3O_8 *density by the estimated density. A block size of 10 by 5 by 5 metres was selected (Table 14-7). Search radii are based primarily on visual observations and variogram analyses. The estimation of U_3O_8 *density and density were based on two estimation passes using the same set of parameters (Table 14-8).

The block model was validated using nearest neighbour estimation and by visual inspection of the block grades relative to composites and swath plots comparing the ID^2 and nearest neighbour model. All blocks were classified as Inferred.

Table 14-7: Huskie Deposit Block Model Parameters.

Dimensions	X	Y	Z
Block Size	10	5	5
Model Origin	556,701.74	6,467,610.15	280
Rotation		10	
Number of Blocks	25	29	50

Table 14-8: Huskie Deposit Block Model Interpolation Parameters.

Pass	Search Orientation			Search Range (m)			Data Requirements		
	Z	X	Z	1	2	3	Min	Max	Max/hole
1	0	-65	15	60	60	20	5	9	4
2	0	-65	15	120	120	40	3	15	-

14.3.5 SRK Audit Methodology and Findings

During the site visit, SRK reviewed drill core from the four high grade intersections of the Huskie deposit (i.e. drillholes WAT17-449, WAT18-452, WAT17-446A, and WAT17-450A). The geological observations made during this review were consistent with the interpretation of the mineralization controls by Denison. In addition, 12 density samples were collected from these four drillholes to validate density assumptions used for mineral resource estimation of the Huskie deposit.

Denison provided to SRK a GEMS project and drillhole data in .csv format on September 18, 2018 and October 4, 2018. SRK verified that the drillhole database consists of 28 holes (12,273.1 metres) drilled by Denison since 2017. Ten drillholes intersect the three modelled mineralized domains. The database used to estimate the mineral resources for the Huskie deposit was audited by SRK. SRK is of the opinion that the current drilling information is sufficiently reliable to confidently interpret uranium mineralization boundaries and that the assay data are sufficiently reliable to support mineral resource estimation.

SRK reviewed the accumulation approach taken by Denison to construct the internal mineral resource model and finds it to be generally consistent with that undertaken for other similar deposits.

The use of derived density values based on a regression of density on grade is not uncommon; this results in a density data set that is artificially smooth due to the addition of the regressed values. Estimation yields an outcome that is inevitably smooth, the smoothness of the estimated density is further compounded by the inclusion of regressed values as part of the informing data. The impact is an over-conservative estimation of density, with a risk associated with yielding inaccurate tonnages. At this stage of evaluation, this risk is not considered to be material.

Denison based the density-grade regression on the Gryphon deposit which comprised of 279 data pairs. Only 12 density measurements were available for the Huskie zone. These 12 pairs of density and grade samples compared well to the density-grade regression from Gryphon (see Figure 14-6). In fact, the Huskie density-grade data pairs show the potential for slightly higher densities than Gryphon; however, the Gryphon data set is considered to be more reliable. SRK finds that the use of the density-grade regression from Gryphon is an appropriate choice at this time, with the recommendation that more density measurements be collected in future drilling campaigns with the aim to validate the slight optimism found in the Huskie density-grade relationship.

Composites were capped based on probability plots, and SRK reviewed and confirmed the reasonableness of Denison’s capping selection. SRK agrees that the lack of data in Huskie lenses 1 and 3 does not warrant capping and notes that these two zones represent only a small fraction of the Huskie mineral resource based on preliminary volumetrics. Figure 14-7 shows the probability plot and capping sensitivity curve for Huskie lens 2, which represents the best-informed zone and most significant volume. The red line in the probability plot corresponds to Denison’s chosen cap value, which coincides with a ‘break’ in points in the plotted curve. SRK agrees with the capping selection of 9% U_3O_8 and notes that this impacts four composites and results in a 22% decrease in the mean % U_3O_8 grade. While this may seem significant, Huskie lens 2 is informed by 53 composites, and the potential influence of these four composites may be significant depending on the data spacing and the size of the mineralized volume.

Table 14-9 and Table 14-10 tabulate the assay and composite statistics, respectively.

Denison estimated U_3O_8 *density (GD) and density with the same estimation parameters shown in Table 14-8.

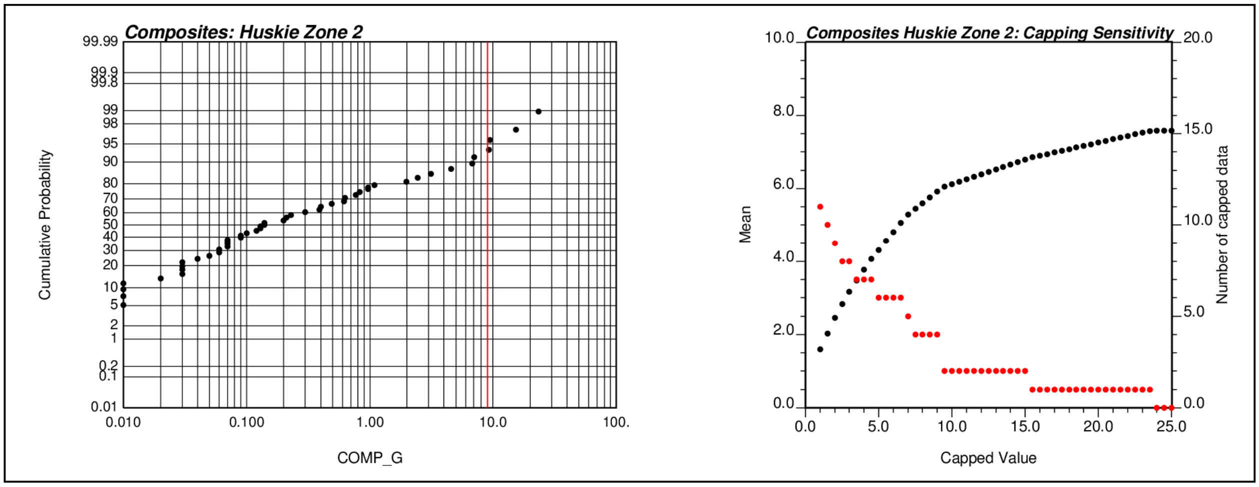


Figure 14-7: Probability Plot and Capping Sensitivity Curve for Huskie lens 2.

Red line on left plot corresponds to Denison chosen cap value.

Table 14-9: Assay Statistics.

Zone	Attribute	No. Samples	Mean	Std Dev	Min	Q1	Med	Q3	Max	CoV
Huskie 1	U_3O_8	39	0.36	0.57	0.00	0.05	0.18	0.36	3.19	1.60
	Density	39	2.28	0.01	2.27	2.27	2.27	2.28	2.33	0.01
	GD*	39	0.82	1.33	0.00	0.12	0.41	0.82	7.45	1.62
Huskie 2	U_3O_8	89	1.92	5.39	0.00	0.01	0.14	0.73	40.70	2.80
	Density	89	2.32	0.17	2.27	2.27	2.27	2.28	3.72	0.07
	GD*	89	5.37	17.97	0.00	0.02	0.31	1.66	151.26	3.35
Huskie 3	U_3O_8	19	0.11	0.22	0.00	0.00	0.03	0.12	0.96	1.96
	Density	19	2.27	0.00	2.27	2.27	2.27	2.27	2.29	0.00
	GD*	19	0.25	0.49	0.00	0.01	0.07	0.27	2.20	1.96

*GD=grade*density

Table 14-10: Statistics for Composites and Capped Composites.

Zone	Attribute	No. Samples	Mean	Std Dev	Min	Q1	Med	Q3	Max	CoV
Huskie 1	U_3O_8	32	0.27	0.40	0.00	0.02	0.16	0.25	1.77	1.49
	Density	32	2.27	0.01	2.26	2.27	2.27	2.27	2.30	0.00
	GD*	32	0.61	0.92	0.00	0.05	0.35	0.57	4.12	1.51
Huskie 2	U_3O_8	53	1.79	4.22	0.00	0.04	0.14	0.83	23.54	2.36
	Density	53	2.32	0.13	2.26	2.27	2.27	2.28	3.06	0.06
	GD*	53	4.99	13.55	0.00	0.10	0.31	1.91	83.48	2.72
	Capped U_3O_8	53	1.40	2.66	0.00	0.04	0.14	0.83	9.00	1.90
	Capped Density	53	2.30	0.06	2.26	2.27	2.27	2.28	2.47	0.03
	Capped GD*	53	3.43	6.64	0.00	0.10	0.31	1.91	22.27	1.93
Huskie 3	U_3O_8	14	0.12	0.14	0.00	0.02	0.06	0.15	0.51	1.19
	Density	14	2.27	0.00	2.26	2.27	2.27	2.27	2.28	0.00
	GD*	14	0.26	0.31	0.00	0.05	0.15	0.34	1.17	1.19

*GD=grade*density

SRK reviewed search ellipsoid orientation and geometry used in the estimation for each domain and found it to be reasonably oriented. Further, SRK calculated the variogram for Huskie 2, and as expected, found this to be challenging given that only 53 composites are available. The range used by Denison for the first pass is overall consistent with the spacing of the drillhole data as it pierces the mineralized lenses, with the third axis inflated to overcome any undulations in the modelled wireframe. SRK visually reviewed the estimated block grades against nearby informing data and found that the estimated blocks generally compare well to the nearby data.

To assess the sensitivity of the estimated model to slight changes in estimation parameters, SRK proposed a series of alternate estimation parameters (Table 14-11) and re-estimated only Huskie lens 2 for comparison. The grade, tonnage and contained pounds of U_3O_8 for these sensitivity cases were compared to the base case (Denison estimate) at various cut-off grades. Figure 14-8 shows the percentage difference in contained pounds of U_3O_8 for these cases relative to the base case. Except for Cases 1 and 2, all other cases show that slight variations in the minimum number of data and/or the maximum number of samples per hole have minimal impact on contained pounds of U_3O_8 and are within 3 percent of Denison's estimate.

Table 14-11: Description of Estimation Sensitivity Cases.

Case No.	Sensitivity Case	Description*
0	Denison ID2	Exported model from Denison
1	SRK min4, max9, mph3	P1: 4/9, mph=3
2	SRK min5, max9, mph3	P1: 5/9, mph=3; no change to P2
3	SRK min6, max9, mph5	P1: 6/9, mph=5; no change to P2
4	SRK min5, max9, mph5	P1: 5/9, mph=5; no change to P2

*mph = maximum samples per hole

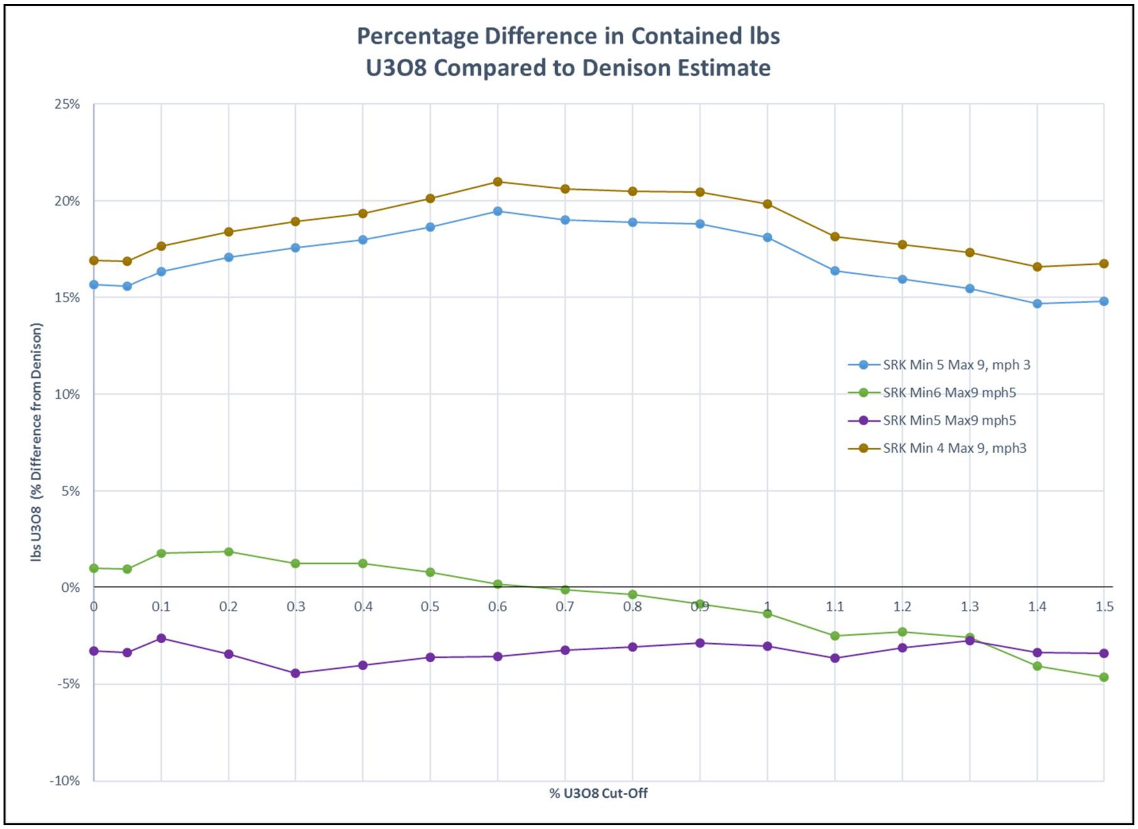


Figure 14-8: Sensitivity of Percentage Difference in Contained Pounds of U_3O_8 to Estimation Parameters.

Reducing the maximum number of samples per hole to three has a significant impact, with up to 16 percent more contained lbs U_3O_8 at zero cut-off grade (Figure 14-8). SRK visually inspected the region most impacted by this parameter and found a central area in Huskie 2 where there are four samples from one hole intersecting the zone. The configuration of the data consists of two interior capped high grade composites flanked by two lower grade composites. The specification of three composites per hole means that the influence of both higher grade composites is only ever dampened by one of the adjacent lower grade composites, leading to a consistent overestimation in this central area. Given the drillhole spacing, this impact has a nominal radial distance of up to 50 metres.

Slight changes to search orientation were also assessed and found to have no material impact on grade or pounds of U_3O_8.

Finally, SRK generated a swathplot to compare the grade profile of (Figure 14-9) according to the following steps:

1. Estimated model constructed by Denison using the accumulation approach.
2. Created Sensitivity model using the accumulation approach for different data requirements, specifically focussed on maximum per hole parameter of 3 and 5.
3. Used Nearest neighbour model on a 1-metre by 1-metre by 1-metre grid.

In the main Huskie 2 volume (up to a depth of approximately 130 metres), the swathplot shows three different trends: (1) the models based on a maximum of three samples per hole consistently yield higher grade profiles, (2) the models with a maximum of four (i.e. Denison model) or five samples per hole have comparable grade profiles, and (3) the nearest neighbor model is consistently lower than all models in this same area. The nearest neighbor grade profile is similar to a swathplot generated by Denison as part of the data package received by SRK.

As this is the initial mineral resource model for the Huskie deposit, and informed by data from 12 boreholes, SRK agrees with Denison’s classification of the estimated blocks as Inferred blocks. The cut-off grade of 0.1% U_3O_8 is reasonable, and consistent with similar deposits in the region, including the property’s Tthe Heldeth Túé deposit.

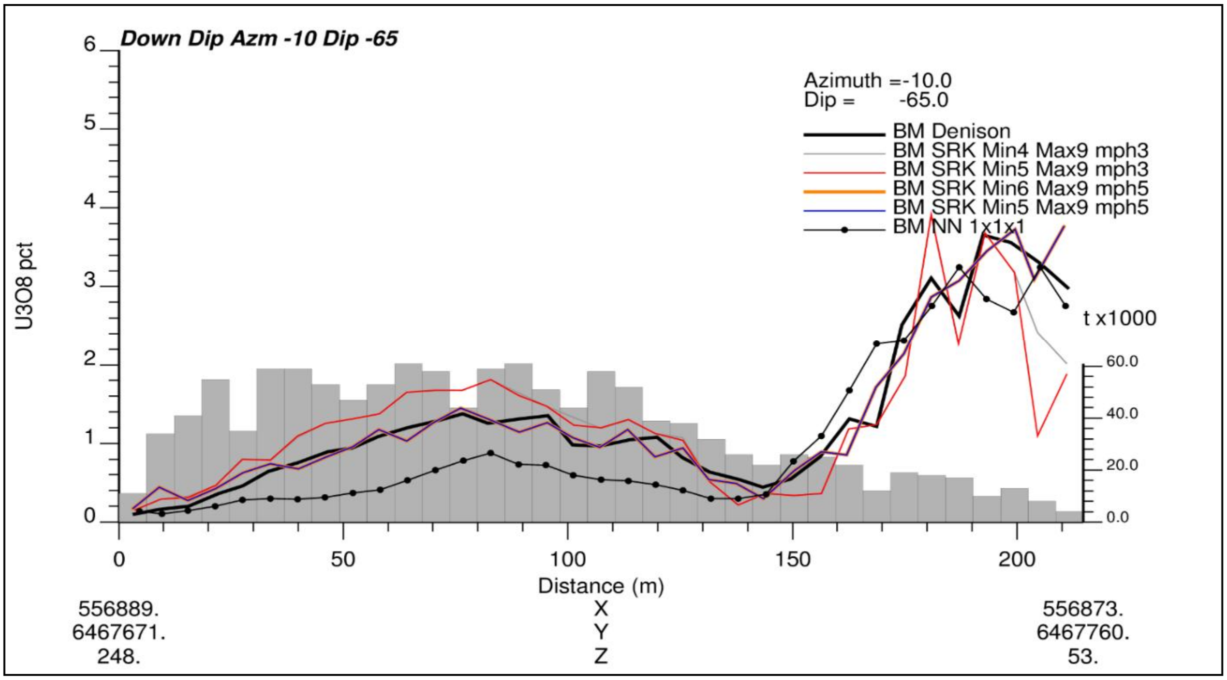


Figure 14-9: Swathplot Comparing U_3O_8 Grades from Estimated Models for Huskie lens 2, Oriented Down Dip. Histogram represents model tonnage.

14.3.6 Audited Mineral Resource Statement

CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) define a Mineral Resource as:

"[A] concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling."

The "reasonable prospects for eventual economic extraction" requirement generally implies that quantity and grade estimates meet certain economic thresholds and that mineral resources are reported at an appropriate cut-off grade that takes into account extraction scenarios and processing recovery. Denison considers that a cut-off of 0.10% U_3O_8 is appropriate for mineral resource reporting. SRK finds this cut-off grade to be reasonable and comparable to other Denison projects and other nearby uranium projects in the Athabasca basin.

SRK is satisfied that the mineral resources were estimated in conformity with the widely accepted CIM Estimation of Mineral Resource and Mineral Reserve Best Practices Guidelines. The mineral resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent mineral resource estimates. The mineral resources may also be affected by subsequent assessments of mining, environmental, processing, permitting, taxation, socio-economic, and other factors. The audited Mineral Resource Statement for the Huskie deposit in the Waterbury Lake Uranium Project presented in Table 14-12 was prepared by Dr. Oy Leuangthong, PEng (PEO#90563867) and Mr. Cliff Revering (APGS#9764). Dr. Leuangthong and Mr. Revering are independent qualified persons as this term is defined in National Instrument 43-101. The effective date of the audited Mineral Resource Statement is October 17, 2018.

Table 14-12: Audited Mineral Resource Statement*, Huskie Deposit, Waterbury Lake Uranium Project, Saskatchewan, SRK Consulting (Canada) Inc., October 17, 2018.

Category	Zone	Tonnage (kt)	Grade (% U_3O_8)	Contained Metal (x1000 lbs. U_3O_8)
Inferred	Huskie 1	81	0.34	612
	Huskie 2	178	1.28	5,047
	Huskie 3	8	0.15	27
Total Inferred		268	0.96	5,687

* Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates. Reported at mineral resource cut-off grade of 0.10% U3O8 and at a uranium price of US$45 per pound U3O8.

15 MINERAL RESERVE ESTIMATE

No pre-feasibility or feasibility studies have yet been completed to allow conversion of the mineral resources to mineral reserves. Consequently, no mineral reserves exist for the Waterbury Lake property at the present time.

16 MINING METHODS

16.1 Summary

This PEA is based on utilization of ISR recovery for mining of the Tthe Heldeth Túé deposit. Only the Tthe Heldeth Túé East pod is assessed as part of this report. After strategic evaluation of the mining options, Denison has planned to initiate the Tthe Heldeth Túé East pod development first, followed by the Tthe Heldeth Túé West pod should studies and economics allow. The Tthe Heldeth Túé West pod has not been included as part of the current study. The advantages for this development sequence include:

- Lower initial capital costs.
- Shorter timeframes to production.
- Potentially attractive project economics at current market prices, allowing development to occur immediately.
- Generation of cashflow from Tthe Heldeth Túé East production will reduce or eliminate need for external financing for the Tthe Heldeth Túé West deposit development and construction if studies and economics allow.

The life of mine production for the Tthe Heldeth Túé East pod is expected to be approximately 6 years for the recovery of the deposit, providing a total of 9.7 million pounds of U_3O_8 (100% basis). After initial ramp up, the Tthe Heldeth Túé East pod will provide a steady state production rate of 2.1 million pounds of U_3O_8 per year.

16.2 Estimated Resources Included in Mine Plan

16.2.1 Introduction

This PEA is based on the Indicated mineral resources of the Tthe Heldeth Túé East pod deposit. The following steps were followed to estimate the mineral resources and mineralized zones to be included in the PEA mine production plan.

1. Mining methods were selected.
2. A zero-cut-off grade was estimated for the ISR mining method selected. The method is deemed to be non-selective in terms of grade.
3. Mineralization wireframes were evaluated at zero cut-off grade.
4. The final wireframes were evaluated in Gemcom/Surpac to determine in situ tonnes and uranium grades within the wireframes at a zero-cut-off grade.
5. Factors for mining recovery were applied to estimate potentially mineable tonnes.

6. Factors for recoverable resources were evaluated based on sterilized resources due to the freeze wall enclosure incorporated into the mine design.

The author notes that this PEA is preliminary in nature. The estimated resources included and disclosed in the mine plan are derived from Indicated mineral resources. The economic considerations applied to them are conceptual in nature and there is no certainty that would enable them to be categorized as mineral reserves, and that the results of this study will be realized.

16.2.2 Summary

The Tthe Heldeth Túé East and West pods can be seen on Figure 16-1 which shows the distribution of the mineralized resources in each of the East and West pods and serves as the rationale to exclude the West pod from this PEA study due to the difficulty of accessing this part of the deposit.

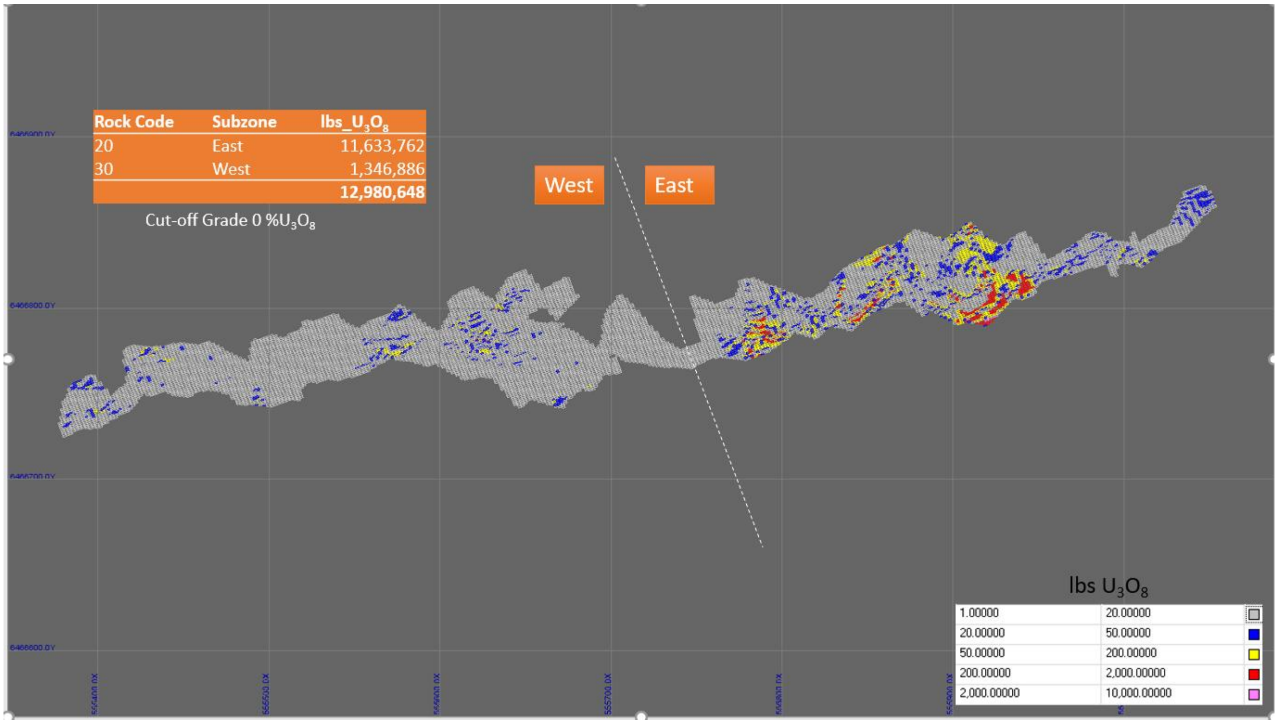


Figure 16-1: Isometric view showing the Tthe Heldeth Túé East and West pods.

The estimated Resource included in the mine plan for the Tthe Heldeth Túé East pod is estimated at 9.7 million pounds of U_3O_8 with an average grade of 2.49% over ~178,000 tonnes as summarized in Table 16-1. The Potentially Recoverable Resource was prepared by Denison based on the mineral resources prepared by GeoVector. The ISR process has been designed to a level appropriate for this PEA study.

A small percentage of the Tthe Heldeth Túé East pod resource has not been included in the mine plan due to sterilization by freeze methods. Due to the geometry of the deposit and the nature of freeze technology applied to the deposit to allow for sufficient containment of mining fluid, the extreme western and easternmost portions of the deposit have not been considered in the mine plan. The collective resource attributed to sterilization is 206,180 lbs, representing 1.7% of the Tthe Heldeth Túé East pod.

Additionally, an 85% mining recovery factor was applied to the mineable resource to account for sweep efficiencies and metallurgical recovery envisioned and deemed appropriate for the nature of the Tthe Heldeth Túé deposit.

Table 16-1: Tthe Heldeth Túé East Pod Projected mine Production.

Deposit Category	Classification	Percentage	Tonnes	Pounds U_3O_8 (100% Basis)	Grade (% U_3O_8)
Tthe Heldeth Túé East Pod: In-Situ Resource	Indicated	100%	211,997	11,633,762	2.49%
Sterilized Resource	Indicated	100%	(2,980)	(206,180)	-
Tthe Heldeth Túé East Pod: Mineable Resource	Indicated	100%	209,017	11,427,582	-
Mining Recovery Factor		85%			
Projected Mine Production			177,664	9,713,445	2.49%

16.2.3 Mining Recovery

Mining recovery has been included in the mine plan and was determined from other typical ISR projects. These results were considered against benchmarked ISR operation recoveries within the context of comparing the grade distribution and geometry between the typical low-grade and dispersed roll front deposit benchmarked operations and the high-grade and concentrated Tthe Heldeth Túé deposit. Based on this analysis, an overall mining recovery factor of 85% has been applied against the in-situ resource to account for sweep efficiencies and metallurgical recovery envisioned and deemed appropriate for the nature of the Tthe Heldeth Túé deposit.

The mining recovery factor is a product of the metallurgical recovery and sweep efficiencies based on knowledge gained during the project development of the Phoenix deposit utilizing the ISR method. The sweep efficiency is defined as the percentage of mineralized rock in contact with the lixiviant as it circulates between the injection wells and surrounding recovery wells. The metallurgical recovery is determined by the amount and rate at which the uranium dissolves from the rock when in contact with the lixiviant.

The Tthe Heldeth Túé deposit is well defined and well understood, geologically. It has been drilled on average to 10 m by 25 m spacings across the deposit and in some cases a denser drill spacing has been applied. The genesis and structural complexity of the deposit are well understood as well. There are no outlying elements of the deposit requiring further drill interrogation. For these reasons, no reductions in the mine plan estimated resource have been made due to geological understanding.

16.2.4 Cut-off Grade

The mine plan estimated resources use a zero-cut-off grade as compared to the cut-off grade of the mineral resource estimate, 0.1% U_3O_8. The estimated resources included in the mine plan is bounded by the resource wireframe itself. This was considered prudent given the compact geometry of the Tthe Heldeth Túé East pod and that ISR is not a selective mining method.

16.2.5 Tthe Heldeth Túé Deposit

In 2013, Denison completed a preliminary concept study analysis of the Tthe Heldeth Túé deposit based on the application of various mining techniques, ISR was not evaluated at that time.

Despite the relatively shallow nature of the Tthe Heldeth Túé deposit, no mining methods achieved the financial results targeted by Denison with the life of mine total cash expenditures estimated to range from $64.59 CAD /lb U_3O_8 to $96.87 CAD/lb U_3O_8 depending on the mining technology chosen.

On September 24, 2018, Denison released the results of the Pre-feasibility Study ("PFS") for its flagship Wheeler River uranium project in northern Saskatchewan. The PFS was completed in accordance with NI 43-101 and is highlighted by the selection of the in-situ recovery ("ISR") mining method for the development of the unconformity-hosted Phoenix deposit, with highly attractive operating costs and low initial pre-production capital costs. Considering Tthe Heldeth Túé is also an unconformity-hosted uranium deposit, Denison recommended an evaluation of the ISR mining method for the Tthe Heldeth Túé deposit.

ISR mining has become a standard uranium production method, following early adaptation and use in the 1960s. Its application to amenable uranium deposits in certain sedimentary formations has grown owing to competitive production costs and low surface impacts. ISR operations are found in a number of countries, including USA, Australia, Kazakhstan, Uzbekistan, and India. In 1997, the ISR share in total global uranium production was 13%, and by 2011, it had grown to 46%. In 2019, 57% of world uranium mined was from using ISR. ISR mining is expected to remain a major uranium production method into the future. There has been continual development and improvement of ISR techniques, particularly in the two decades since the IAEA published the Manual of Acid in Situ Leach Uranium Mining Technology, IAEA-TECDOC-1239.

In an ISR operation, the mining solution is pumped through the underground deposit to dissolve the minerals. After dissolution, the solution (now referred to as the pregnant solution or UBS) is recovered and pumped to surface. Once on surface, the solution is transported to a processing plant and the uranium is recovered in much the same way as the final stages of processing in any other uranium mill. As a result of this mining approach, there is minimal surface disturbance, no tailings, and minimal waste rock generated.

Benefits of ISR operations include:

- Established safety practices and procedures to ensure health and safety of workers.
- Minimal environmental impacts, including low noise, dust, and air emissions, low water consumption levels, minimal surface disturbance, and full rehabilitation of the area.

- Ability to scale production up or down to meet market demands.
- Insensitivity to ore grades (i.e. lixiviants will dissolve the uranium at any grades).
- Low initial capital costs and short timeframe to production.
- Low operating costs.

For a deposit to be considered viable for ISR extraction, it must have three general characteristics:

1. Mineralization must be located in permeable ground to allow the mining solution (i.e. lixiviant) to interact with the uranium mineralization.
2. Mineralization must be readily dissolvable by the mining solution.
3. Mineralization must be confined to the resource by either natural geological features (i.e. impermeable clay or other geological formations) or by artificial means (i.e. pumping, freeze walls). This is done for a variety of reasons, including:
   a) Maximizing recovery of the mineralization once the uranium is dissolved into solution by preventing outflow of the pregnant solution into the regional groundwater.
   b) Minimizing the dilution of the lixiviant with regional groundwater and avoidance of higher treatment costs to recover the uranium.
   c) Minimizing the potential for environmental effects.

The ISR approach at the Tthe Heldeth Túé deposit meets all of these parameters. It is important to note that, traditionally, grade of the mineralization is not a key criterion to determine applicability of an ISR operation. Grade will naturally impact the economic viability of the deposit, but it has limited bearing on the applicability of ISR for low-grade conventional ISR operations.

While the planned ISR extraction for the Tthe Heldeth Túé deposit meets the key parameters, there are important differences between conventional ISR operations and that envisioned for the Tthe Heldeth Túé deposit. In conventional ISR operations, containment is typically achieved using natural impermeable layers in the geological strata and/or by creating a natural drawdown of the water table towards the ore zone (i.e. pumping out more solution than injecting). At the Tthe Heldeth Túé deposit, there is a natural impermeable layer below the deposit, but the ground is otherwise hydraulically connected to the regional groundwater throughout the Athabasca Basin. Due to the high-water flows and movements through the deposit and sandstone, creating a depression in the water table was estimated to be impractical, in addition to being counterproductive to the use of ISR mining techniques that rely on the hydrostatic head of the overlying water bearing units to maintain containment. Therefore, in order to contain the lixiviant to within the mineralized zones, an artificial freeze wall will be established surrounding the East pod of the Tthe Heldeth Túé deposit. Freezing technology and methodologies are well established throughout the world and in the Athabasca Basin.

A second difference is the ability for mining solutions to permeate the ore zone. In conventional ISR operations, the geology of the ore zones is required to be relatively homogeneous in terms of permeability to allow the lixiviant to come into contact with the low grade (ppm levels) of uranium mineralization spread throughout the deposit. Conventional deposits grade in the ppm and as a result, mass and volume loss of the mineralization ground during dissolution of the deposit is not a factor to be considered. Conversely, the Tthe Heldeth Túé deposit does not have homogeneous permeability. The geology of the deposit is highly variable, with severe fracturing, broken and desilicified sands, and zones of high clays and high-grade uranium metals. With zones grading upwards of >10% U_3O_8, the resulting loss of mass and volume of the uranium will be moderately significant to the operation, especially since permeability is expected to increase as the deposit is dissolved during the mining process.

A third major difference is the concentration of the lixiviant once it has dissolved the uranium. In conventional ISR operations, UBS mill feed concentrations are in the mg/L levels. This requires the use of ion exchange or solvent extraction processing equipment to concentrate the uranium to allow for the efficient precipitation and packaging of the final product. To meet annual production requirements, the volume of solution to be processed to recover the uranium is quite large. Conversely, due to the high-grade nature of the Tthe Heldeth Túé deposit, review of the laboratory test work from the Hathor Roughrider PEA NI43-101 Technical Report & experience gained through the Phoenix Deposit project development, the authors conclude that a reasonable assumption to be carried for this PEA study is that a UBS grade of 7g/L can be achieved. This is discussed further in Section 11.2 of this report. At this level of concentration, much smaller volumes of solutions are required to be processed for an equivalent production level. As a result, direct precipitation of the uranium is viable, which eliminates the need for ion exchange or solvent extraction circuits. Capital costs are reduced, as are personnel and reagent consumption costs during operations. Thus, operations are streamlined, and operating costs are much lower.

Finally, the last major difference is the lack of limitations that are faced by conventional ISR operations. Due to the nature of the mineralization formation (i.e. roll front deposits), the mineralization is typically spread out over several kilometres. The low-grade nature of the deposit combined with drill hole spacing, reagent consumption, and surface piping and pumping for distribution systems all contribute to creating economic thresholds which impact the viability of some deposits. Conversely, at the Tthe Heldeth Túé deposit, the mineralization is confined to a relatively small area (700 m x 50 m). As a result of the smaller surface area, certain costs (i.e. drill hole spacing, reagent consumption, and surface piping systems) are reduced compared to conventional ISR operations to the point where they have minimal impacts to the overall economics of the deposit.

16.3 Mining Context

16.3.1 Tthe Heldeth Túé Deposit

At the Tthe Heldeth Túé deposit, mining challenges are presented by the finite surface area in which the wellfield and freeze holes are situated, heterogeneous distribution of ore grades within the deposit and anticipated variable hydraulic conductivities within the mining area. Further details describing the relevant characteristics of the Tthe Heldeth Túé deposit from an ISR mining method selection are described below:

- In the deposit area, the surface overburden layer ranges in thickness from 10 to 20 m.
- It has been systematically drilled at a variable spacing typically on the order of 10 m by 268 drill holes.
- The East Pod is approximately 260 m long, 45 m wide, and 2 to 19.5 m thick.
- The West Pod is approximately 318 m long, 40 m wide, and 2 to 19.5 m thick.
- The east and west pods are separated by an intermittently mineralized zone approximately 45 m in strike length.
- It is a flat lying deposit. Over the 680 m strike length of the west and east zones, the deposit gradient is only -3.5% to the east.
- The deposit sits on the unconformity at a nominal 200 m depth and is subject to the ambient hydrostatic head (water pressure) of the overlying sandstone.
- It is a high grade, high value deposit requiring a high mining recovery.
- There are some areas of lower grade within the deposit, primarily within the west pod and select areas of the east pod.
- Geotechnical assessment indicates a very weak broken zone domain above the deposit for up to 100 m.
- Ground conditions within the deposit are expected to be variable for the extraction via ISR methods.
- Development in basement rock will encounter fair to good rock mass conditions with some risk of encountering fault structures and clay seams. The basement rock is indicated to act as an aquitard for a preferred confining layer.
- Mineralization/waste contacts are easily visible.

Key features of the application of ISR at the Tthe Heldeth Túé deposit include:

- Utilization of a low pH mining solution.
- Injection and recovery wells on a 7 m spacing in 5-spot pattern with the recovery wells placed in the centre of a ring of injection wells.

- A total of 184 wells (66 recovery and 118 injection) are required for complete coverage of the east pod.
- Use of a freeze wall (curtain) to ensure separation and maximize the isolation of the mining solution from the regional groundwater requiring 92 individual freeze holes.
- Utilization of commercial permeability enhancement techniques to increase hydraulic conductivity of the near well environment within the deposit, where necessary.
- Annual steady state production of 2.1 Mlbs/yr requiring the operation of 12 recovery wells (out of a total of 66 planned).
- Monitoring wells will be installed around the perimeter of the mineralized zone and within the overlying and underlying aquifers, as dictated by geologic and hydrogeologic parameters.

16.4 Hydrogeology

Hydrogeological conditions have not yet been assessed in detail for Tthe Heldeth Túé at a site-specific level. Assumptions about the hydrogeology of the area can be drawn from geological characteristics and comparison to similar deposits in the Athabasca Basin.

The natural surface groundwater elevation above Tthe Heldeth Túé is shallow, within a few metres of ground level, and is assumed to have an elevation of 478 masl which represents the elevation of nearby McMahon Lake. Regional ground and lake elevations generally decrease to the southeast which indicates a predominant groundwater flow from northwest to the southeast.

The hydrogeology of the Tthe Heldeth Túé area is defined by two primary units. The overlying water bearing unit is comprised of the regionally extensive sandstones of the Athabasca Group and the 15 to 45 m of unconsolidated glacial till which covers it. The other primary hydrogeological unit is the underlying, crystalline basement which is comprised of metasedimentary and granitoid gneisses.

The Tthe Heldeth Túé deposit is flat lying and occurs along the unconformity between these two units at a nominal depth of 200 m below surface. Most of the deposit is located in the 10 to 20 m thick paleoweathered zone of the unconformity, which is anticipated to have similar hydrogeological characteristics to the overlying, permeable sandstone. Tthe Heldeth Túé is below the natural groundwater elevation and is subject to the full hydrostatic head (284 psi or 1,957 kpa) of the overlying water-bearing units.

Although site-specific information is limited, the geologic units hosting the Tthe Heldeth Túé deposit are likely to be permeable and water bearing, as shown by experiences in mining the equivalent geologic units at McArthur River and Cigar Lake and recent hydrologic testing conducted at Phoenix. Permeability is expected to be comprised of a combination of matrix permeability and fracture-controlled secondary permeability, but the proportion of each component is not known at this time. Additional discussion regarding permeability is provided in Section 16.3.1.

At this stage in the project, it is assumed that the underlying crystalline basement units, below the paleoweathered zone associated with the unconformity, are not hydraulically connected to the overlying sandstone. This lack of hydrogeological connectivity between the basement and the mining zone needs to be confirmed with additional field test work.

Ground conditions at Tthe Heldeth Túé are anticipated to be variable with a heterogeneous distribution of more permeable and less permeable zones. During mining, the lixiviant will be expected to dissolve mineralization faster along the highly permeable zones. In lower permeability zones a longer residence time will be required to allow the lixiviant to sufficiently contact the mineralization. A reduction in the uranium resource accessible to ISR mining due to accessibility of ore to the leaching solution has been incorporated into the 85% mining recovery factor.

The ISR mine design for Tthe Heldeth Túé includes a freeze wall surrounding the mining zone and extending from surface down to the crystalline basement units, which are presumed to be hydraulically disconnected from the overlying water-bearing units. This will provide isolation of the mining zone from the surrounding hydrogeological system. The freeze wall will create a closed groundwater system that will allow for the control of ISR fluids due to hydraulic containment.

16.4.1 Assessment of Mineralized Zone Permeability

A key hydrologic property that affects ISR mining is the permeability (hydraulic conductivity) of the ore zone and, just as importantly, the hydraulic communication (interconnectedness of the permeability/porosity) across the ore zone. The ability to transmit fluids through the ore body via well injection and recovery is fundamental to the efficacy of ISR mining.

Denison has performed permeameter testing of exploratory boring cores that were recovered from the ore zone and overlying and underlying strata at the site. The permeameter testing was conducted utilizing a portable nitrogen gas probe permeameter adapted for testing drill core pieces. Permeameter testing measures the matrix permeability of the core sample. Permeameter testing was performed by applying an epoxy ring at the sample location and sealing the permeameter probe against the ring to ensure a tight seal. Pressure is measured upstream of the probe tip at a sampling interval of two seconds, and the pressure decay of the nitrogen gas injection is measured to determine permeability in the drillcore at the sample location. In general, the gas pressure pulse applied to the drillcore is approximately 30 to 50 psi, and test durations are less than 20 minutes per test. This methodology was applied extensively at the Phoenix project, with testing conducted on core at approximate 10 centimeter intervals, resulting in a total of over 1,200 measurements (Dec 18, 2020 Press release).

Permeameter test results were reported for 150 core sample measurements in the Tthe Heldeth Túé East pod. Of the 150 measurements, 25 were from core collected within the mineralized zone, 43 were from the overlying Athabasca Sandstones, with the remainder from the underlying metasedimentary basement. The samples were further grouped into lithologic units. Table 16-2 provides a summary the number of samples analyzed for the Tthe Heldeth Túé Deposit for each lithologic group. The lithologic group with the highest-grade uranium at the Tthe Heldeth Túé deposit is the 2(d) zone (described as black dense, high grade uranium with hematite/sulphides). The majority of the uranium mineralization in the Tthe Heldeth Túé Deposit is located below the unconformity, within the paleo-weathered basement rock.

The core material available from the Tthe Heldeth Túé deposit East pod are 8 to 10 years old and have undergone degradation. As a result, the samples suitable for conducting the permeameter testing are biased toward the more dense and intact (and likely lower permeability) core material. What effect degradation may have had on the tested cores, and any remaining testable cores is unknown and cannot be quantified.

Table 16-2: Number of Permeameter Tests for the Tthe Heldeth Túé Deposit (East Pod).

Lithologic Grouping	Tthe Heldeth Túé, Number of Samples
1a) Athabasca sandstones	43
2a) Clay zone (upper), can be regolith also	1
2b) Brown clay with black U patches; dense, friable, porous	1
2c) Black dense U high % + hematite/sulphides (not friable)	7
2d) Clay zone (lower)	4
2e) Mineralized paleo-weathered basement (hematite-rich)	12
3a) Intensely altered metasedimentary rocks	19
3b) Metasedimentary gneiss (moderate porosity/alteration) fresh basement,pegmatite,healed quart breccia / quartzite	46
3c) Unmineralized paleo-weathered basement (hematite-rich)	17

The analyses of the permeameter tests included calculation of the median, minimum and maximum hydraulic conductivity values within each lithologic group. The Tthe Heldeth Túé permeameter test results were compared to the Phoenix Project publicly available data. Table 16-3 presents median hydraulic conductivity (in m/s) of the sample groups, where applicable, as well as the range that was measured.

Table 16-3: Summary of Permeameter Test Results by Lithologic Groups for the Tthe Heldeth Túé Deposit. (All values are hydraulic conductivity (K) in m/s).

Lithology	Tthe Heldeth Túé		
	Median	Min	Max
1a	3.8E-11	3.4E-13	7.6E-08
2a*	--	1.1E-12	1.1E-12
2c*	--	1.0E-08	1.0E-08
2d*	4.5E-10	1.6E-12	5.1E-08
2e*	3.2E-10	6.6E-13	1.7E-07
2f*	4.5E-11	1.0E-13	3.3E-09
3a	4.0E-11	1.0E-13	6.2E-10
3b	1.5E-12	1.0E-13	1.2E-08
3c	5.0E-11	1.1E-13	5.9E-09

Notes:

1. * within the mineralized zone

The median hydraulic conductivity value for all of the mineralized samples for the Tthe Heldeth Túé is 1.1E-10 m/s with a range of 1.0E-13 to1.7E-07 m/s. The matrix permeability test work conducted for Phoenix and outlined in Denison's press release dated Feb 24th, 2020 shows hydraulic conductivity values ranging from 1.5 x 10-13 to 5.0 x 10-6 m/s for the Phoenix Deposit.

Based on Denison's Press release dated Feb 24th, 2020, the permeameter testing results from cores collected from borings at the Phoenix project correlates reasonably well to the hydraulic conductivity values published from the pumping and injection tests conducted at Phoenix. The data from Phoenix suggest that permeameter data can provide a reasonable initial estimate of hydraulic conductivity.

Given the positive correlation between bulk hydraulic conductivity testing and permeameter testing of core samples in estimating hydraulic conductivity at the Phoenix Project (Denison's press release Feb 24th, 2020); it is reasonable to assume a similar correlation for the Tthe Heldeth Túé Deposit based on a comparable geologic setting. The recently conducted permeameter testing from the Tthe Heldeth Túé Deposit should provide a reasonable initial estimate of hydraulic conductivity, although, as previously indicated, the degraded state of the core most likely biased the tested samples toward lower permeabilities. Based on the currently available data, the hydraulic conductivity estimated from the Tthe Heldeth Túé permeameter testing appears to be notably lower than what was estimated for the Phoenix Project.

Several factors should be considered in the evaluation of permeability and its potential impacts to ISR mining applied to the Tthe Heldeth Túé deposit. First, as previously indicated, the samples suitable for conducting the permeameter testing are biased toward the more dense and intact (and likely lower permeability) core material. Second, the inter-well spacing (distance between wells within a well pattern) planned for the project will be less than what is proposed at the Denison Phoenix Project, which will reduce the residence time for lixiviant to move from injection well to extraction well. Third, application of permeability enhancement methods will be utilized to increase the near well-bore permeability within the mineralized zone.

Additional testing (both permeameter and hydrologic) will be necessary to fully characterize the distribution of hydraulic conductivity and other aquifer properties of the mineralized zone at the Tthe Heldeth Túé deposit. Future test work to characterise the hydrogeology within and around Tthe Heldeth Túé could include groundwater elevation measurements, packer tests, single well injection and/or pump tests, cross-hole injection and/or pump tests, well pattern scale tracer tests, pre- and post-permeability enhancement testing, on-core permeability measurement, downhole geophysics, and numerical groundwater flow modelling.

The future testing will be designed to reduce hydrologic risks associated with the project including:

- More representative characterization of the range of matrix permeability within the deposit and comparison between hydrologic testing and permeameter results.
- Characterization of the range and distribution of bulk permeability within the deposit.
- Demonstration of hydraulic communication throughout the mineralized zone.
- Demonstration of sufficient hydraulic isolation of the mineralized zone from the overlying and underlying hydrologic units to allow establishment of hydraulic control of production fluids during ISR operations.
- Assessment of the viability of permeability enhancement methods.
- Identification of achievable and sustainable extraction and injection rates on a per well basis.
- Optimization of well spacing between injection and extraction wells.

16.5 Mine Geotechnical

As the ISR mine plan does not require any underground workings, the geotechnical characterization of the Tthe Heldeth Túé area is not as critical as the hydrogeological characterization. Anticipated direct impacts of geotechnical characteristics on mining are the stability of drill holes to allow for construction of ISR wells and the stability of any potential caverns created during mining by mass loss of uranium and other leachable minerals. It is predicted that geotechnical risks associated with caverns will be low, as the volume will be small, the ground will be saturated with fluid, and any upward propagation of caverns will be limited by the volume expansion of broken rock. This can also be mitigated by backfill of material utilizing decommissioned wells.

Additionally, the understanding of certain geotechnical characteristics may play a critical role in future permeability enhancement techniques to better understand fracture pressures and aid in the selection of viable techniques.

Mine-scale geotechnical characteristics are expected to be heterogeneous and vary for competent sandstone, broken or altered sandstone, basement units, and different mineralized domains. Existing geotechnical data from exploration work such as RQD, clay content, fracture frequency, friability, and fault zone characterization can be used to provide qualitative characterization of hydrogeology at a PEA level study. This can be used to provide relative permeability within and around Tthe Heldeth Túé, as well as relative to other deposits such as the Phoenix deposit, which has better hydrogeologic characterization.

Geotechnical characteristics can be determined for future PFS and FS studies with dedicated geotechnical drilling, or rock mass rating (RMR) can be estimated from existing logged geotechnical data, select relogging of core, and core photos. Mine-scale structural interpretation will also be required at the PFS level to better understand the hydrogeology.

16.6 Mining Methods

16.6.1 Wellfield

Mining of Tthe Heldeth Túé is proposed using a wellfield of 184 wells at 7 m spacing arranged in a 5-spot pattern, with four injection wells around one recovery well (Figure 16-2). The ISR wells are planned to be drilled entirely from land on the peninsula on McMahon Lake which extends to the eastern portion of Tthe Heldeth Túé (Figure 16-3). The wells will be angled out to cover the mining zone at 7 m spacing at the target depth within the mineralized zone. The minimum drilling angle is limited to 45º to reduce the technical risk of drilling and installing the wells. The spacing of the ISR well field collars are arranged on a 5 by 7.5 m grid at surface on the peninsula. There is a 10 m gap between the freeze holes and the ISR wells on the east and west sides of the wellfield on surface.

The ratio of injection wells to recovery wells in this configuration is expected to be ~1.8 to 1. A 5-spot pattern was chosen over a 7-spot pattern to provide a higher number of recovery wells which allows greater flexibility in pumping rates and for blending UBS of variable grade and quality. The well spacing of 7 m is less than the Phoenix Deposit PFS value of 10 m to decrease the mining time for Tthe Heldeth Túé, which is a shallower deposit with a lower per-well cost, and to account for a potentially lower permeability than Phoenix. The well spacing and pattern may change based on future hydrogeological test work and modelling.
Eight monitoring wells will be installed outside of the freeze wall to detect and remediate any excursion of lixiviant from the mining zone. The monitoring wells were designed based on 150 m spacing surrounding the freeze wall, but this design will need to be re-evaluated based on regional

hydrogeological, geochemical, and environmental modelling. The monitoring wells are located on land where possible, but three were required to be in the lake, of which two are located on the Rio Tinto side of the property boundary. It is anticipated that the wells located in the lake will have casing stick up above the lake bottom and will require access for monitoring from the ice in the winter or from a platform or equivalent in the summer. Monitor well design will be determined in future studies. The ability to construct monitoring wells on the Rio Tinto side of the property may be affected by permitting or political risk.

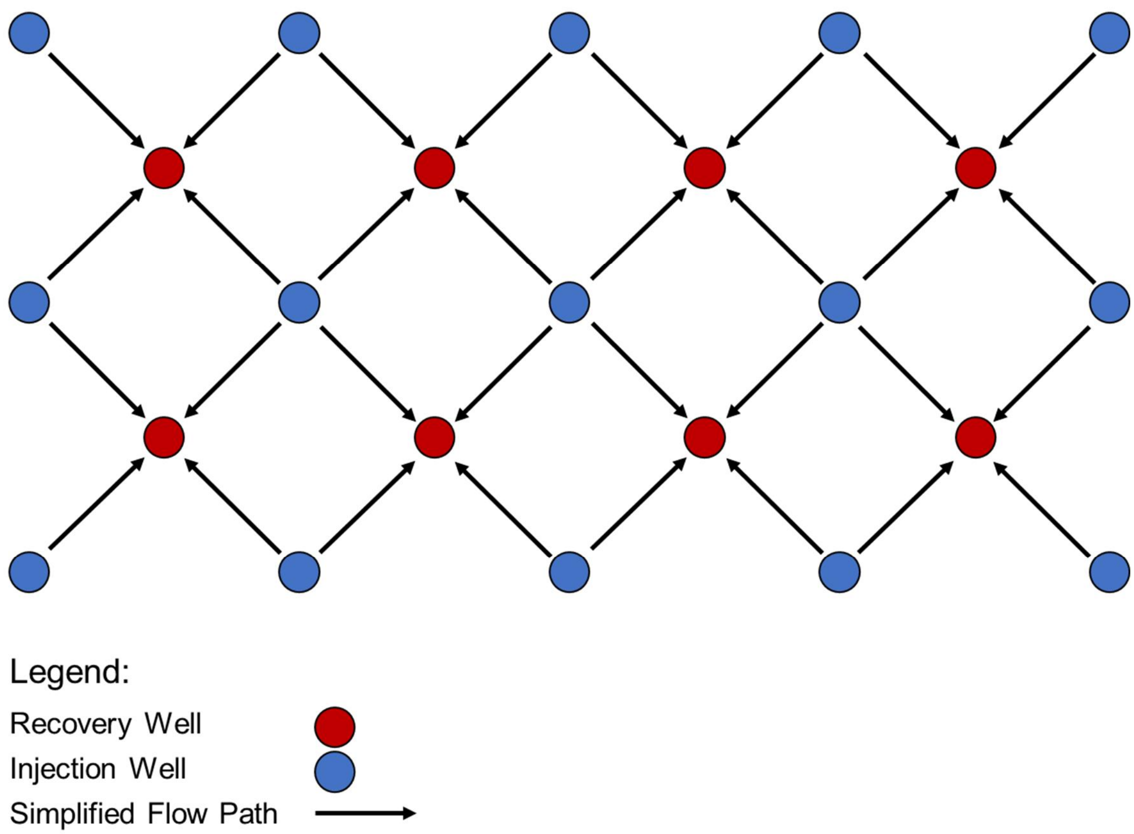


Figure 16-2: Conceptual 5-Spot ISR Wellfield Design.

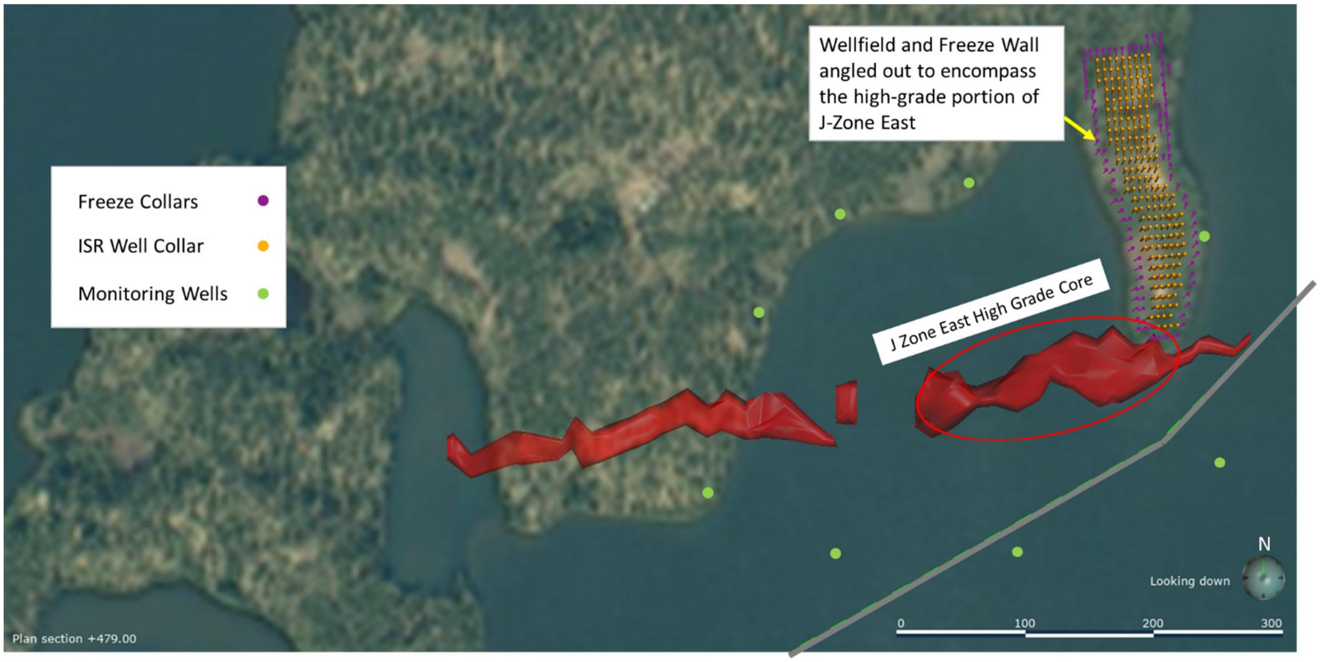


Figure 16-3: Tthe Heldeth Túé (J Zone) Wellfield and Freeze Wall Plan View at Surface.

16.6.2 Freeze Wall

A freeze wall will be constructed around the mining zone prior to commencement of ISR mining at Tthe Heldeth Túé. It will extend from surface down to the competent crystalline basement rock below the unconformity. The freeze holes are planned at a 7 m spacing at the target depth and extend 30 m below the unconformity elevation. The freeze wall is planned to be drilled entirely from land on the peninsula on McMahon Lake which extends to the eastern portion of Tthe Heldeth Túé. Freeze holes will be angled out to surround the mining zone with the minimum drilling angle limited to 45º to reduce technical risk of drilling and installing the freeze holes (Figure 16-4).

The freeze wall will hydraulically isolate the mining zone from the surrounding regional groundwater in the water-bearing formations. The freeze wall combined with the low permeability basement rocks below Tthe Heldeth Túé will confine the mining solution. The mining solution will be a higher density than the surrounding groundwater and will be controlled hydraulically by pumping and injection to prevent any vertical upward migration. This will limit the total volume of groundwater to remediate after mining is complete. Mitigating any groundwater ingress will provide operational advantages by effectively eliminating dilution of the lixiviant being circulated between injection and recovery ISR wells. This will allow for control on volume throughput and reagent consumption. Preventing excursions of mining solution will provide economic and environmental advantages. By maintaining control of the mining solution inside the freeze wall, the recovery of UBS will be maximized and impact on the natural groundwater outside the freeze wall will be prevented.

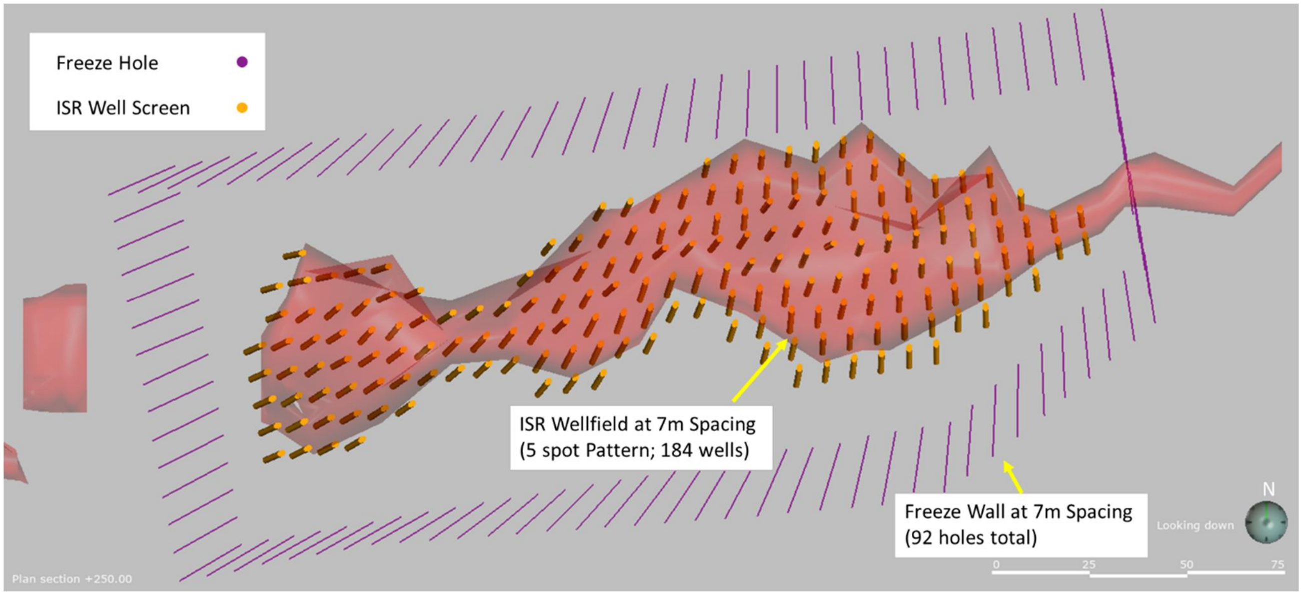


Figure 16-4: Plan View of Tthe Heldeth Túé Freeze Wall and ISR Wells at Ore Level.

16.6.3 Freeze Design

Ground freezing will be conducted by circulating a chilled brine of calcium chloride through the pattern of freeze holes. The brine will be contained and circulated within each freeze hole casing, which will extract the heat from the surrounding rock until it is sufficiently frozen to form an impermeable barrier. Heat transfer and freezing time will be affected by freeze hole spacing, water content of surrounding rock, brine temperature, and flow rate, among other factors. Detailed freeze modelling will be estimated in future studies, but an estimated freezing time of 12 months is used for this study. The freeze holes and freeze plant will be installed first, and then the ISR wellfield, and other surface infrastructure can be constructed while the freeze wall forms.

Ground freezing for water control is a relatively low risk procedure and is commonly used in the uranium mining industry in Saskatchewan under similar conditions to Tthe Heldeth Túé. The primary objective at Tthe Heldeth Túé is to create an impermeable hydraulic barrier wall. As there will be no underground workings, the freeze wall will be considered sufficiently emplaced once it is at least 4 m thick and the ground temperature is below -2°C.

Based on the planned cumulative freeze hole length, the estimated freeze capacity requirement for Tthe Heldeth Túé is expected to be ~900 tonnes refrigerant at -35°C. This was scaled based on the value published in the Wheeler River PFS and it will have a similar modular design. A total of three modular freeze plants, one electrical/control skid, three evaporative condenser skids, and one insulated brine tank are expected to be utilized at Tthe Heldeth Túé. A shutdown in any one of the modules will not result in a complete plant shutdown and there is enough thermal inertia in the system to provide time for restart without significant thawing.

16.6.4 Drilling Methodology

16.6.4.1 Drilling

The drilling of individual recovery, injection, monitoring, temperature and freeze wells will be carried out utilizing established standard drilling methods including rotary drilling and wireline core drilling. Drilling methods will be evaluated to improve drilling costs and productivities.

Diamond drilling provides the recovery of core during the drilling process allowing for the close examination of ground characteristics prior to the completion of any well.

Accuracy will be a key drilling consideration during project execution to avoid operational problems with the freeze wall and wellfield. Mud motors can be used during the drilling process to ensure accuracy of the borehole to within one metre at the ore zone depth of approximately 200 m.

Total depth of all monitoring, recovery, and injection boreholes was set to 230 m to ensure complete penetration of the Tthe Heldeth Túé mineral resource. Freeze holes are drilled to 245 m being 15 m past the base of the deepest portion of the deposit. Future considerations should be taken to customize individual boreholes to tailor the individual depths.

16.6.4.2 Permeability Enhancement

A permeability enhancement technique will also be utilized in areas of the deposit where natural hydraulic conductivity is deemed inadequate for mining. One such technique is the Max PERF drilling tool. The MaxPERF drilling tool, is deployable from within the planned boreholes and is designed to drill a 0.7 inch (17 mm) roughly horizontal hole up to 72 inches (182 cm) in length. The MaxPERF drilling tool exposes the permeability of the ore zone in more challenging areas by completing multiple arrays of holes at various elevations, potentially providing increased access to hydraulic connectivity associated with the existing fracture network, permeability and natural fluid pathways.

The recovery and injection wells design allows for a one time use of the MaxPERF tool per well. Other permeability enhancement techniques will be considered/evaluated for application to the Tthe Heldeth Túé deposit mining.

16.6.4.3 Well Design

Recovery, Injection, Monitoring

A standard well design will be used for the recovery, injection and monitoring wells (Figure 16-5). A typical well is constructed of an outer 5-inch diameter SDR 17 PVC well casing. The outer casing is pressure rated for 275 psi, which is well suited for Tthe Heldeth Túé depths of mineralization and will be pressure grouted in place. Well screens are attached to a K packer and lap pipe to ensure retrievability if necessary. Well screen lengths installed in recovery and injection wells will be customized to match the thickness of the ore zone intersected in a particular well. Monitoring wells will have a standard six-metre screen length. If required, an inner recovery tube constructed of HDPE DR9 pipe attached to a submersible pump is installed within the outer casing. The wellhead is standard construction with multiple ports installed for cables and sensors. A typical recovery well design was provided by Woodard & Curran Inc. during the Wheeler River PFS and modified by Denison to suit the project's specific needs.

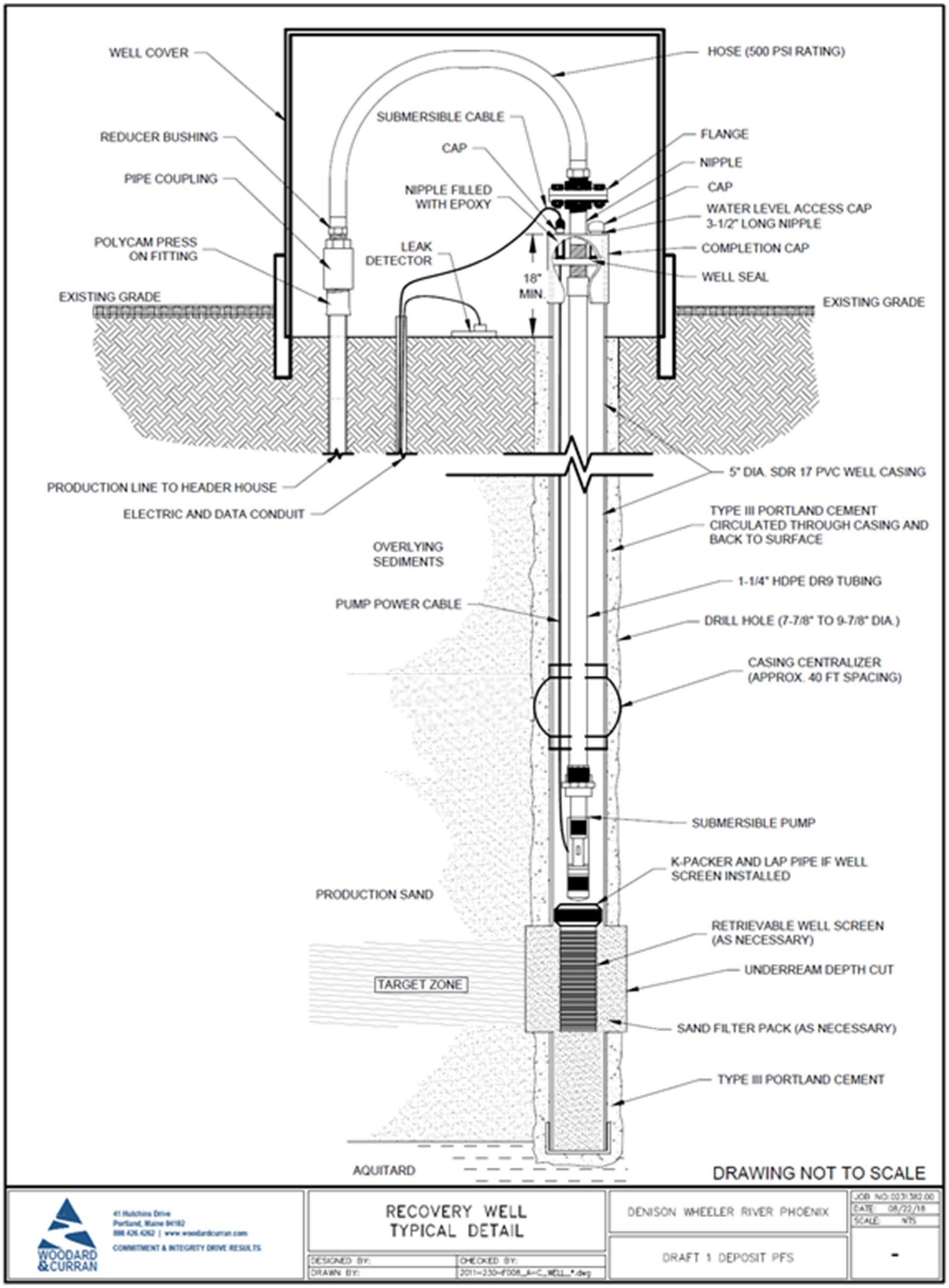


Figure 16-5: Typical Recovery Well Design.

16.6.4.4 Freeze Holes

A standard well design will be utilized for all freeze holes. Wells will be drilled and cased with standard PQ diameter drill pipe and set at the specified depth. An additional inner delivery pipe is then installed within the PQ diameter pipe leaving an open annulus between the two. The delivery pipe is designed to deliver chilled brine to the bottom of the freeze hole where it returns up the annulus between the delivery pipe and an outer freeze pipe to a depth of approximately 245 m. If required, a reduction adaptor is then used in the return pipe so that more heat removal occurs in the bottom portion of the hole.

16.6.5 Mechanical Integrity Testing

After an injection, recovery, or monitoring well has been completed, and before it is made operational, a mechanical integrity test (MIT) of the well casing is completed. In the integrity test, the bottom of the casing adjacent to or below the confining layer above the zone of interest is sealed, as is the top of the casing, and a pressure gauge is installed to monitor the pressure inside the casing. The pressure in the sealed casing is then increased to a specified test pressure and must maintain 95% of this pressure for a specific duration of time to pass the test. Well casings that fail the integrity test will be repaired.

16.6.6 Production

The uranium ISR process proposed in this PEA study will involve the dissolution of soluble uranium from the mineralized host sands at low pH ranges using acidic solutions. The acidic solution will dissolve and mobilize the uranium, allowing the dissolved uranium to be pumped to the surface. The uranium-rich solution will be transferred from the production wells to a nearby facility for uranium removal, drying, and packaging. As the entire mineral resource will be isolated from the surrounding aquifer by the freeze wall, production flow rates are anticipated to be relatively equal to injection rates.

16.6.7 Wellfield Piping System

The wellfield pipelines will transport the wellfield solutions from the lixiviant storage pond to the injection wells and from the recovery wells to the UBS storage pond. The flow rates and pressures of the individual well lines will be monitored in header houses. This data will be transmitted to the operations center for remote monitoring through a master control system. Through the master control system, the user will be capable of controlling header house production lines remotely. Double contained high density polyethylene (HDPE) piping (or equivalent) will be used in the wellfields and will be designed and selected to meet design operating and environmental conditions.

The lines from the wellfield, header houses, and individual well lines will be freeze protected and secured to minimize pipe movement. Figure 16-6 illustrates the approximate locations for the wellfield, trunk line, and header houses.

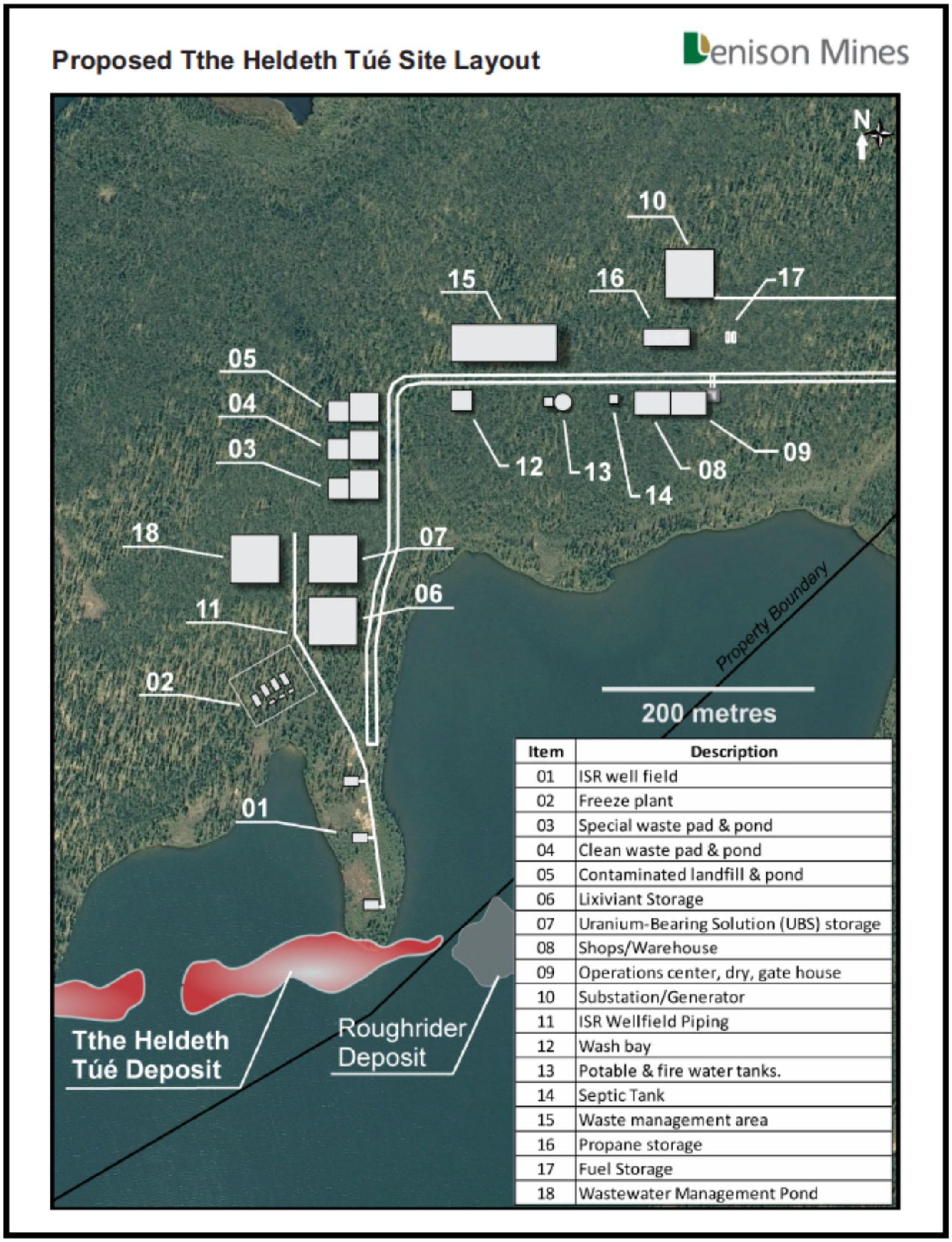


Figure 16-6: Tthe Heldeth Túé (J Zone) Plan View Showing Wellfield, Header Houses, and Well Lines.

16.6.8 Header Houses

Header house buildings (header houses) will be used to distribute the mining solution to injection wells and collect the UBS solution from recovery wells. Each header house will be connected to two production trunk lines. One of the trunk lines will be used for receiving barren mining solution from the feed tank via truck or pipeline and the other will be used for conveying UBS back to a tank or holding pond for transportation to the mill via truck. The header houses will include manifolds, valves, flow meters, pressure meters, and other instrumentation, as required, to fully operate and control the process. This monitoring and control of the system allows the operators to individually adjust each recovery or injection well.

Each header house will service approximately 80 wells (injection and recovery), depending on resource and pattern configuration. Table 16-4 presents the current anticipated header house and well summary.

Table 16-4: Tthe Heldeth Túé East Pod Deposit Header House and Well Inventory by Unit.

Item	Production Unit
	Tthe Heldeth Túé East Pod
Header Houses	3
Injection Wells	118
Recovery Wells	66
Monitoring Wells	8

16.6.9 Wellfield Reagents, Electricity, and Other Consumables

The wellfield production has been targeted at a steady state of 2.1 Mlbs/year. Due to the consistent production rate and consistent nature of the deposit, wellfield reagents, electricity, and other consumable costs are expected to be consistent each year. Reagents, electricity, and other consumables have been estimated based on this production rate and have been included in the annual operating costs.

16.6.10 Mining Equipment

Equipment for establishing the wellfield and drilling the wells are standard wireline diamond drill rigs, skidders, dozers and trucks. Truck mounted pump units will also be utilized to conduct permeability enhancement of the individual wells at depth. In addition to drilling equipment, wellfield operations will also utilize submersible pumps, hoists and each well will be equipped with a wellhead assembly, with appropriate valves and other instrumentation to facilitate flow in either direction or for operations monitoring.

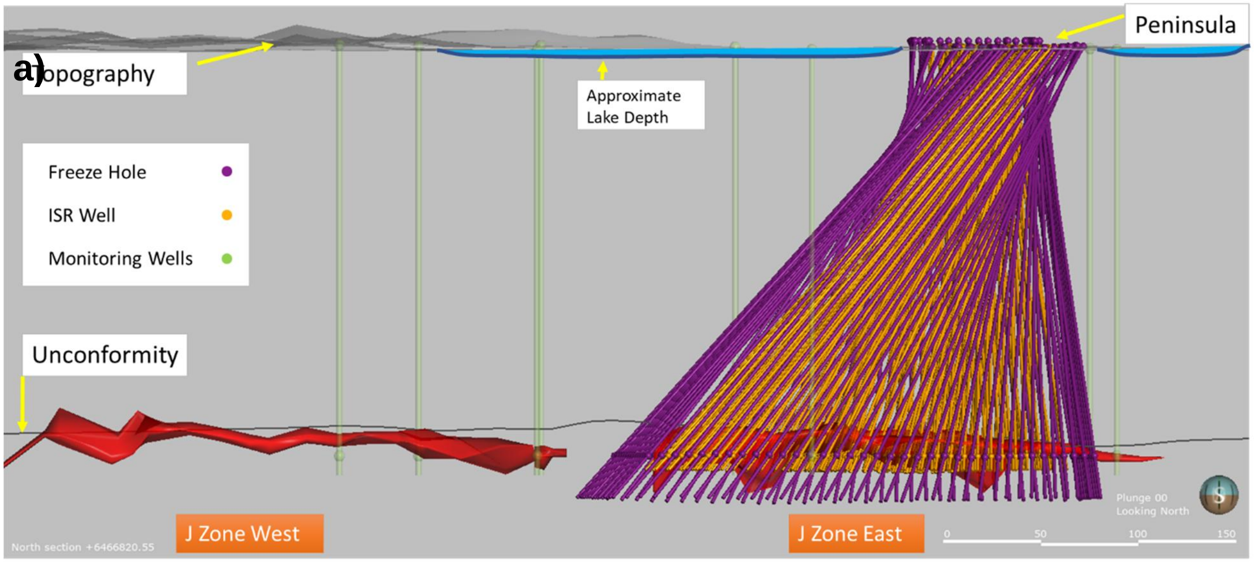
Ongoing operations and maintenance activities will use moderately sized mobile equipment for testing and maintenance, such as a light duty crane, front-end loaders, 4X4 trucks and side by sides. Additional hoists will also be utilized to change out pumps and maintain wells as necessary.

16.6.11 Other Mining Methods Considered

No other mining methods were considered as part of the 2020 PEA study.

16.6.12 Tthe Heldeth Túé Mine Model

A conceptual three-dimensional mine model was developed as part of this study (Figure 16-7). The most recent geologic models from the 2018 Waterbury technical report were imported into Seequent's Leapfrog Geo® software program. ISR wells, freeze holes, and monitoring wells were planned using the planned drill holes function. Targets were set at the deposit elevation and collars were adjusted to the surface topography on the eastern peninsula.



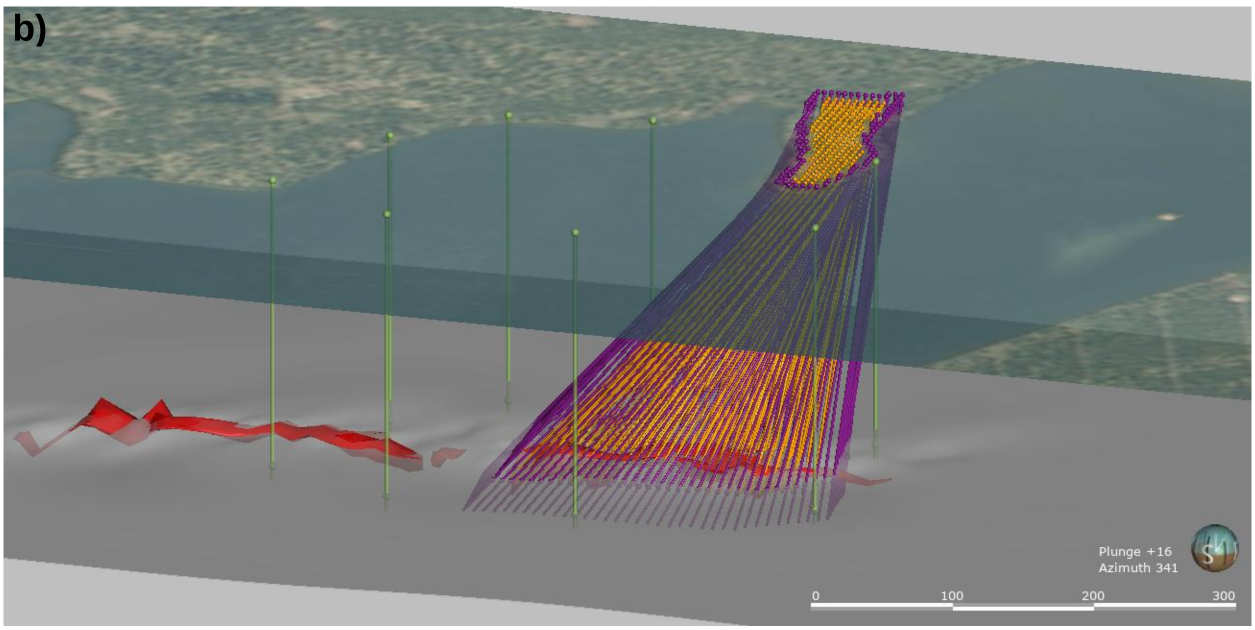


Figure 16-7: Conceptual 3D ISR Mine Model of Tthe Heldeth Túé. Views include: (a) long section looking north, (b) oblique view looking northwest.

16.7 Development and Production Schedule

16.7.1 Estimated Production Rates

The mining approach is governed by the rate of mineral extraction and the duration of the mine development, mineral extraction, processing, and closure. The following describes each of these mine development and operation components.

The Tthe Heldeth Túé deposit is divided into two areas – East pod and West pod. Only the East pod is evaluated as part of this PEA study. A combination of wells will be operated concurrently to provide the overall flow to the receiving facility. Initially, this flow rate will be up to 230 L/min requiring the average operation of 12 recovery wells per year. Table 16-5 below shows the operating assumptions.

Table 16-5: Tthe Heldeth Túé East Pod Deposit Wellfield Operating Assumptions.

Project Summary	Rate	Unit
Recovery Wells	66	
Injection Wells	118	
Individual Well - Flow Rate	3	gal/min
Wellfield - Average Flow Rate	60	gal/min
Average Head Grade	7000	mgU/L
Total Annual Production	2,132,015	lbs/yr
Recoverable Uranium	9,713,445	Lbs
Mine Life	6	Yr

The development plan is subject to change due to extraction schedules, variations with production area recoveries, plant issues, economic conditions, etc. Uranium recovery head grade, or concentration, of the uranium bearing solution is assumed to average 7 g/L over the entire production schedule.

Based on analysis of comparable projects, it is estimated that uranium recovery will begin immediately upon injection of lixiviant solutions into the mineralized zone. A six-month wellfield commissioning timeframe has been included in the production profile to allow acidification of the wellfield and full production rates from recovery wells. Once the mining solution passes through the mineralized zone and reaches the recovery wells, production of uranium in the precipitation plant will begin. Low pH ISR operations will sometimes circulate a more concentrated mining solution to pre-condition a wellfield prior to flows from that area being directed to a receiving facility. However, at the Tthe Heldeth Túé deposit, due to the low flow rate required, it is anticipated that these initial flows will be directed to the receiving facility, allowing for the quick ramp-up of production.

Production is expected to begin at 850,000 lbs in year one, ramping up to full production in years 2 through 5, with total production expected to be 9.7 Mlbs (100% basis) over a 6-year mine life. Figure 16-8 and Table 16-6 show total annual production over the life of mine for Tthe Heldeth Túé.

Table 16-6: Tthe Heldeth Túé East Pod Deposit Overall Production.

Overall Production*		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Tthe Heldeth Túé East Pod	tonnes	15,599	38,994	38,994	38,994	38,994	6,089	177,664
	grade	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
	Lbs U_3O_8	852,806	2,132,015	2,132,015	2,132,015	2,132,015	332,577	9,713,445
Total	**lbs U_3O_8**	**852,806**	**2,132,015**	**2,132,015**	**2,132,015**	**2,132,015**	**332,577**	**9,713,445**

Note: Numbers may not add due to rounding
*100 % basis

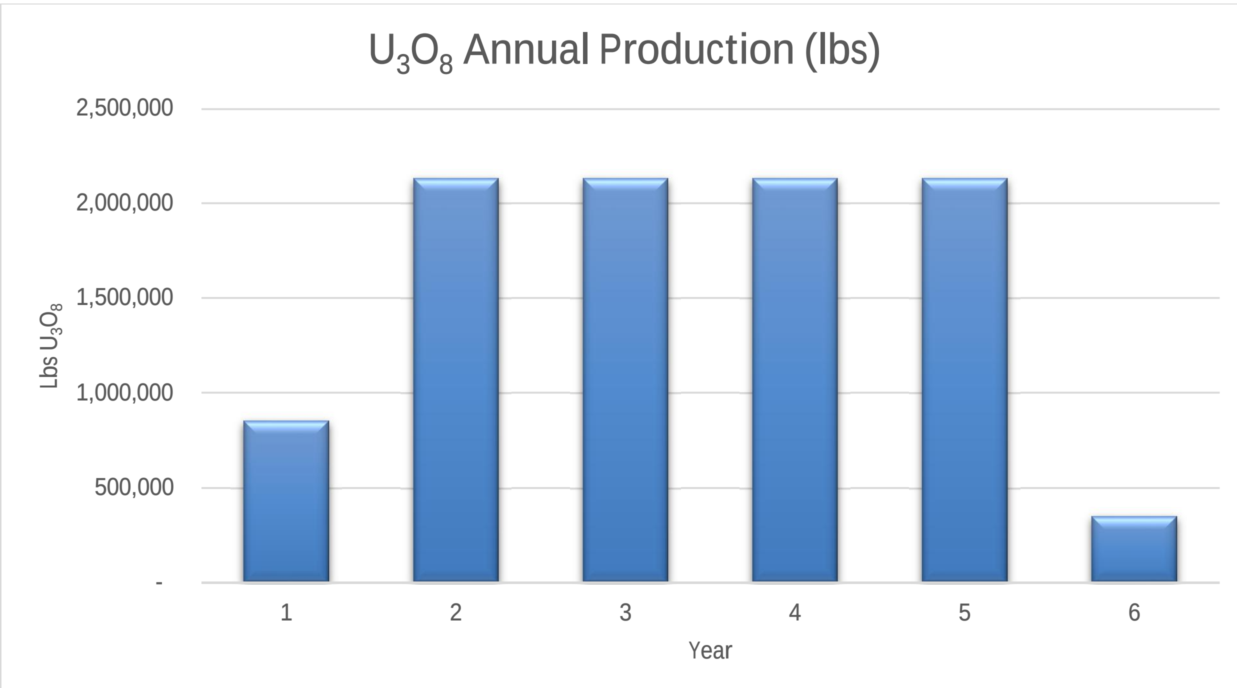


Figure 16-8: Tthe Heldeth Túé East Pod Production by Year (100% basis).

Denison has estimated the mine life based on head grade, estimated resource, flow rates, and closure requirements for the Tthe Heldeth Túé deposit. Production will occur across the Tthe Heldeth Túé deposit over a period of approximately 6 years. Restoration and reclamation will be implemented following production and will continue approximately 3 years beyond the production period. The overall mine life of the Tthe Heldeth Túé deposit is approximately 10 to 12 years from initiation of construction activities to completion of restoration and decommissioning/reclamation.

16.7.2 Mine Development Sequence

The Tthe Heldeth Túé project is broken down into several key phases. The first is the pre-construction phase, followed by construction and operations. Key generalized milestones are noted below:

- Installation of clean and special waste pads
- Site preparation of wellfield and freeze pads
- Drilling of freeze holes
- Drilling of wellfield (injection, recovery, temperature and monitoring wells)
- Installation of freeze plant
- Ground freezing
- Installation of injection and recovery piping
- Installation of downhole well pumps

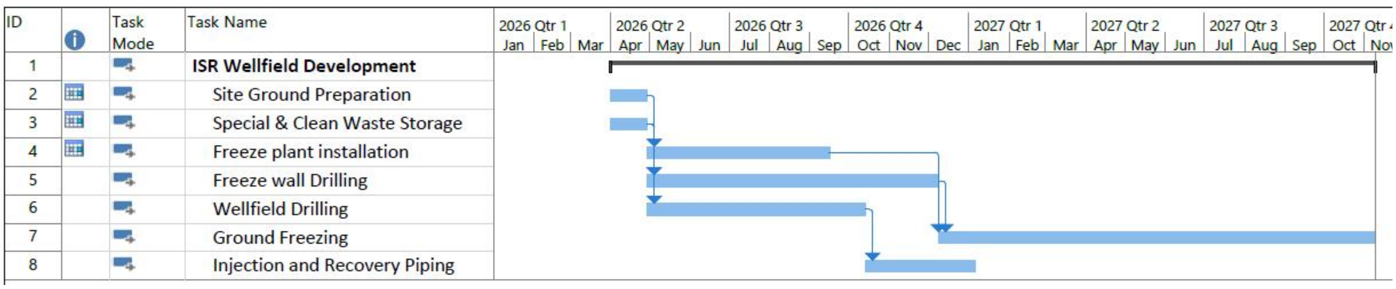


Figure 16-9: Tthe Heldeth Túé ISR Development Milestone Schedule.

16.7.2.1 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 a future feasibility study should results continue to support advancement of the project.

16.7.2.2 Construction Phase

Following receipt of environmental approvals and permits, construction activities on site will commence. Construction of the Tthe Heldeth Túé infrastructure has several key areas which make up the bulk of the capital costs as noted below:

- Site Preparation:
    - Clearing and leveling of the wellfield will be contracted out to a suitable contractor. Lidar surveys of the area for estimation and contracting at unit rates will minimize the risk of capital cost overruns. Rip Rap will also be placed around the wellfield peninsula for ground stability, support and erosion protection. Clean and special waste pads will also be constructed to facilitate the storage of wellfield and freeze hole drill core and cuttings.

- Freeze Hole Drilling:
    - The first step in the development of the Tthe Heldeth Túé East pod deposit will be the drilling and installation of the freeze cap piping system that surrounds the deposit. Concurrent to drilling operations, the freeze plant will be constructed. The freeze plant and piping system will need to be in operation for approximately 12 months to develop a sufficient frozen barrier between the Tthe Heldeth Túé deposit and the surrounding sandstone. Typical time frames for establishing ground freezing can vary from 6 to 18 months depending on ground conditions and other operational factors.
- Well Field Drilling:
    - Wells will be established concurrent with freeze wall development. Wells will be brought online on an annual basis as required as to maintain production guidance. The physical size and nature of the Tthe Heldeth Túé deposit allows all infrastructure to be installed early in the project.
    - As patterns across the Tthe Heldeth Túé deposit reach their economic limit, the production flow in that pattern will be terminated and other patterns will be brought into operation. It is also possible that flow will be adjusted throughout the deposit to meet production targets, and some areas of the deposit may need to have flow shut in temporarily to allow a longer period of time for reactions between the uranium and the mining solutions to occur.

16.7.2.3 Operations Phase

The capital construction period will end with the first production of yellowcake. Operations for the ISR deposit are planned to last 6 years. Denison anticipates operating the site with a total of 16 site Denison employees, with limited numbers of external contractors.

16.7.3 Underground Mine Infrastructure

An ISR mining option was selected for developing Tthe Heldeth Túé and there will be no underground mine workings required. The only underground mine infrastructure will be the freeze wall and the ISR wells described in the previous sections, which will all be from surface.

16.7.4 Definition Drilling

The level of definition of drilling at Tthe Heldeth Túé is considered sufficient. As the entire resource is estimated at the Indicated level, no further exploration drilling is recommended. It is anticipated that all freeze hole and ISR well drilling during construction will involve coring through the zone of interest. This will add even further detail to the understanding of the distribution of mineralization and other geologic characteristics.

16.7.5 Underground Mine Dewatering

Underground mine dewatering will not be required for the Tthe Heldeth Túé deposit. ISR mining entails the recirculation and containment of production fluids within the mineralized zone. Vertical migration of production fluids is limited by the hydrostatic head provided by the overlying water bearing units. Reducing the hydrostatic head of the overlying units by dewatering would actually create an upward hydraulic gradient which would enhance vertical migration into the overlying units. Once the freeze wall around the mining zone is established, groundwater flow inside of the freeze wall can be readily controlled by adjusting operating rates of the existing recovery and injection wells.

17 RECOVERY METHODS

17.1 Mineral Processing – McClean Lake

17.1.1 Tthe Heldeth Túé Processing at McClean Lake Mill

Final mineral processing for Tthe Heldeth Túé UBS production is assumed to occur at the McClean Lake mill. The mill is owned by Orano (77.5%), Denison Mines Inc (22.5%).The mill is currently processing material from the Cigar Lake mine (up to 18M lbs U_3O_8/yr), however, it has approximately 6M lbs U_3O_8/yr in additional licenced processing capacity up to 24 M lbs U_3O_8/yr.

Toll milling agreement terms have not been assessed as part of this study. UBS from the Tthe Heldeth Túé deposit at a production rate 2.1 M lbs of U_3O_8/yr will make up a small portion of the entire McClean Lake mill feed (estimated in the range of 10 to 15%). Final drummed "yellowcake" will be a blend of the entire feed stream through McClean. The Tthe Heldeth Túé is a relatively clean ore feed source in comparison to either Cigar Lake or the Midwest deposits both of which have contaminates of concern, that could result in penalties at the refinery. The scope of this study has not considered what other ores will be co-milled with the Tthe Heldeth Túé UBS, and therefore the final product make-up cannot be determined.

17.1.2 Transportation

Delivery of the UBS mill feed to the McClean Lake mill will require construction of a road. A conceptual option study has been conducted and is discussed in the Infrastructure section of this study. Consideration of other nearby deposits, if mined with the ISR method, would greatly benefit from a road to the McClean Lake mill.

17.1.3 Mill History & Flowsheet

The McClean Lake mill was designed as a typical acid leach uranium mill. During the design of the mill, allowances were made for potential future mill expansion and for the ability to process high-grade uranium ores, as it was thought that higher grade feed, and feed from other off-site sources, may be processed during its life.

The mill was constructed between 1995-1999 and commissioned in June 1999. The mill commenced production at a rate of 6 M lbs of U_3O_8/yr, processing grades of up to 4% U (Remple, 2000) (Schwartz, 2000).

In 2005, regulatory approval was received to modify the mill to receive Cigar Lake ore, including the construction of an ore receiving facility. The mill entered a period of care and maintenance in 2010 when on-site mining was complete and Cigar Lake feeds were not yet available.

A significant mill upgrade project was initially considered in 2009, and implemented in 2012-2014, considering a production rate of up to 22.3 M lbs U_3O_8/yr. The mill restarted in October 2014 (AREVA (Orano), 2013).

The mill operating licence has been updated and expanded multiple times during the mill's life, and most recently was approved to process 24,000,000 lbs U_3O_8/yr, with a 10-year licence renewal to June 30, 2027 (CNSC, 2017). In 2016, the McClean Lake mill produced 17 M lbs U_3O_8, and in 2017, 2018 & 2019, it produced over 18 M lbs U_3O_8.

The mill economic operating range was assumed to be 12 to 24 M lbs of U_3O_8/yr. The processing cost for Tthe Heldeth Túé could be significantly higher or lower as compared to the current cost of processing Cigar Lake ore; it will depend on the status of other ore sources at the time of Tthe Heldeth Túé production.

A process overview of the McClean Lake mill is provided in Figure 17-1.

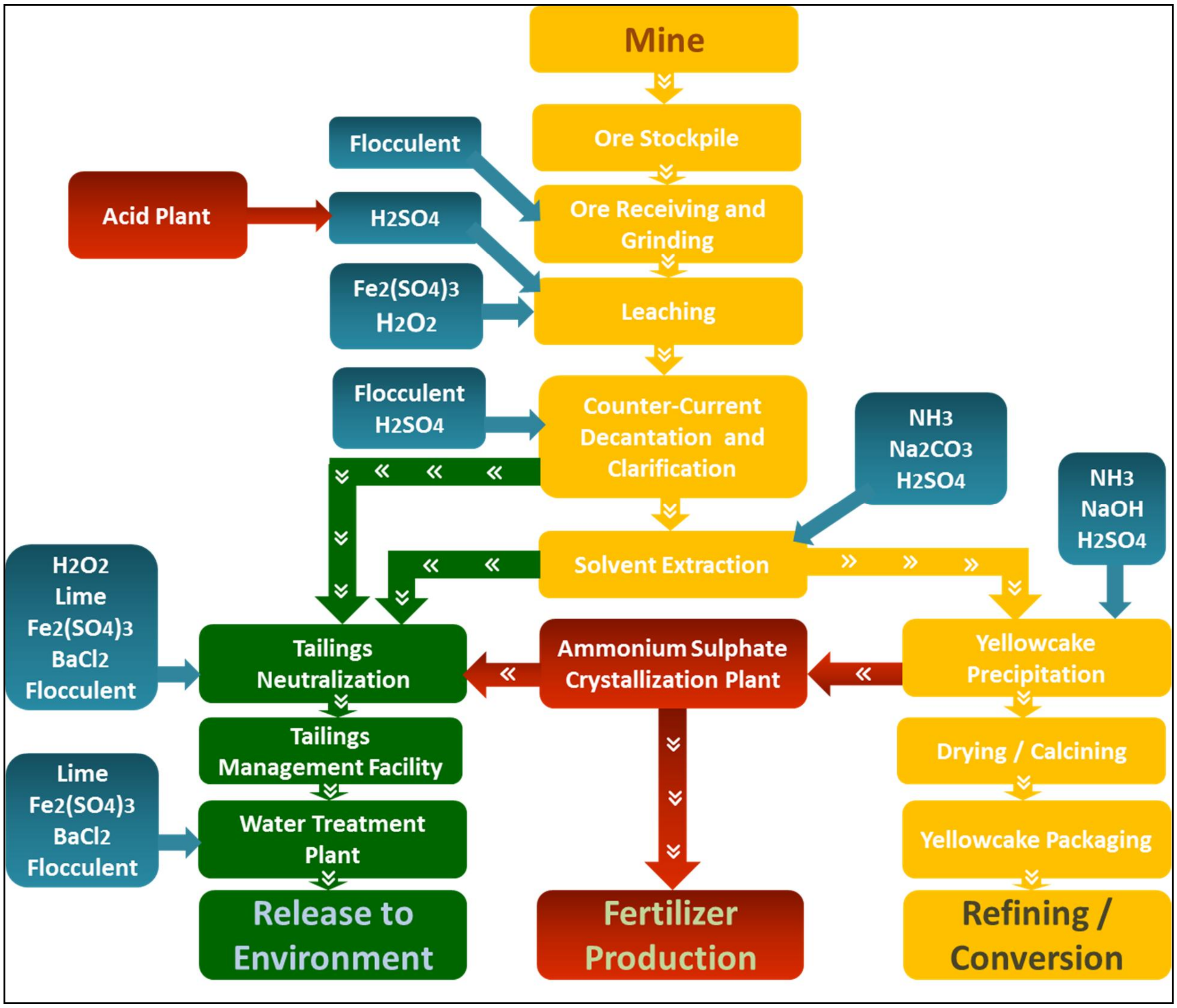


Figure 17-1: Mill Process Overview (courtesy of Orano McClean Lake).

17.1.4 Mill Current Configuration and General Process Description

The design basis for Tthe Heldeth Túé processing is the co-milling of both Tthe Heldeth Túé UBS and other ore sources. Current production rates of over 18 M lbs/yr have been achieved using Cigar Lake ore through the mill. Processing cost per pound of uranium will assume a production rate at McClean of 18 M lbs/yr; 2 M lbs/yr of this total will be supplied by Tthe Heldeth Túé. Processing cost used in this study will be reflective of current milling rates and output at McClean.

The mill is currently configured to be fed from either the ore stockpile and grinding circuit or from the ore slurry receiving facility, which is currently used to receive high-grade material from Cigar Lake. Tthe Heldeth Túé will require production storage large enough for several days of UBS and lixiviant at both the Tthe Heldeth Túé and McClean mill sites to accommodate wellfield production when the McClean mill is down for maintenance, or if the Tthe Heldeth Túé operation is down. Storage can be either in lined ponds or tanks with a retention time of 7 days. Open pond storage will allow the UBS to settle any solids and provide open air for radon dissipation. UBS will then be trucked from the wellfield settling pond to the McClean mill reservoir storage.

Tthe Heldeth Túé UBS held in the McClean storage will be pumped into the mill at one of two points:

1. The low pH UBS could be added directly to the leach circuit, which should reduce acid addition rates for other ore(s) being co-milled (this is the preferred option), or
2. UBS could be piped directly to Counter-Current Decantation (CCD) (prior to the clarification circuit).

The CCD circuit consists of six thickeners in series and is utilized to separate the uranium containing solution from the barren residual solids. Wash water is added to minimize the aqueous uranium in the final solids from the circuit, which are directed to a tailings neutralization circuit.

In order to improve Solvent Extraction (SX) performance, the UBS from CCD is clarified and passed though sand filters to remove any suspended solids from the solution. It is then sent to the two parallel solvent extraction circuits.

In SX, the solution is contacted with an organic solvent, whereby the uranium is selectively transferred to the organic along with any molybdenum. The uranium and molybdenum are then stripped out of the organic phase using anhydrous ammonia into an ammonium sulphate solution, resulting in a purified (with the exception of molybdenum) and concentrated uranium solution.

The pregnant strip solution is passed though molybdenum removal carbon columns, used to remove any molybdenum, which is an impurity in the final uranium product. The further purified solution is then advanced to the yellowcake precipitation circuit, where anhydrous ammonia is used to precipitate ammonium diuranate (ADU). The ADU is then thickened, densified, and washed though a centrifuge, where it is then advanced to a calciner. The calciner produces a high purity U_3O_8 product that is then packaged for off-site shipment and processing.

Ancillary circuits supporting the uranium recovery process include:

- An acid plant used to produce the necessary acid for leaching.
- A ferric sulphate plant used to produce the necessary ferric sulphate for leaching.
- An oxygen plant to support the ferric sulphate plant.
- An ammonium sulphate crystallization plant, which treats the bleed stream from the uranium precipitation circuit and produces a saleable ammonium sulphate fertilizer product.

- A tailings management facility (TMF) to safely store the final residues from the process.
- A water treatment plant to treat waste water from the milling process, and water reclaimed from the TMF prior to discharge to the environment.
- Reagent receipt and storage facilities, including a lime slaking plant, to support the various mill circuits.
- General plant utilities, including process and freshwater systems, cooling water systems, compressed air systems, and steam.

17.1.5 Tailings Neutralization

The flowrate will increase to the tailings neutralization circuit during Tthe Heldeth Túé ore processing. No change to the tailings neutralization tanks is expected.

17.1.6 Clarification

Changes are not expected to the existing CCD clarification circuit. The Tthe Heldeth Túé feed stream will cause a small increase in the aqueous flow rate to the CCD circuit.

17.1.7 Solvent Extraction

Modifications are not expected to be required for the solvent extraction circuits. Maximum sustained capacities to date indicate that continuous operation of the two existing solvent extraction circuits for a combined rate of 24 M lbs/yr U_3O_8 should be possible without any modifications.

17.1.8 McClean Lake TMF

Tailings storage at the McClean Lake facility are provided by the existing tailings management facility. On April 19, 2017, the Canadian Nuclear Safety Commission (CNSC) approved a 1.7M m^3 expansion to the TMF. The expansion, along with the existing capacity in the TMF pit, provides for ~2.4M m^3 of tailings storage.

Based on currently available metallurgical information, the expected precipitates by products generated during the Tthe Heldeth Túé operation phase are Fe/Ra precipitates and Gypsum precipitate.

The volume of Fe/Ra precipitates generated during the Tthe Heldeth Túé operational phase have been assumed to be less than the volume anticipated to be generated during the Phoenix operation phase (15,000m^3 based on metallurgical testing results). The volume of Fe/Ra Precipitates assumed for this PEA study to estimate the TMF storage fees is 10,000m^3.

The other by product precipitate resulting from the processing of the Tthe Heldeth Túé deposit is anticipated to be gypsum. The McClean Lake Mill process equipment and infrastructure is currently able to deposit this gypsum in the TMF. No capital or operating costs are expected to be required to process gypsum precipitates from the Tthe Heldeth Túé deposit.

17.2 Metallurgy and Mineral Processing – Tthe Heldeth Túé Mine Site

The Tthe Heldeth Túé deposit is located near several other uranium deposits that are in close proximity to the Points North Airport. These deposits were reviewed to provide additional mineral processing and metallurgy insights in support of the Tthe Heldeth Túé PEA study. Sources for this review included the Midwest Feasibility Study (“Midwest FS”) and Environmental Assessment (“Midwest EA”) along with the Roughrider Preliminary Economic Assessment (“Roughrider PEA”).

Results from the review indicated that the western portion of the Roughrider deposit has a mineral composition most similar to Tthe Heldeth Túé (given that Tthe Heldeth Túé mineralization is a shallower extension of the Roughrider deposit). Midwest mineral processing studies have shown much higher contaminates of concern, and correlates poorly relative to mineralization found in Tthe Heldeth Túé and Roughrider (see Table 17-1). On this basis, only the test work done to date for Tthe Heldeth Túé and Roughrider will be considered for this PEA study.

It was well understood early on in the evaluation of the Tthe Heldeth Túé deposit, that the size of this deposit could not support a stand alone ISR plus uranium precipitation and calcining plant. This determination came from the capital costs required to build the ISR plant for the Phoenix Deposit valued at 50M CAD. The obvious solution to this is to transport the UBS to the McClean Lake Mill by truck.

Processing Tthe Heldeth Túé at the 22.5% Denison owned McClean Lake mill would require minor mill modifications. Tthe Heldeth Túé UBS, trucked to the mill, would be stored in a tank or pond, providing surge capacity for both the mine and mill. From the UBS storage it would be pumped into the mill leach circuit. The McClean mill may find it advantageous to mix the UBS into their leaching process to take advantage of the low pH, reducing acid addition rates for their other feed streams. Following CCD solution clarification, the solution would be processed as per the current mill flowsheet.

The McClean Lake mill will need to process the Tthe Heldeth Túé UBS with other ores to be economic, as the Tthe Heldeth Túé production rate of 2.1 M lbs U_3O_8 per year is insufficient to run a large mill. Assuming an annual production range at the mill of 12 to 24 M pounds of U_3O_8, the contaminants in the yellowcake will be more reflective of the ores being mined from other sources. Contaminant levels could reach penalty levels at the refinery. The toll milling agreement would need to take this into consideration during any negotiations.

Given that the mill processes at McClean Lake are well understood, discussion of the Tthe Heldeth Túé ISR method for uranium processing will be focused on the well field lixiviant inputs and UBS characteristics that is shipped to the mill.

Table 17-1: Ore Characteristics of Local Deposits.

Element	Tthe Heldeth Túé*	Roughrider West	Midwest
$\%U_3O_8$	1.85	10.86	5.5
%As	0.14	0.17	7.17
%Co	0.01	0.03	0.34
%Mo	0.01	0.05	n/a
%Ni	0.08	0.15	4.35
Se (ppm)	6.8	46	n/a
%Fe	12.7	n/a	n/a

*Tthe Heldeth Túé block model for area within the freeze wall; Fe content n/a; composite leach sample used.

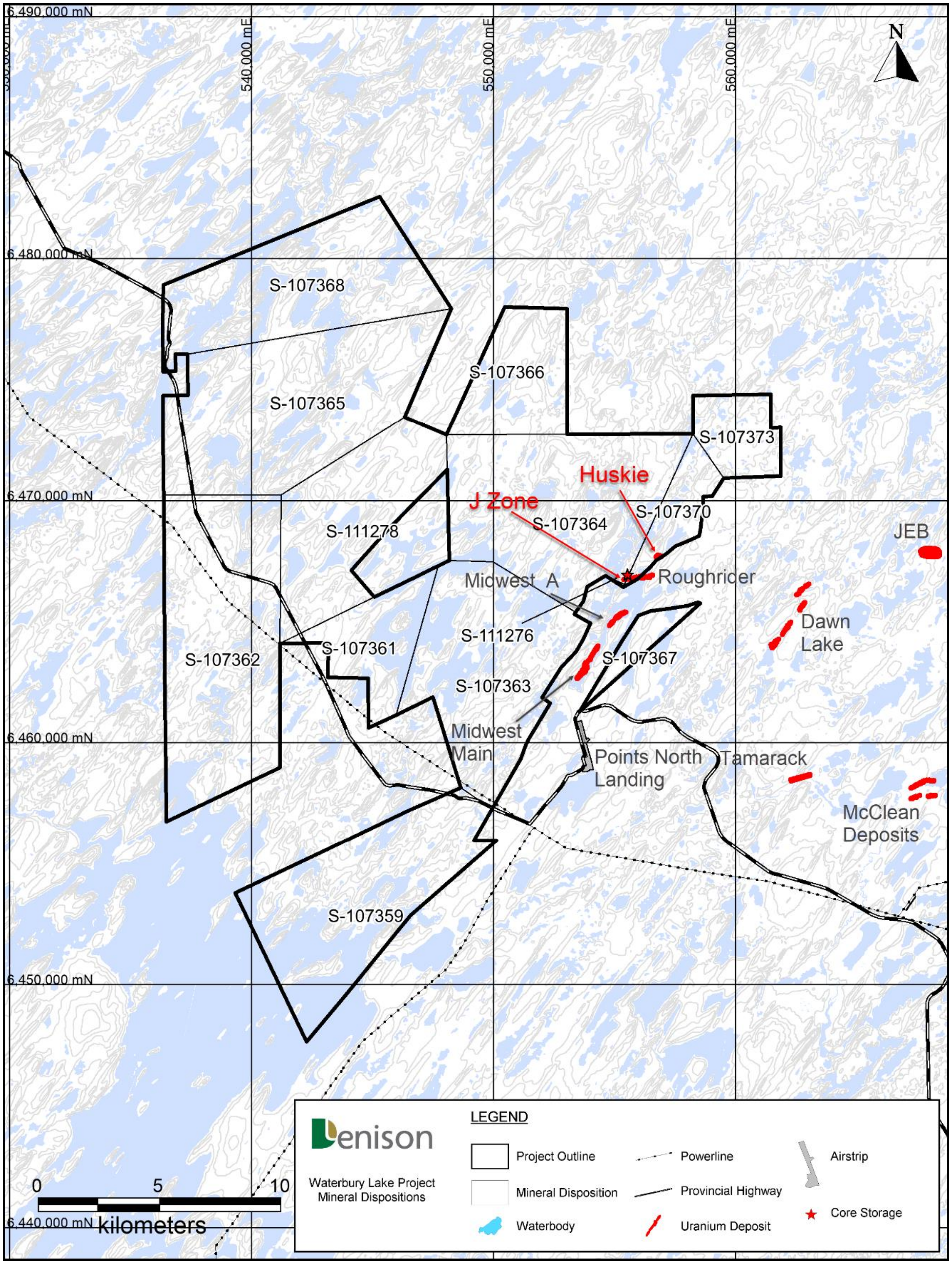


Figure 17-2: Location of Nearby Local Deposits.

17.2.1 Lixiviant Characteristics

In general, test leaching of uranium ores with H_2SO_4 has shown:

- Increasing reagent concentration generally increases leaching rates, but also increases contaminants of concern in the UBS,
- Increasing leach time increases total uranium going into solution,
- Lower leaching temperatures also lowers leaching rate, and
- Increasing host rock surface area with a permeability enhancement technique improves overall recovery.

These are important considerations when contemplating a new mining method for the high-grade Athabasca Basin deposits, generally considered to be “hardrock mining” in a low temperature, and low permeability environment.

The Tthe Heldeth Túé ISR mining method is much different than standard ISR. Above the wellfield collars, processes are very similar to most ISR operations, however, below the collar we see a different process for leaching.

The proposed mining method, using a freeze wall enclosure, will create a large “bathtub” or “leach tank” for the containment of lixiviant. Ground water and ground temperatures of the deposit are 5 to 10 degrees C near the mining area; most leach tests are performed at 20 to 60 degrees C. It may be necessary to heat the lixiviant prior to injection in order to promote acceptable leaching rates. Lixiviant injection temperatures have not been determined but will likely decrease overtime as the latent heat from the lixiviant and exothermic reactions from the sulfuric acid will slowly warm the fluids within the deposit. Should the lixiviant heating option be retained as the project advances, additional modeling will be conducted to better understand any potential interaction of the heated lixiviant with the freeze wall integrity. Lixiviant contact area (‘sweep efficiency’) will be maximized by the use of the MaxPERF tool or other permeability enhancement techniques. Well spacing has been reduced to 7 m, compared to 10 m in the Wheeler River PFS, in order to further enhance permeability of the Tthe Heldeth Túé deposit.

Wellfield connectivity will be within specific well patterns, rather than across the entire wellfield. Hydraulic gradient within each well pattern will be created by pump and injection, with the ability to reverse flows to maximize recovery and provide the required leach time. With this strategy, the UBS head grade of 7 g/L is attainable. Metallurgical testing has confirmed achievement of 7 g/L in the UBS. This is approximately 1/3 of the average UBS head grade that the Phoenix deposit core leach test yielded, and less than half of the Roughrider UBS head grade from the composite metallurgical sample.

Test work on the adjacent Roughrider deposit yielded a UBS head grade (column test) of 14 to 20 g/L of U_3O_8, from a composite sample grading 4.16% U_3O_8 (sample #RR2). Leaching was for a 12-hour period with acid addition rates (H_2SO_4) of 125 kg/tonne (3.0 kg H_2SO_4/kg U_3O_8). Recovery of U_3O_8 was 99% with leaching taking place at 50 degrees C; solution contaminants remained low for all leach tests.

The Roughrider composite sample #RR2, UBS test solution head grade is approximately 2 to 3 times higher than the assumed 7 g/l for Tthe Heldeth Túé UBS. Lower grade and leaching temperature of the Tthe Heldeth Túé will negatively affect UBS head grade, providing the rationale for assuming 7 g/l. A summary of the Roughrider metallurgical test work is shown in Figure 17-3.

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Table 12.11: Summary of Phase II Leach Test Results

Test No.	Composite	% U_3O_8			Final Pregnant Solution			U_3O_8 Extraction (%)
		Direct Head	Calc. Head	Leach Residue	g U_3O_8/L	g Fe^{3+}/L	g Fe^{2+}/L	
AL-1	RR2	3.30	4.12	0.031	17.7	3.60	2.90	99.1
AL-2	RR2	3.30	3.93	0.025	16.5	3.69	3.01	99.4
AL-3	RR2	3.30	3.74	0.047	15.3	1.91	4.69	98.7
AL-4	RR2	3.30	3.26	0.066	14.2	0.79	1.71	98.0
AL-5	RR2	3.30	4.10	0.112	16.5	1.38	4.82	97.3
AL-6	RR2	3.30	3.87	0.027	19.1	2.47	5.06	98.3
AL-7	RR2	3.30	3.92	0.020	18.2	6.94	<0.005	99.2
AL-8	RR2	3.30	4.14	0.018	19.8	7.01	<0.005	98.9
AL-9	RR2	3.30	4.06	0.060	20.0	7.78	0.016	97.5
AL-10	RR2	3.30	4.11	0.040	18.9	4.14	2.06	99.0
VAL-1	PE	0.11	0.11	0.005	0.57	0.43	<0.005	95.8
VAL-2	DM	0.81	0.94	0.021	4.01	1.09	1.31	97.7
VAL-3	PG	0.19	0.13	0.006	0.50	2.50	9.50	95.6
VAL-4	WRM	16.5	15.4	0.024	89.6	1.13	2.27	99.8
LP-1	RR2	3.30	3.78	0.029	16.5	2.98	3.52	99.2
LP-2	PE	0.11	0.13	0.006	0.63	0.19	0.12	95.6
LP-3	DM	0.81	1.12	0.020	5.31	1.51	1.69	98.2
LP-4	PG	0.19	0.16	0.006	0.65	9.64	7.36	96.4
LP-5	WRM	16.5	23.3	0.130	71.9	1.32	1.58	99.4
Bulk Leach	Remaining Feed	4.16	4.10	0.029	20.0	2.99	4.71	99.3

Of the ten leach atmospheric pressure leach tests conducted on Composite RR2, the highest uranium extraction obtained was 99.4% and the average was 98.5%. Of the tests on the variability composites the highest extraction was 99.8% for the atmospheric leach of the high grade Composite WRM (99.4% for the low pressure leach). The lowest extraction was 95.6% for the atmospheric leach of the lower grade Composite PG. Broadly, the feed grades and extractions for the variability composites were correlated, but not linear.

The bulk leach test, completed on 35 kg of material assaying 4.16% U_3O_8, yielded a 99.3% extraction for a 12 hour leach using 19 g H_2SO_4/L free acid and an ORP of 500 mV with 3.9 kg $NaClO_3$/t sodium chlorate addition.

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Figure 17-3: Summary of Roughrider Metallurgical Test Work.

Although further test work for reagent addition rates is required, enough work has been done to provide a range for cost estimating the PEA study reagent cost. Tthe Heldeth Túé metallurgical tests on five composite samples provided insights as to the relationship of acid strength, leach time and ore grade as illustrated in Table 17-2.

Table 17-2: Tthe Heldeth Túé Composite Leach Tests.

Sample U_3O_8 Assay	kg H_2SO_4/kg U_3O_8	Leach Time	U_3O_8 Recovery
1) 0.71%	6.69	8 hours	98.5%
2) 1.33%	5.43	6 hours	98.5%
3) 3.23%	2.51	8 hours	98.4%
4) 1.34%	6.22	6 hours	98.5%
5) 1.14%	8.09	4 hours	97.6%

The leaching tests were performed at atmospheric pressure (1 atm), 55 to 65 degrees C, and with the oxidation-reduction potential (ORP) over 450 mV. The test results showed that 97.6 to 98.5% U_3O_8 can be extracted depending on the acid addition, within 4 to 8 hours of leaching time.

Samples 3 and 4 are most representative of the area to be mined within the initial mining freeze ring for Tthe Heldeth Túé, which suggest H_2SO_4 addition rates of between 2.5 and 6.2 kg/kg U_3O_8. Although it is anticipated that the lixiviant will be heated prior to injection, but because the deposit is much cooler than the injected lixiviant, lixiviant leaching temperatures will decrease as the solution flows away from the injection point. For cost estimating purposes, assume acid consumption of 6.2 kg H_2SO_4 per kg of U_3O_8 extracted. Assuming recovery of approximately 10 M lbs U_3O_8, a total of 27,000 tonnes of H_2SO_4 will be injected into the deposit.

17.2.2 UBS Characteristics

Although there are differences from past test work on Fe content, we have assumed the Fe/Ra precipitates volume to be similar to the Wheeler River PFS. The surface “surge pond” for UBS will be designed for several days of storage. Having storage capacities for UBS will smooth the head grade entering the McClean Lake Mill and allow continued wellfield production during mill maintenance shutdowns and other types of mill downtime.

18 PROJECT INFRASTRUCTURE

18.1 Summary

The Tthe Heldeth Túé surface infrastructure is modelled after the Wheeler River Project infrastructure. Portions of the Wheeler River PFS report were utilized and updated as needed to meet the Tthe Heldeth Túé Project requirement.

Figure 18-1 is an overall plan view of the Tthe Heldeth Túé Project, showing the key infrastructure required for the Tthe Heldeth Túé site operations. It shows the planned 13 km route for the electrical transmission line, the 1.5 km road addition required to access the site, the road upgrades from highway 905 to allow for UBS and lixiviant trucking between Tthe Heldeth Túé and the McClean Lake mill site (45 kilometre one way). A trade-off study was conducted during the preparation of this study examining the relative merits of trucking UBS and lixiviant versus a dedicated pair of pipelines. The economic results of such were relatively close in terms of overall value, and for the purposes of this study the trucking option was selected. Community consultations during future phases of the study will allow for revisiting this decision in the future.

An additional trade-off study considered a comparison of generated on site power versus establishment of line power and showed a strong preference for line power.

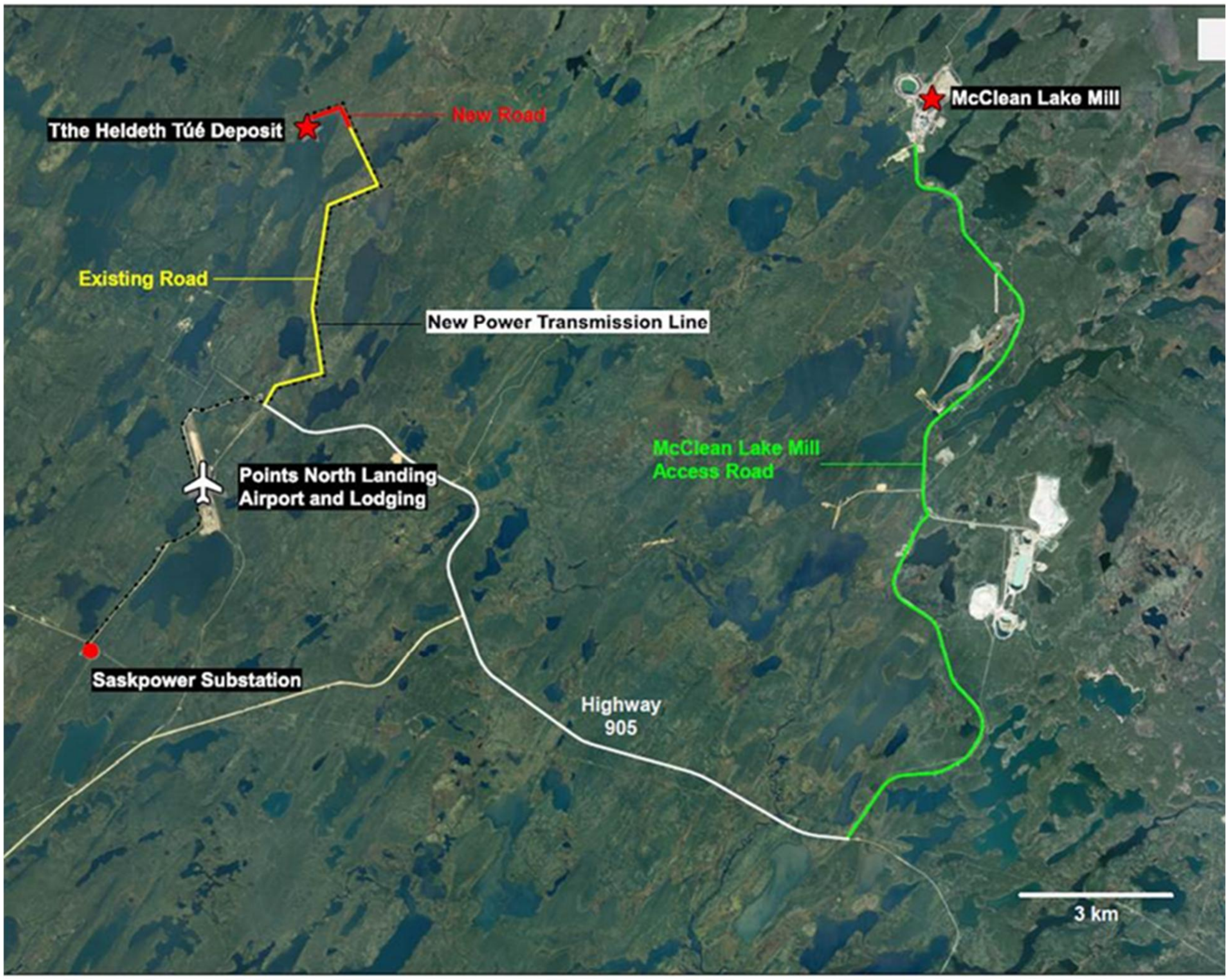

Figure 18-1: Tthe Heldeth Túé Project Site Showing McClean Lake and Key Infrastructure.

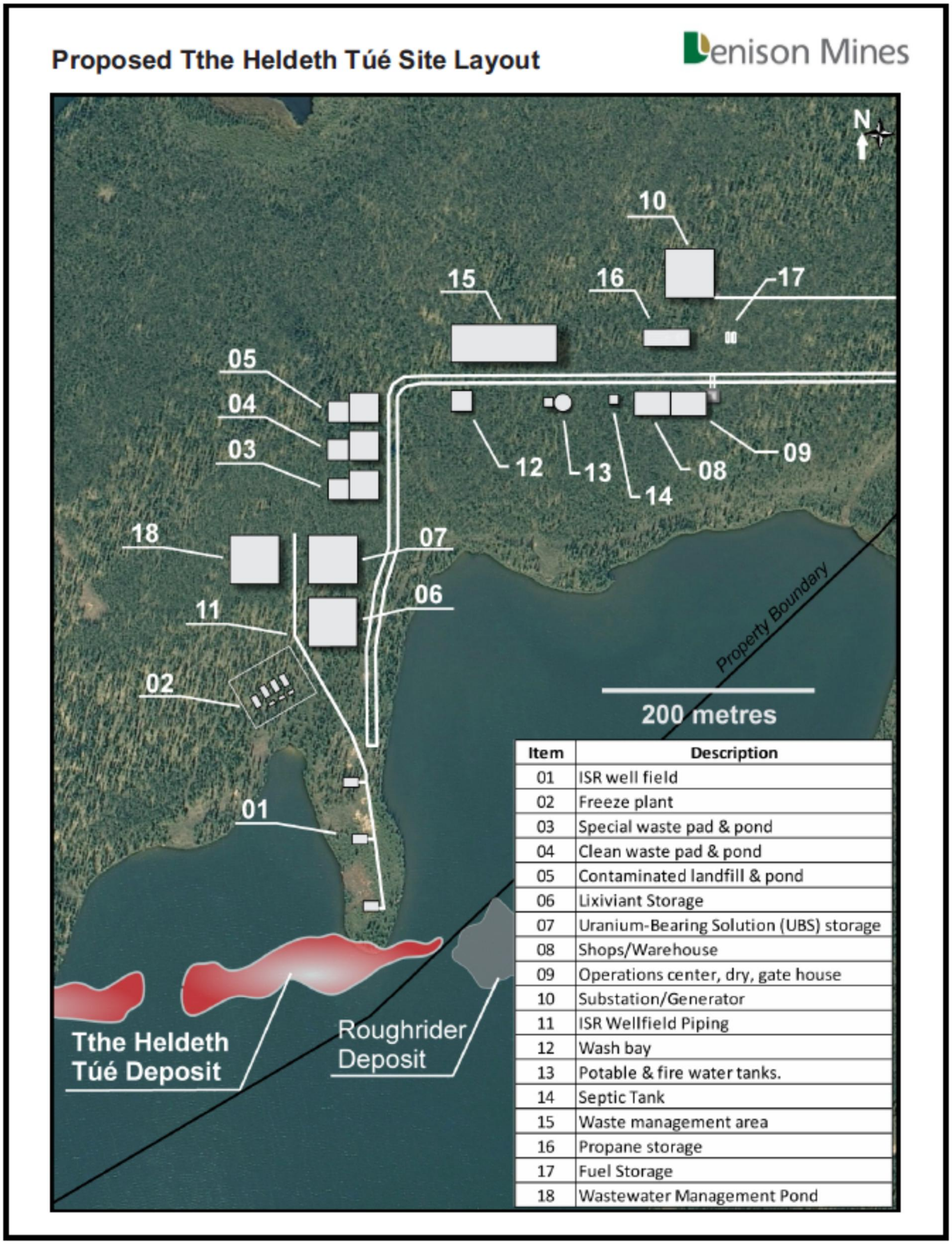

Figure 18-2: Tthe Heldeth Túé Project Site Layout.

18.2 Access Road and Site Preparation

Main land access to the site is from Saskatchewan Highway 905, via a road developed by Rio Tinto for their Roughrider exploration requirements. A road extension of 1.5 km will be required to access the ISR well field (Figure 18-2).

The access road to the ISR well field is also expected to be the main artery of the site infrastructure with all buildings, ponds and other infrastructure required built on either side of this road. Trucks will also utilize this road for transportation of UBS and lixiviant and its profile has been upgraded accordingly in the cost estimates.

A containment berm is expected to be required around the ISR well field to protect the environment from potential spills as well as protect the well field from potential lake water level rise. To accommodate the freeze well collars and the supply and return lines required, additional site preparation on the peninsula has been included. This will allow this infrastructure to be buried leaving ample space on surface for ISR well heads, hosing and header houses as well as room for mobile equipment to move these hoses from wellhead to wellhead as required.

18.3 Camp

Due to the short-expected duration of mining activities for Tthe Heldeth Túé (~ 6 years) and the site’s proximity to existing lodging facilities, no camp is envisioned to be required at Tthe Heldeth Túé.

Points North Landing, located approximately 10 km from site, has a lodging capacity of 90. Should more or cheaper accommodations be required, the camp facilities located at McClean Lake could be utilized.

18.4 Operations Center

The operations center has been envisioned to hold a maximum of 25 persons. It is anticipated that skidded modularized trailers will meet the needs of the site. The modularized units will include an office space, a dry, washrooms and a nurse station. It is expected that these will be brought in fit for purpose and will include all relevant septic and power connections.

Minimal maintenance activities are expected to take place at the site with all major repairs completed in surrounding area facilities (Points North & McClean Lake).

18.5 Fuel Storage and Dispensing

A diesel and gasoline split compartment tank will be installed at the Tthe Heldeth Túé site. This fuel storage will be used to facilitate fueling both owner and contractor equipment. Total tank volume will be 25,000 L and will feature double walled construction for fuel containment. The fuel tank will be equipped with overfill prevention valves, bottom loading nozzles, and vents. The fuel tank assemblies come equipped with full-length platform access and are mounted on I-beam skids for transport to site.

Fuel is also available from Points North or McClean Lake.

18.6 Propane Storage and Dispensing

A propane storage and distribution system will be rented for the Tthe Heldeth Túé site. The propane infrastructure will feature storage tanks, vaporizers, and a propane bottle fill station. The system capacity will be sufficient to supply eight days of on-site storage and maximum consumption. Propane is anticipated to be delivered to site on a weekly basis.

18.7 Electrical Power

Power to the site is envisioned to come from the existing SaskPower substation southwest of Points North Landing. The power transmission line to the site would be approximately 13 km long and is envisioned to be at 25kV. Estimated by SaskPower, the cost to install an electrical line at $0.4M CAD per km has been included in the project estimate.

18.8 Back-up Electrical Power

Similar to the Phoenix site, back up power will be available through standalone generators. One generator will be dedicated to the freeze plant and another one dedicated for imperative services (emergency lights, fire suppression system, pumping system to McClean Lake).

18.9 Freezing Plant Surface Infrastructure

For the purpose of this study, the freeze plants envisioned at Tthe Heldeth Túé were scaled based on the design work completed for the Phoenix project. The Tthe Heldeth Túé freeze plant is expected to require a total capacity of 900 tonnes of refrigeration for 241 m^3 of brine. It will be constructed on surface based on a modular design for easy installation and operation. The design includes:

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

The freeze plant system being proposed for this project is “modular”, which means that a shutdown in any one unit will not result in complete plant downtime. Having one unit offline during early freezing will mean the brine temperature supplied to the ground will warm slightly and the freeze duration extended, but breakdowns in new equipment near to their commissioning are not typical. If breakdown or maintenance takes a freeze module offline once the freeze is established, that is not such a concern since, over time, the ground heat load tends to decay and eventually a module will be intentionally taken offline to serve as back-up.

18.10 Water Supply

The Tthe Heldeth Túé site freshwater distribution system is designed to provide fresh water to the fire water system, the ISR wellfield and the wash bay. The water is expected to be supplied by underground wells or the nearby lake.

Potable water consumption requirement is expected to be met through bulk potable water delivery to the infrastructure buildings potable water tanks, with 5-gallon water dispensing stations in buildings.

18.11 Water Management

Wastewater management at the Tthe Heldeth Túé site will be handled as two separate wastewater streams. Specifically, there will be domestic wastewater production and operating wastewater production. Domestic wastewater will be discharged into a septic tank and removed from site for offsite processing by vacuum trucks.

Operational wastewater will be captured through the use of a 5,000 m^3 water management pond. It will be sized and constructed to capture rainfall during a 1 in 100-year event, as well as all expected operational wastewater. The site will be graded to capture any potentially contaminated water to this pond, and it will ultimately be transported to McClean Lake for disposal.

18.12 Waste Management

A contaminated landfill will be required on the Tthe Heldeth Túé site unless radioactive waste can be transported to McClean Lake mill’s contaminated landfill.

All other waste generated by operational activities at Tthe Heldeth Túé is expected to be temporarily stored onsite and managed through a third-party waste management firm for offsite disposal. The waste management area is shown on the site layout.

18.13 ISR Wellfield Waste Rock Management

The waste rock generated from the ISR drilling requirements will be managed with two waste pads: one special waste pad where mineralized cuttings will be stored in barrels and shipped for milling at McClean Lake and one clean waste pad that will remain onsite through to decommissioning.

18.14 UBS Handling Infrastructure

Two 1000 m^3 retention ponds are anticipated to be required to facilitate production rate fluctuations of the ISR wellfield. Each pond is expected, at normal production rates, to allow for almost three days retention time of required lixiviant solution and UBS. The ponds are assumed to be double lined for environmental protection.

19 URANIUM MARKET AND CONTRACTING

19.1 The Uranium Industry

2020 has been an eventful year for the uranium market. Almost nine years to the day since the March 2011 Fukushima Daichii nuclear incident occurred, the market began experiencing a significant price recovery attributable, in part, to unexpected uranium supply disruptions resulting from the COVID-19 pandemic. The uranium supply/demand picture had already begun to change over the past couple of years, with demand now outstripping supply from primary production and the shortfall being made up by inventories and other secondary supplies. As this dynamic has played out, a recovery in price has been seen as inevitable. However, the market continued to struggle to recover in recent years, even following the shutdown and curtailment of many supply sources across the industry, including the world's largest, highest grade uranium mine, Cameco Corporation's ("Cameco") McArthur River Mine in northern Saskatchewan, Canada, which was indefinitely shut in July 2018.

COVID-19's effect on uranium supply has been dramatic, with additional production cuts being announced by several of the world's largest uranium producers. In March 2020, Cameco announced the closure of the lone remaining uranium mine operating in Canada, Cigar Lake. The McClean Lake Mill, as the sole processor of Cigar Lake ore, followed suit with its own temporary shut-down. In April 2020, the world's largest producer of uranium, National Atomic Company Kazatomprom ("Kazatomprom"), announced that it would reduce operational activities across all of its uranium mines for an expected period of three months. Kazatomprom has indicated that production is expected to decrease by up to 4,000 tU (10.4 million lbs) over this period. These supply shocks resulted in the uranium price quickly rising almost 40%, from a low of US$24.10 in mid-March 2020, to more than US$34.00 by May 2020.

Since then, however, the price has weakened slightly. On July 29th Cameco announced that it would reopen its Cigar Lake mine in September. This surprised many market participants and moving into August, the uranium price slowly fell from above US$32 at the beginning of the month, to just below US$31.00 by the end. The spot price for delivery at Cameco has now dipped slightly below USD$30.00. Spot market demand through the period has been robust, though, with 79.4 million lbs of U_3O_8 having been transacted so far this year.

Subsequent to Cameco's Cigar Lake restart announcement in July, though, Kazatomprom announced on August 19th that it had decided to maintain its 20% reduction through 2022. In addition, Kazatomprom also confirmed in its August 27th investor call that it had bought uranium in the spot market and could continue to do so through the rest of the year. This helped to stabilize general market sentiment. Regardless of the overall supply impact of COVID-19, what is clear is that the unexpected reduction in production through the period resulted in large volumes of inventories and other secondary supplies being depleted faster and sooner than expected. This, coupled with the fact that nuclear power plants around the globe have remained online and using uranium through this difficult period, is expected to help move the market towards a long-term sustainable price increase sooner than it otherwise would have, prior to COVID-19.

Also, in recent years, several trade issues in the United States ("US") have impacted the nuclear fuel market. Recently, though, these long-standing issues have gained some clarity which is positive for the uranium market. In 2018 a petition was filed with the US Department of Commerce ("DOC") to investigate the import of uranium into the US under Section 232 of the 1962 Trade Expansion Act. In July 2019 the U.S. President ultimately concluded that uranium imports do not threaten national security and no trade actions were implemented. In conjunction with this, though, a further review was ordered of the nuclear supply chain in the U.S., and the Nuclear Fuels Working Group ("NFWG") was established. The NFWG reported its findings on April 23, 2020, which among other recommendations included a plan to budget US$150 million per year, in each of the next 10 years, for uranium purchases from U.S. producers to stock the nation's strategic reserve. This plan has not yet been approved by the US government.

Most recently, it has been the review of the Russian Suspension Agreement ("RSA") which was due to expire at the end of 2020 that has been closely watched by the industry. On September 11, 2020, a draft amendment was announced, and subsequently finalized on October 5, 2020. The new arrangement extends the RSA until 2040, reducing US reliance on Russian uranium products over the next 20 years. The arrangement negotiated between the US DOC and Russian government reduces Russian exports of the enrichment component from the current level of approximately 20% of US enrichment demand to an average of 17% over the 20-year period, and limits Russian uranium concentrates and conversion components contained in the enriched uranium product to an average equivalent of approximately 7% of US enrichment demand. The agreement's conclusion brings added clarity and stability to the nuclear fuel market.

With a significant shortfall having developed between annual nuclear utility requirements and primary production, inventories and other secondary sources of supply are being drawn down to meet utility needs. This process of inventory drawdowns suggests that we are nearing an inflection point - where end-users of uranium begin to question where long-term uranium supplies will come from and how secure that supply will be over the long lives of their nuclear reactors. There is a growing sense that market participants are beginning to look beyond near-term market conditions in an attempt to understand what the supply environment will look like in the mid-2020s and beyond. With a renewed focus on nuclear energy as a critical element in battling climate change, it is expected that global utilities will be looking to source future supply from operations that are not only low-cost, reliable, and situated in stable jurisdictions (the typical criteria for a good supplier), but also those which are flexible and environmentally responsible.

In addition, these positive market signals indicating that supply and demand fundamentals continue to improve were underscored in the biannual Nuclear Fuel Report released by the World Nuclear Association ("WNA") at the end of 2019. The report is an industry-wide reference that evaluates nuclear fuel demand and supply scenarios. This most recent report evaluated the period 2019 to 2040, using a reference, low and high case. For the first time in several years, the WNA's outlook for global uranium demand was positive in each of these cases, which represents a very good outlook for the market. This has been supported by news on the demand side. Including increasing recognition of the critical role nuclear has to play in combatting climate change.

19.2 Uranium Demand

Overall, uranium demand has grown in recent years as new reactors have been started around the world and now exceeds the annual levels that existed prior to Japan shutting all of its nuclear units following the 2011 Fukushima Daichii nuclear incident. This is despite only 9 of 54 reactors restarting in that country to date.

As of October 2020, there are 442 nuclear reactors operating in 30 countries and generating 393 GWe, according to the World Nuclear Association – supplying over 10% of the world's electrical requirements. Nuclear is the world's second largest source of low-carbon power, at 29% in 2018. Today, there are almost 50 nuclear reactors being constructed in 15 countries. with the principal drivers of this expansion being China (10 reactors under construction), India (7), South Korea (4), Russia (3), and United Arab Emirates (3). By 2035, UxC forecasts under its base case that operating reactors will increase to 462, generating around 451 GWe. Through this period, annual uranium demand will grow from 182 million pound in 2020 to around 211 million pounds by 2035. Through this period, uncovered utility uranium requirements, not including typical inventory building, are almost 1.5 billion pounds U_3O_8.

19.3 Primary Uranium Supply

Early in 2020, the outlook for world uranium production was expected to be approximately 142 million pounds U_3O_8. This changed materially with the curtailment of additional production as a result of COVID-19. Production for 2020 is now estimated to be 122 million pounds which has created an even greater shortfall to 2020 global annual demand of 182 million pounds.

Though rebounding a little from 2020, UxC estimates that primary production in 2021 will remain low at 135 million pounds as ERA's Ranger project and Orano's COMINAK project are shut down. With annual demand expected to be 179 million pounds in 2021, the 2021 differential between primary production and annual demand will remain high, at 44 million pounds.

UxC estimates in its Q3 2020 Outlook that existing mine production, plus new planned and potential mine production under its base case, will reach a peak of 153 million pounds U_3O_8 by 2027, before declining back down to 98 million pounds U_3O_8 by 2035. At its projected height in 2027, production levels are anticipated to include the resumption of mining at McArthur River, with UxC anticipating the mine will ramp up from 4 million pounds U_3O_8 in 2026 to 18 million pounds U_3O_8 by 2027. While Kazakhstan is seen to maintain relatively consistent supply in future years, it does start to drop off significantly around 2034. In order for other projects to move forward and increase production forecasts, UxC believes uranium prices will need to increase appreciably to support higher cost production profiles and the significant capital expenditures that will be required.

19.4 Secondary Uranium Supply

In UxC's Q3 2020 Outlook, primary mine production in 2020 is estimated to supply approximately 67% of the year's estimated base case demand, with the balance of demand expected to be supplied from secondary sources. These sources include commercial inventories, reprocessing of spent fuel, sales by uranium enrichers and inventories held by governments, such as the U.S. Department of Energy, and the Russian government.

Secondary supplies remain a complex aspect of the uranium market. The Q3 2020 Outlook forecasts that 64 million pounds U_3O_8 will enter the market from secondary supplies in 2020, leaving a surplus of 4 million pounds U_3O_8 if the base case demand scenario of 182 million pounds for 2020 is met.

Commercial inventories, which are majority held by utilities, but also by suppliers, trading companies and investment funds, were one of the major sources of secondary supplies during the period from the early 1970's to the early 2000's. And though much of this excess was consumed during that period, a significant contributor to new commercial inventories in recent years have come from the planned shutdown of nuclear programs in countries like Germany, and the continued struggles of the Japanese nuclear program to restart following Fukushima. Government inventories also continue to contribute substantially to the secondary supply picture, particularly in the US and Russia. The disposition of these commercial and government inventories may have a market impact in the near to medium term, although, UxC expects their role will diminish over time as these inventories continue to be depleted and the uranium and enrichment markets rebalance themselves.

In general, UxC expects that secondary sources of supply will fall significantly from the estimated level of 64 million pounds U_3O_8 in 2020 to roughly 16 million pounds U_3O_8 per year by 2035.

19.5 Uranium Prices

Nuclear utilities typically purchase most of their uranium through long-term contracts, often supplemented by smaller spot purchases within a year. These long-term contracts usually commit to uranium supply which can begin two to four years after they are signed and can provide for deliveries for a period of three or four years, up to as many as ten years or more. In awarding term contracts, nuclear utilities may consider many factors about the supplier. In addition to the commercial terms offered, they typically consider the producer's uranium reserves, record of performance, geopolitical situation of the production location, and the supply's production cost profile.

Prices can be established by a number of methods, typically tied to either base or fixed prices, or by referencing market related indicators. Base prices are established at the time of contracting and are usually adjusted by inflation indices. When a delivery is tied to market-related prices (generally spot price indicators, but also long-term reference prices), this typically means the delivery will be priced at the value of that market related indicator at the time of delivery. Contracts may also contain annual volume flexibility, floor prices, ceiling prices, discounts to the market price and other negotiated provisions. Under these contracts, the actual price mechanisms are usually kept confidential.

19.6 Competition

The uranium industry is small compared to other commodity industries, and in particular other energy commodity industries. Uranium demand is international in scope, but supply is characterized by a relatively small number of companies operating in only a few countries. Production, in general, is also concentrated amongst a small number of producers and is geographically concentrated with approximately 62% of the world's production in 2020 coming from only three countries: Kazakhstan, Canada, and Australia.

Competition is different amongst exploration and development companies focused on the discovery or development of a uranium deposit. Exploration for uranium is being carried out on various continents, but expenditures by public companies have generally concentrated on Canada, Africa, and Australia in recent years. In Canada, exploration has focused on the Athabasca Basin region in northern Saskatchewan. Explorers have been drawn to the Athabasca Basin region by the high-grade uranium deposits that have produced some of the world's most successful uranium mines. Within the Athabasca Basin region, exploration is generally divided between activity that is occurring in the eastern portion of the Basin and the western portion of the Basin. The eastern Basin is a district that is defined by rich infrastructure associated with the existence of several past and present operating uranium mines and uranium processing facilities. Infrastructure includes access to the provincial power grid and a network of all-weather provincial highways. By comparison, in the western Basin, there are no operating uranium mines or processing facilities and access to the provincial power grid is not currently available. Several uranium discoveries have been made in the Athabasca Basin region in recent years, and competition for capital is intense.

19.7 Contracting

Denison has historically sold its uranium under a combination of long-term contracts and spot market sales. The long-term contracts had a variety of pricing mechanisms, including fixed prices, base prices adjusted by inflation indices, and/or spot price or long-term contract reference prices.

Denison currently has no long-term sales contracts in place. In general, contracting is typically negotiated on a business-to-business basis between the end-user (nuclear electricity generating utilities) and suppliers (primary producers, trading companies, etc.).

Decisions related to future contracting associated with this project will be made in due course, subject to extensive strategic planning and analysis related to the uranium market, as reviewed, and assessed by Management.

20 ENVIRONMENTAL STUDIES, PERMITTING, SOCIAL AND COMMUNITY IMPACT

20.1 Environmental Assessment

20.1.1 Provincial Requirements

In the province of Saskatchewan, the Environmental Assessment Act is administered by the Ministry of Environment (MOE). The level of assessment for mining projects is dependent on the specific characteristics of each individual project.

In Saskatchewan, the proponent of a project, that is considered to be a “development” pursuant to Section 2(d) of the Environmental Assessment Act, is required to conduct an environmental assessment (EA) of the proposed project and prepare and submit an environmental impact statement (EIS) to the Minister of Environment.

Section 2(d) of the Environmental Assessment Act reads:

> *…“development” means any project, operation or activity or any alteration or expansion of any project, operation or activity which is likely to:*
>
> *Have an effect on any unique, rare or endangered feature of the environment*
>
> *Substantially utilize any provincial resource and in so doing pre-empt the use, or potential use, of that resource for any other purpose*
>
> *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*
>
> *Cause widespread public concern because of potential environmental changes*
>
> *Involve a new technology that is concerned with resource utilization and that may induce significant environmental change*
>
> *Have a significant impact on the environment or necessitate a further development which is likely to have a significant impact on the environment (Sask. Env. Act, 2002)*

The Tthe Heldeth Túé project, as it is currently defined, meets the province’s definition of a “development” and will therefore be required to conduct a provincial EA.

20.1.2 Federal Requirements

On August 28, 2019, the Government of Canada enacted the Impact Assessment Act (IAA) outlining the new Federal assessment requirements for projects listed as a Designated Activity within the Physical Activities Regulations. According to these regulations, an EA under the IAA would not be required for a new uranium mine if the mine has an ore production capacity of less than 2,500 t/day. Based on the current regulation and anticipated Tthe Heldeth Túé production rate, the Tthe Heldeth Túé project would not require an EA under the IAA; however, it should be noted that the Environment and Climate Change Minister may designate a project based on its characteristics, location or public concerns. The potential for the Environment and Climate Change Minister to designate the Tthe Heldeth Túé project be subject to the IAA is likely low since the CNSC provides strong federal, environmental oversight as a life-cycle regulator for nuclear projects in Canada.

Since the proposed project is subject to a provincial EA but not subject to the federal IAA, the CNSC would act as a technical expert and active participant throughout the provincial EA process (CNSC 2020). Although the CNSC has no formal role or decision-making authority in the provincial EA process, the Commission uses the information gathered in the provincial EA to inform its licensing decision under the Nuclear Safety and Control Act.

Other federal legislation that will need to be considered throughout the EA and licensing phase of this project includes and is not limited to:

- Fisheries Act
- Species at Risk Act
- Migratory Birds Convention Act
- Canadian Navigable Waters Act
- Canada Water Act
- Canada Labour Code
- Transportation of Dangerous Goods Act

20.2 Licensing and Permitting

Once the environmental assessment receives approval by the provincial government the project will move into the operational approval stage. This requires the proponent to obtain a variety of approvals/permits/authorizations from both levels of government.

The proponent would need provincial approval through the submission of various applications to Construct a Pollutant Control Facility, followed by an Approval to Operate a Pollutant Control

Facility, which would also outline the proponent's various monitoring and reporting requirements throughout the life span of the approval. Provincial approvals are renewed approximately every five years and also dictate the schedule the proponent must follow with respect to updating the project's decommissioning and reclamation plan and associated financial assurance obligations for the project.

The federal (CNSC) license application requires the submission of detailed engineering design packages as well as detailed management plans for all facets of the operation as part of the licensing process. The first licence to be applied for from the CNSC would be a licence to prepare the site and construct. The licensing process can progress in tandem with the provincial EA and even though there is no decision made by the Commission on the EA, the findings of the assessment must be summarized within the licensing submission. Other licenses that will be required from the CNSC during the life of the project are licenses to operate, decommission, and abandon.

20.3 Assessment Schedule and Estimated Costs

Based on current knowledge, the environmental approval process is expected to take at a minimum 4.5 years from the start of the environmental baseline studies and approximately 24 months from submission of the draft licensing and environmental impact assessment documents. The estimated costs for the EA are $3 million, excluding contingency and the costs of the baseline studies.

It is important to note that there is some uncertainty in the licensing process under the CNSC since the implementation of the IAA. This may impact permitting review times from what has been estimated here.

20.4 Environmental Considerations

20.4.1 Environmental Baseline Studies

As part of the EA and licensing process, Denison will be required to complete baseline environmental studies within and around the proposed project site. Studies would include the collection of information on the atmospheric, terrestrial, hydrological and aquatic environments, as well as focused studies to collect geotechnical and hydrogeological data. In addition, Denison will work with Communities of Interest to collect data on traditional land use, heritage resources and regional socio-economic environments. It is anticipated that three years of studies occur prior to the submission of the draft EIS in order to adequately characterise the pre-project environmental conditions.

Publicly available data from any previous environmental studies in the regional area will be used to supplement project-specific baseline surveys, where available and applicable.

20.4.2 Water Management

As described in Section 18, any contaminated wastewater is expected to be stored onsite until which time that it can be trucked to McClean Lake for disposal.

Compared to traditional open pit and underground mining, an ISR operation is not expected to withdraw or release a significant amount of water during the life of the project and impacts to the surface water environment are anticipated to be minimal under normal operating conditions. With that said, Denison will be managing a significant amount of liquid solution through the ISR well field. Spill mitigation, and collection and containment of potentially contaminated site water will be a focus for the assessment.

20.4.3 Waste Rock and Precipitate

Small volumes of clean waste rock generated from wellfield and freeze wall drilling will be permanently stored on surface. As described in Section 18, any mineralized cuttings will be stored in barrels and shipped for milling at McClean Lake.

20.5 Corporate Social Responsibility Considerations

Early and meaningful engagement of Interested Parties was completed by Denison, who worked together with YNLR during the conceptual mining study phase to share information and receive feedback about the proposed activities. The YNLR provided Denison the following statement to Denison regarding this process and future considerations:

> *The Ya'thi Néné Land and Resource Office (YNLR) received and reviewed the "*Tthe Heldeth Túé *" Project Conceptual Mining Study at the Waterbury Property. YNLR provided initial feedback to Denison for project development considerations. Extensive consultation and engagement will be required to determine how potential impacts on the environment and Aboriginal and Treaty rights will be addressed, and how benefits to Indigenous peoples and communities will be maximized during the further development of the project concept.*

Additionally, in order to advance a resource extraction project within the traditional territories of Indigenous communities, it is almost a 'requirement' to enter into an agreement of some kind between the company and the Indigenous communities in whose territory the project is located. This 'requirement' is largely set by current best practice within Canada and globally and embodies the spirit of Free Prior and Informed Consent, which the Canadian government has endorsed as a means toward reconciliation with the Indigenous Peoples' of Canada.

The Tthe Heldeth Túé Project is located in an area near to the existing operations of McClean Lake, Cigar Lake and Rabbit Lake – all of which are operations which have Impact Benefit

Agreements (or more specifically, Collaboration Agreements) with various Communities of Interest.

For the Tthe Heldeth Túé Project, it can be assumed that Denison will undertake Agreement negotiations with at least two key Indigenous organizations: 1) the YNLR, representing the three First Nations and four municipalities in the Athabasca Region of Saskatchewan and 2) the Métis Nation – Saskatchewan, representing all relevant Métis Locals who may have interests in the Tthe Heldeth Túé Project area.

Traditional and contemporary land use activities are well-known in the area, owing to the long-time presence of the existing uranium operations, and this knowledge will generally inform the basis for the considerations in any Agreement negotiations, which are planned to be completed at approximately the same time as substantial completion of the draft EIS, recognizing that additional land use information may be further collected to enhance Denison's understanding of the area.

21 CAPITAL AND OPERATING COSTS

21.1 Capital Costs

21.1.1 Summary

The capital costs for the Tthe Heldeth Túé project were estimated relying on available data from the 2018 NI 43-101 Phoenix PFS, the 2016 NI 43-101 Cigar Lake Operation Technical Report. Where features of the Tthe Heldeth Túé project scope were sufficiently different from Phoenix, cost were developed from quotes or other historical data.

For the wellfield costs estimation, a combination of Phoenix PFS data and Cigar Lake data was utilized.

Capital costs to support trucking of UBS to the McClean Lake mill consist of upgrade of the all-weather gravel road into the Tthe Heldeth Túé site and purchase of six (6) purpose-built UBS transfer totes.

Many items were sufficiently similar to the Phoenix scope such that the Phoenix PFS estimate files were analyzed and each relevant line item scaled based on the anticipated requirements of the Tthe Heldeth Túé project.

In cases, such as the requirement for storage, loading and unloading infrastructure at the Tthe Heldeth Túé and the McClean Lake mill, these items could not be scaled from the Phoenix PFS and were estimated using historical data for similar scopes of work.

The Tthe Heldeth Túé project total capital costs are estimated at approximately $162 M CAD with an initial investment, of $111.6 M CAD as shown on Table 21-1. The total initial capital investment includes a 30% contingency. No contingency was applied for sustaining capital although a 30% contingency was applied to decommissioning costs. The Capital cost estimates exclude $20.1M CAD of project evaluation and development costs that must be incurred prior to construction. These costs should be considered when assessing the merit of advancing the project to a development decision in the future.

Total indirect construction costs are shown as 19.5% of direct construction costs. This is lower than most mining and mineral processing projects. The ratio of indirect construction costs to direct construction costs is typically 20% to 30%. However, the Tthe Heldeth Túé contains no new processing plant. Processing will take place at the McClean mill with minimal modifications to the existing circuits.

The Tthe Heldeth Túé project is not a typical mining project as it contains minimal mechanical, piping and instrumentation, which require significant supervision, logistics, warehousing, quality control and quality assurance activities during construction.

It has also been assumed that the operations complex will be modular with wash facilities onboard including showers, toilets, potable and sanitary waste holding tanks. The holding tanks will be periodically filled and emptied as required.

Another feature of the project driving indirect construction costs down is the strategy of utilizing existing accommodation at Points North. This eliminates the need to construct, operate and decommission a construction camp. In addition, domestic waste, sewage and water will be trucked in from Points North, further reducing indirect construction costs.

Additionally, most of the surface infrastructure is expected to be modularized to reduce engineering and installation costs.

Finally, the execution strategy assumes Denison will perform much of the construction management activities which will further reduce indirect construction costs. This is reflected in the atypically high percentage of indirect construction Owner's costs.

Project evaluation and development costs are shown as 25% of total direct + indirect construction costs. This is close to the midpoint range of 20 to 30% typically observed for projects of this type. The project evaluation and development total $20.1M and include a 30% contingency and have been excluded from the capital costs summary. The project evaluation and development costs estimated include the engineering and permitting activities required to reach the construction phase of the project, including:

- Engineering including Preliminary Feasibility and Feasibility Studies ($7.7M excluding contingency)
- Environmental Baseline study ($1.5M excluding contingency)
- Environmental Assessment ($3M excluding contingency)
- Environmental approval and CNSC fees ($1.5M excluding contingency)
- Owners costs ($1.8M excluding contingency)

Table 21-1: Capital Cost Summary (000's).

	Initial (1)	*Sustaining*	*Total*
Wellfield	49,601	24,399	74,000
Milling (McClean Lake modifications)	1,130	-	1,130
Surface facilities	2,102	-	2,102
Utilities	665	-	665
Electrical	5,038	-	5,038
Civil & earthworks	5,817	385	6,202
Offsite infrastructure	7,469	-	7,469
Decommissioning	-	19,404	19,404
Construction Indirect	14,023	-	14,023
Subtotal	**85,845**	**44,188**	**130,033**
Contingency	25,754	5,821	31,575
Total Capital Costs (100%)	**111,599**	**50,009**	**161,608**

(1) Initial capital costs exclude $20.1 million of estimated pre-construction Project evaluation and development costs

21.1.2 Milestone Project Schedule

A project schedule was created for the purpose of this PEA study.

Table 21-2 summarizes it in a milestone project schedule. The critical path of the project during the preconstruction phase is the obtention of environmental approvals from the regulators which can be expected to be received 4.5 years after the start of the environmental baseline activities.

During the construction season of the project, the critical path activities are related to installing the ground freezing plant and achieving adequate ground freezing to commence production.

Table 21-2: Milestone Project Schedule.

Year

Project Phase	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Concept Study	X																
PEA	X																
PFS			X														
FS				X													
Environmental Baseline			X	X	X												
EA & Licensing application					X	X											
Environmental& Licensing Approval						X	X										
Construction						X	X	X									
Operations									X	X	X	X	X	X			
Decommissioning															X	X	X

21.1.3 Estimate breakdown

An estimate breakdown Excel calculation sheet was created. Extracted data can be seen in Table 21-3.

Table 21-3: Capital Cost Breakdown.

Description	$1000
Wellfield Freeze Plant Install	18,301
Special / Clean Waste Ore Pads-Run-Off Ponds	583
Wellfield Drilling	7,163
Freeze Wall Drilling (1 Yr to Freeze Area)	17,260
Ground Freezing	2,019
Truck Haul of UBS to McClean	4,275
ISR Wellfield	49,601
Operations Complex / Contents	539
Wash Bay / Scanning Facility	519
Fenced Storage	11
Outdoor Covered Storage	127
Security / Gatehouse	47
Surface Mobile Equipment	860
Surface Facilities	2,102
McClean Mill UBS Receiving Pond	400
McClean Mill Lixiviant Mix Tank & Piping	730
McLean Lake Mill	1,130
Fuel System	105
Communications	410
Firewater	150
Utilities	665
Site Electrical Distribution / Powerline	2,359
Operations Centre	2,678
Electrical	5,038
Site, Pond, Landfill	5,817
Civil/Earthworks	5,817
Road Upgrades	2,269
Sask Power 138kV Line to Site	5,200
Offsite Infrastructure	7,469
Sub-Total Direct Construction Costs	71,822
Construction Indirects (Incl.Camp, Meals, Travel)	5,387
Owners Costs re PCM Mgmt	5,387
Detailed Engineering	3,000
Commissioning	250
Sub-Total Indirect Construction Costs	14,023
Sub-Total Direct + Indirect Construction Costs	85,845
Contingency	25,754
Total Construction Costs(2) (Initial Capital)	111,599
Sustaining Capital	24,784
Decommissioning[1]	25,225
Total Capital Expenditure (2)	161,608

Note 1: Includes 30% Contingency
Note 2: Excludes $20.1M of project evaluation and development costs

21.2 Operating Costs

The operating costs were estimated for the six year mine production and are summarized in Table 21-4. A recovery rate of 98.5% has been assumed for processing of the UBS from the Tthe Heldeth Túé deposit at the McClean Lake mill. The total OPEX of CAD$16.27 per lb of U_3O_8 is equivalent to USD$ 12.23 per lb U_3O_8 at a USD to CAD foreign exchange rate of 1.33.

Table 21-4: Operating Cost Summary.

Operating Cost Summary Tthe Heldeth Túé Project (J-Zone)	100% Project C$1000	Mill Feed C$/lb U3O8	Recovered C$/lb U3O8
Opex - Mining	54,839	5.6457	5.7316
Opex - Milling	77,192	7.9469	8.0679
Opex - Transport, Weigh, Assay re Convertor	5,114	0.5265	0.5345
Opex - G&A Site Support	2,002	0.2061	0.2093
Opex - G&A Admin / Other	16,546	1.7034	1.7294
Total	155,693	16.0286	16.2727
Mill Processing Fee - J-Zone	61,972	6.3800	6.4772
Mill Toll Mill Fee - J-Zone	14,570	1.5000	1.5228
TMF Usage Fee - J-Zone	650	0.0669	0.0679
Milling Total	77,192	7.9469	8.0679
Transport to Convertor - Price per lb	2,009	0.2069	0.2100
Convertor Weigh, Assay, Sampling - Price per lb	3,105	0.3196	0.3245
Transport Total	5,114	0.5265	0.5345
Unit rates based on pounds U3O8		9,713,445	9,567,744

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The Site operating costs for the Tthe Heldeth Túé Project were factored from the Phoenix PFS where applicable, including: Freeze plant, Surface facilities, Utilities and Electrical.

Operating costs for the loading and unloading stations at Tthe Heldeth Túé and McClean Lake Mill, transport of recycle water between Tthe Heldeth Túé and the McClean Lake water treatment plant and road maintenance were based on historical data for similar scopes of work.

The workforce cost estimate utilized an all-inclusive rate of $150,000 CAD per year per employee with a total of 16 onsite personnel and 5 offsite personnel to support the operation.
The lodging and food costs were calculated with a $150 CAD per day allowance with a total of 16 employees at site for the duration of the operational phase.

The flight costs were calculated using a $400 CAD return trip with a total of 16 employees (includes contracted drilling crews) on a two week in/out rotation.

The Toll Milling and Mill processing fees were estimated based on work completed during the Wheeler River PFS with updates based on latest available data from the MLJV.

The TMF usage fee was estimated utilizing the volume of storage required for the storage of Iron and Radium precipitates estimated to be 10,000m3.

21.3 Decommissioning Costs

The decommissioning costs encompasses two main phases. The first decommissioning phase is the ISR restoration phase where groundwater in the former mining chamber is improved to meet acceptable quality objectives. The second decommissioning phase involves site infrastructure removal.

The total decommissioning costs for the Tthe Heldeth Túé project are estimated to be $25.2M CAD including a 30% contingency of $5.8M CAD.

21.3.1 ISR Restoration

The ISR restoration phase at the Tthe Heldeth Túé site has been estimated based on a three-year duration with a total cost of $24.5M CAD (including contingency). The restoration phase includes circulating water in the ISR mining chamber until ground water quality is restored to acceptable levels. The basis of estimate for the ISR restoration phase considers the requirements of maintaining the freeze wall for two years after the end of the production phase and using truck transport to bring restoration water from Tthe Heldeth Túé to the water treatment facility of the McClean Lake Mill for a duration of three years. The estimate includes ground freezing operating costs, environmental monitoring, CNSC fees and personnel costs (four FTE for three years).

21.3.2 Site Infrastructure Removal.

The infrastructure removal direct costs for the Tthe Heldeth Túé project were scaled down from the Phoenix PFS decommissioning costs and have been estimated to be $0.7M CAD (including contingency). The estimate includes the following:

- Stockpiles, pads and ponds removal
- Demolition of UBS and Lixiviant loading and unloading station at Tthe Heldeth Túé and McClean Mill
- Infrastructure removal
- Roadway removal
- Wells decommissioning

22 ECONOMIC ANALYSIS

The Tthe Heldeth Túé deposit is part of the Waterbury Lake project, owned by WLULP of which Denison Waterbury Corp. (a wholly owned subsidiary of Denison) owns 66.90% and KWULP owns 33.10%. KWULP is comprised of a consortium of investors, in which Korea Hydro & Nuclear Power holds a majority position.

Each partner reports its share of the operations in its own tax return. As each partner has a unique tax profile, the Tthe Heldeth Túé project has been evaluated using two different cash flow model approaches:

- Pre-Tax Basis - A pre-tax discounted cash flow model (see section 22.5) which shows the economics of the project on a 100% basis. This case includes the Saskatchewan uranium Resource Surcharge (3.0%) and the Saskatchewan Basic Royalty (4.25% with Resource Credit) and excludes tax specific items related to Canadian Federal and Provincial income taxes and Saskatchewan profit-based royalties, each of which will vary depending on each partner's unique facts and circumstances; and
- Post-Tax Basis - A post-tax discounted cash flow model, specific to Denison (see section 22.6), which shows the economics of the project based on Denison's ownership interest in the project. This case includes the Saskatchewan uranium Resource Surcharge (3.0%) and the Saskatchewan Basic Royalty (4.25% with Resource Credit) as well as tax specific items related to Canadian Federal and Provincial income taxes and Saskatchewan profit-based royalties and other non-tax related items which are unique and applicable to Denison's economic interest in the Tthe Heldeth Túé project.

The calendar years referred to in the economic model developed for the Project are indicative only, and should not be understood as reflecting the Company's plans for advancing the project. Any advancement of the Project, or the timing thereof, is subject to various factors, some of which may be outside of the Company's control. The Company has advised that it will provide additional applicable guidance on its intentions to advance the Project in its public disclosure, as appropriate.

The PEA is a preliminary analysis of the potential viability of the Tthe Heldeth Túé deposit's mineral resources and should not be considered the same as a Pre-Feasibility of Feasibility Study, as various factors are preliminary in nature. There is no certainty that the results from the PEA will be realized. Mineral resources are not mineral reserves and do not have demonstrated economic viability.

22.1 Input and Assumptions

Inputs and assumptions to both the pre-tax and post-tax cash flow models include:

- An estimated 3-year pre-production period from July 2025 to June 2028;
- Life of mine production of 177,664 tonnes at an average grade of 2.49% U_3O_8 containing 9,713,445 lbs of U_3O_8;
- A project mine production period of approximately 6 years from July 2028 to March 2033, with production beginning in mid-2028, reaching current planned capacity of 2.1 million lbs of U_3O_8 in 2029, operating at that rate for four years and declining to 0.3 million lbs of U_3O_8 in 2033, the final year;
- Estimated metallurgical process uranium recoveries of 98.5%;
- A Base case uranium pricing scenario, provided by Denison, and based on UxC's Q3-2020 Uranium Market Outlook Report Composite Midpoint spot price projection, in constant / uninflated dollars, ranging from USD$49.43 to USD$57.07 per pound U_3O_8 during the Tthe Heldeth Túé mine production period, translated to CAD using an exchange rate of 1.33 CAD/USD;
- Project capital costs of $161,608,000 (100% basis) as shown in Table 21-1. This amount excludes $20,127,000 of pre-construction project evaluation and development capital costs (100% basis);
- Project operating costs of $155,693,000 (100% basis) as shown in Table 21-4;
- No inflation or escalation of revenue or costs has been incorporated. Costs are expressed in 2020 Canadian dollars;
- Adjustments for financing (via debt or equity) and any associated carrying charges thereon (interest, other financing charges) are not included;
- Adjustments for working capital (timing adjustments in cash receipts re uranium sales and / or CAPEX, OPEX payments) are not included; and
- The Tthe Heldeth Túé economic model does not include any intellectual property charges that may be borne by the project in the future from the use of Wheeler River ISR related proprietary information.

Production and cost data have been reviewed, confirmed and / or developed by the ENGCOMP evaluation team.

22.2 Canadian Royalties Applicable to Waterbury Lake

The province of Saskatchewan imposes royalties on the sale of uranium extracted from ore bodies in the province in accordance with Part III of The Crown Mineral Royalty Regulations (the "Regulations") pursuant to The Crown Minerals Act (the "Act"). The uranium royalty regime currently in effect in Saskatchewan has three components:

i. Basic Royalty: Computed as 5% of gross revenues derived from uranium extracted from ore bodies in the province;

ii. Resource Credit: Reduction in the basic royalty equal to 0.75% of gross revenues derived from uranium extracted from ore bodies in the province; and

iii. Profit Royalty: Computed as 10% to 15% of net profits derived from the mining and processing of uranium extracted from ore bodies in the province.

Under the current system, each owner or joint venture participant in a uranium mine is a royalty payer. Individual interests are consolidated on a corporate basis for the computation and reporting of royalties due to the province.

Gross revenue, for purposes of the Basic Royalty and Resource Credit, is determined in accordance with the Regulations and allows for reductions based on specified allowances. In computing gross revenue, Denison has included the transport, weighing and assaying convertor cost as a specified allowance allowed under the Regulations. Net profit, for the Profit Royalty, is calculated based on the recognition of the full dollar value of a royalty payer's production, exploration, capital and decommissioning costs, in most cases, incurred after January 1, 2013, subject to various expiry provisions. Net profits are taxed under the profit royalty at a rate of 10% for net profits up to and including CAD$22.00 per kilogram (CAD$10 per pound) of uranium sold, and at 15% for net profits in excess of CAD$22.00 per kilogram. The CAD$22.00 threshold is applicable for 2013 (the base year) and is indexed in subsequent years for inflation.

22.3 Canadian Income and Other Taxes Applicable to Waterbury Lake

In 2019, taxable income of a Canadian resource company with a project located in the province of Saskatchewan is subject to Federal tax at a rate of 15% and Provincial tax in Saskatchewan at a rate of 12% for a combined tax rate of 27%. This combined tax rate is applied to a company's taxable income for the year, which is calculated on a net basis after claiming certain allowable deductions.

Resource corporations in Saskatchewan are also subject to a uranium resource surcharge equal to 3% of the value of uranium resource sales from production in Saskatchewan, if any, during the year. As with the Basic Royalty and Resource Credit, the value of resource sales can be reduced by specified allowances – Denison has included the transport, weighing and assaying convertor cost as a specified cost allowance for the purposes of the resource surcharge.

22.4 McClean Lake Toll Milling Revenue Applicable to Waterbury Lake

Denison's wholly owned subsidiary, Denison Mines Inc ("DMI"), holds a 22.5% interest in the MLJV, which is a joint venture between Orano Canada (77.5% and operator), and DMI.

Participants in the MLJV receive their proportionate share of toll milling fees earned at the

McClean Lake mill from toll milling carried out on behalf of any non-MLJV joint ventures or other third parties. In the case of Waterbury Lake, where it has been assumed that Tthe Heldeth Túé mine production will be milled at the McClean Lake mill, DMI would receive 22.5% of the toll milling fees paid by the WLULP to the MLJV related to Tthe Heldeth Túé ore processing, by virtue of its ownership in the MLJV.

It is assumed that the Tthe Heldeth Túé feed into the MLJV mill does not displace any existing feed and so the tolling charges are truly additive (not incremental).

22.5 Pre Tax Economic Analysis

22.5.1 Pre-tax Cash flow Model – Base Case

Basis of the Model

The pre-tax base case cash flow model is based on the inputs noted in Section 22.1 and the following additional notes:

- The evaluation of the project is on a 100% ownership basis;
- No toll milling revenue or production credits applicable to MLJV participants is included;
- No Saskatchewan Profit Royalty is included;
- No provincial / federal tax calculations are included; and
- Net Present Value (“NPV”) calculations assume a discount rate of 8% (refer to following section) and are measured from the start of the pre-production period (assumed July 2025).

Table 22-1 shows the Tthe Heldeth Túé project pre-tax base case cash flow model.
Consistent with Denison common practice, Post tax cash flow is not shown in detail but aggregate post tax results are shown in tables 22.4 for the base case scenario, 22.7 & 22.8 for high and low case scenarios.

Table 22-1: Tthe Heldeth Túé Project Pre-Tax Base Case Annual Cash Flow Model

Denison Tthe Heldeth Túé (J-Zone) PEA			Total	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
File: Denison THT (JZone) M12a-DRev10 LDS cash flow (Den JZONE-REV2) - final.xlsx																
Mine Stage - Level 1 - THT (J-Zone)				Permitting												
Mine Stage - Level 2 - THT (J-Zone)				Construct	Construct	Construct										
Mine Stage - Level 3 - THT (J-Zone)							Prod'n	Prod'n	Prod'n	Prod'n	Prod'n	Prod'n				
Mine Stage - Level 2 - THT (J-Zone) Reclamation													Recl'm	Recl'm	Recl'm	
Production & Revenue 100% Project																
Mine Production																
Mined Ore Tonnes		Tonnes	177,664	0	0	0	15,599	38,994	38,994	38,994	38,994	6,089	0	0	0	0
Mined Ore Grade		% U308	2.5%	0.00%	0.00%	0.00%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	0.00%	0.00%	0.00%	0.00%
Mill Production																
Mill Feed		lbs U308	9,713,445	0	0	0	852,806	2,132,015	2,132,015	2,132,015	2,132,015	332,579	0	0	0	0
Mill Process Recovery		%	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%	98.50%
Recovered U308		lbs U308	9,567,744	0	0	0	840,014	2,100,035	2,100,035	2,100,035	2,100,035	327,590	0	0	0	0
Metal Prices																
U3O8 in US$		US$/lb U3O8	53.59	43.47	45.29	45.63	49.43	51.85	53.83	54.41	55.40	57.07	56.76	56.89	56.89	56.89
FX (C$/US$)		FX	1.330	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33
U3O8 in C$		C$/lb U308	71.28	57.82	60.24	60.69	65.74	68.96	71.59	72.37	73.68	75.90	75.49	75.66	75.66	75.66
Project Revenue																
U3O8 Revenue		C$1000	681,957	0	0	0	55,223	144,818	150,342	151,980	154,731	24,864	0	0	0	0
Cash Flow - 100% Project Pre-Tax																
Project U3O8 Revenue		C$1000	681,957	0	0	0	55,223	144,818	150,342	151,980	154,731	24,864	0	0	0	0
Opex - Mining		C$1000	-54,839	0	0	0	-9,140	-9,140	-9,140	-9,140	-9,140	-9,140	0	0	0	0
Opex - Milling		C$1000	-77,192	0	0	0	-6,777	-16,943	-16,943	-16,943	-16,943	-2,643	0	0	0	0
Opex - Transport, Weigh, Assay re Convertor		C$1000	-5,114	0	0	0	-449	-1,122	-1,122	-1,122	-1,122	-175	0	0	0	0
Opex - G&A Site Support		C$1000	-2,002	0	0	0	-334	-334	-334	-334	-334	-334	0	0	0	0
Opex - G&A Admin / Other		C$1000	-16,546	0	0	0	-2,758	-2,758	-2,758	-2,758	-2,758	-2,758	0	0	0	0
Project Operating Cash Flow		C$1000	526,264	0	0	0	35,765	114,522	120,045	121,683	124,434	9,815	0	0	0	0
Saskatchewan Resource Surcharge		C$1000	-20,305	0	0	0	-1,643	-4,311	-4,477	-4,526	-4,608	-741	0	0	0	0
Saskatchewan Basic Royalty		C$1000	-28,766	0	0	0	-2,328	-6,107	-6,342	-6,411	-6,528	-1,049	0	0	0	0
Project Operating Cash Flow with Sask Royalties		C$1000	477,193	0	0	0	31,794	104,104	109,227	110,746	113,297	8,025	0	0	0	0
Capex - Project Evaluation / Development	0	C$1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Capex - Off-Site Infrastructure		C$1000	-9,710	-9,710	0	0	0	0	0	0	0	0	0	0	0	0
Capex - Surface Infrastructure / Mining / Milling		C$1000	-126,673	-6,386	-80,320	-14,207	-5,176	-5,176	-5,176	-5,176	-5,057	0	0	0	0	0
Capex - Decommissioning		C$1000	-25,225	0	0	0	0	0	0	0	0	0	-9,127	-9,127	-6,972	0
Project Cash Flow After Capex, No Tax		C$1000	315,584	-16,096	-80,320	-14,207	26,618	98,928	104,051	105,570	108,241	8,025	-9,127	-9,127	-6,972	0

Basis of the Discount Rate

A discount rate of 8% was selected for assessing the time value of money for the project's economics. While industry practice may suggest a discount rate of 10% or higher, the 8% discount rate was selected based on the following rationale:

- Reference to current interest / lending rates which are at historic lows;
- Project country risks (political stability, established taxation regime, extent of corruption and civil unrest) are considered low in Canada and in Saskatchewan;
- Minimal unexpected risks associated with operating a uranium mine in the eastern Athabasca Basin region of northern Saskatchewan, due to the significant existing regional infrastructure and current mining / milling operations in the area;
- Little or no unexpected risks associated with processing or recovery as the material will be processed at an existing operating mill which is partially owned by Denison.
- Onsite operating costs are included for a full year in the first year and the last year of operation even though the production in these years is a portion of a full year.
- Relatively small scale of pre-production capital expenditures and short expected pre-production and payback periods, reducing inflation exposure; and
- Assessment of project specific risks having already been incorporated through specific risk, schedule and contingency analysis and provisions throughout the cost estimation process.

22.5.2 Pre-tax Indicative Economic Results – Base Case

The Tthe Heldeth Túé project pre-tax indicative base case economic results are as follows:

- NPV (8%) of $177,295,000 when discounting project cash flows back to the start of pre-production activities (assumed to be July 2025);
- Internal rate of return ("IRR") of 39.1%; and
- Payback period of ~22 months (~1.8 years) from the start of the first year of production (assumed to be January 2028).

As noted in Section 22.1, these indicative economic results exclude the impact of pre-construction project evaluation and development capital costs.

22.5.3 Pre-tax Sensitivities – Base Case

Basic Sensitivities

The base case results are summarized as follows:

Average uranium price: $71.28 per pound (average combined selling price of USD$53.59/lb U_3O_8 converted using exchange rate of 1.33 CAD/USD)

Average mill feed grade: 2.49% U_3O_8

Average site operating cost: $16.27/lb U_3O_8 (total operating costs of $155,693,000 divided by recovered processed pounds of 9,567,744)

Total project capital cost: $161,608,000 (excluding pre-construction project evaluation and development capital costs)

A sensitivity analysis has been prepared by varying these four inputs. Table 22-2 shows the impact on NPV (8%), in thousands of dollars, of varying these input values on the base case pre-tax economic indicators. Figure 22-1 presents these sensitivities in graphical format. As with most mining projects, the most sensitive parameter is the commodity price. Mill feed grade (% U_3O_8) is the next most sensitive parameter.

Table 22-2: NPV (8%) Sensitivity – Pre-Tax Base Case

Sensitivity Analysis - Tthe Heldeth Túé Project Base Case				
	Totals or averages for 100% Project (2025 on)			
	Capital C$1000	Operating C$/lb Rec	U3O8 US$/lb	U3O8 Grade
	161,608	16.27	53.59	2.490%
100% Project Pre-Tax				
Variance From Base %	Capital Cost NPV 8% C$1000	Opex Cost NPV 8% C$1000	U3O8 Price NPV 8% C$1000	U3O8 Grade NPV 8% C$1000
-30%	215,423	207,025	56,262	71,985
-20%	202,714	197,115	96,609	107,089
-10%	190,005	187,205	136,937	142,192
0%	177,295	177,295	177,295	177,295
10%	164,586	167,385	217,648	212,399
20%	151,877	157,475	257,994	247,502
30%	139,168	147,565	298,341	282,606

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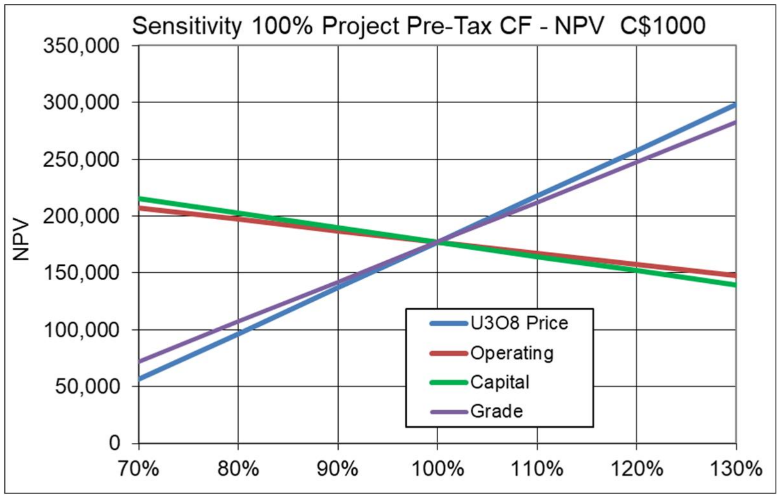

Figure 22-1: NPV (8%) Sensitivity – Pre Tax Base Case

22.5.1 Price Sensitivity – Low and High Cases

The Tthe Heldeth Túé project economic results are quite sensitive to the price of uranium. To illustrate the impact on the project from lower and higher uranium price assumptions than those in the pre-tax base case, the PEA considers an additional two pricing scenarios: (1) the Low Case, which uses an estimated fixed uranium selling price of USD$35.00/lb U_3O_8 for all production; and (2) a High Case, which uses an estimated fixed uranium selling price of USD$65.00/lb U_3O_8 for all production.

A summary of the economic results of the pre-tax low, base and high case scenarios are illustrated in Table 22-3. A cash flow summary of each case, on an aggregate basis, can also be seen in Tables 22-4, 22-7, and 22-8, under the "Pre-tax" column heading.

Table 22-3: Pre-tax Economic Results Summary – Low, Base and High Case

	Low Case	*Base case*	*High Case*
Uranium price assumption	USD$35 per lb U_3O_8	UxC spot price (3)	USD$65 per lb U_3O_8
Pre-tax $NPV_{8\%}$ (1)	$38,260,000	$177,295,000	$264,932,000
Pre-tax IRR (1)	17.4%	39.1%	50.0%
Pre-tax payback period (2)	~33 months	~22 months	~18 months

(1) NPV and IRR are calculated to the start of pre-production activities for the Tthe Heldeth Túé project.
(2) Payback period is stated as number of months to pay-back from the start of January 2028.
(3) Spot price forecast is based on "Composite Midpoint" scenario from UxC's Q3'2020 Uranium Market Outlook ("UMO") for the years 2028 to 2033 and is stated in constant (not-inflated) dollars.

22.6 Post Tax Economic Analysis

22.6.1 Post Tax Cash Flow Model – Base Case

The post-tax base case cash flow model is specific to Denison's ownership interest in Waterbury Lake and Denison's specific facts and circumstances as it relates to: a) tax pools it has available to it to reduce taxable income for Saskatchewan Profit Royalties as well as Canadian Federal and Provincial income taxes, and b) benefits that accrue to it from its interest in the MLJV.

Denison, through Denison Waterbury Corp, currently has a 66.90% ownership interest in the WLULP. The post-tax base case cash flow model is based on the inputs noted in Section 22.1, Denison's current ownership interest in the WLULP and the following additional items:

- Adjustments for Denison's share of pre-construction project evaluation and development capital costs (refer to Section 21.1) including contingency, and the associated impact on Denison's estimated tax pools;
- The economic benefits associated with DMI's 22.5% share of the MLJV as it relates to Tthe Heldeth Túé toll milling at McClean;
- The impact of the Saskatchewan Profit Royalty applicable on uranium production; and
- Denison's expected Federal and Provincial income taxes payable.

Discounting for NPV calculations remains at 8% (see Section 22.5.1), and the impact of estimated net smelter royalties of $3.8 million owing to Denison on KWULP's share of Tthe Heldeth Túé production (refer to Section 4.5) has not been included.

The following assumptions were used in computing Federal and Provincial income tax payable, as well as Saskatchewan Profit Royalty amounts owing by Denison in the model:

- All estimated applicable tax deductions currently available in Denison Waterbury Corp at December 31, 2019, and those which will arise in the future related to the development of the Tthe Heldeth Túé project will be available for use as a deduction against income generated from the Waterbury Lake project;
- The currently enacted tax laws and the proposed tax law amendments at the time of this PEA are those that will apply during the life of the Tthe Heldeth Túé project (as well as the existing interpretations and assessing practices of the applicable taxing authority), and substantially all of the income from the project will be taxed using a combined Canadian Federal and Saskatchewan income tax rate of 27.0% (Federal – 15% / Saskatchewan – 12%);

- Non-capital losses will continue to have a loss carry forward period of 20 years for income tax purposes and 10 years for Saskatchewan Profit Royalty purposes; and
- For Saskatchewan Profit Royalty computations, the \$10.00 profit per pound U_3O_8 threshold demarcating the 10% and 15% net profit taxation tiers has been indexed up to Q4-2019, to approximately \$10.99 per pound U_3O_8, and then held constant at that amount through-out the life of the Tthe Heldeth Túé project.

Table 22-4 contrasts the results of the Tthe Heldeth Túé project base case pre-tax cash flow model and the post-tax cash flow model as it applies to Denison’s current ownership interest:

Table 22-4: Base Case Cash Flow Model – Pre Tax vs Post Tax Comparison

Cash Flow Summary **Tthe Heldeth Túé Project (J-Zone)**	Base Case Pre-Tax C$1000	Base Case Post Tax C$1000
Project Percentage Ownership	100% Project	66.90% Denison
U3O8 Revenue	681,957	456,229
MLJV Toll Milling - Non-Denison THT (J-Zone)	-	1,085
Net Revenue	681,957	457,314
Opex - Mining	-54,839	-36,687
Opex - Milling	-77,192	-51,641
Opex - Transport, Weigh, Assay re Convertor	-5,114	-3,421
Opex - G&A Site Support	-2,002	-1,339
Opex - G&A Admin / Other	-16,546	-11,069
Operating Cash Flow	526,264	353,156
MLJV Toll Milling - Denison THT (J-Zone)	-	2,193
Operating Cash Flow with Tolling	526,264	355,349
Saskatchewan Resource Surcharge	-20,305	-13,584
Saskatchewan Basic Royalty	-28,766	-19,244
Operating Cash Flow with Sask Royalties	477,193	322,520
Capex - Project Evaluation / Development	Excluded	-13,465
Capex - Off-Site Infrastructure	-9,710	-6,496
Capex - Surface Infrastructure / Mining / Milling	-126,673	-84,744
Capex - Decommissioning	-25,225	-16,876
Cash Flow After Capex	315,584	200,939
Sask Profit Based Tiered Royalty - THT (J-Zone)	-	-30,244
Fed. / Prov. Income Tax - THT (J-Zone)	-	-46,620
Cash Flow After Taxes	-	124,075

DCF Metrics **Tthe Heldeth Túé Project (J-Zone)**				Base Case Pre-Tax	Base Case Post Tax
Project Percentage Ownership				100% Project	66.90% Denison
	IRR		%	39.1%	30.4%
	Payback		Years	1.8	1.9
	NPV	8.0%	C$1000	177,295	72,470
U3O8 Wtd Avg Price		53.59 US$/lb		71.28 C$/lb	
DCF Metrics are measured from 2025 onward NPV Discounting: End-of-Year measured from mid-2025					
Denison THT (JZone) M12a-DRev10 LDS cash flow (Den JZONE-REV2).xlsx					

22.6.2 Post Tax Cash Flow Model – Sensitivities / Low Case And High Case

The sensitivity of the post-tax cash flow model to Capex, Opex, Uranium Price and U_3O_8 Grade is similar to that of the pre-tax cash flow model. A sensitivity analysis has been prepared by varying these four inputs. Table 22-5 shows the impact on NPV (8%), in thousands of dollars, of varying these input values on the base case post-tax economic indicators. Figure 22-2 presents these sensitivities in graphical format. Once again, the most sensitive parameter is the commodity price with mill feed grade (% U_3O_8) being next most sensitive parameter.

Table 22-5: NPV (8%) Sensitivity – Post-Tax Base Case

Sensitivity Analysis - Tthe Heldeth Túé Project Base Case				
	Totals or averages for 100% Project (2025 on)			
	Capital	Operating	U3O8	U3O8
	C$1000	C$/lb Rec	US$/lb	Grade
	161,608	16.27	53.59	2.490%
Denison Share Post Tax				
Variance	Capital	Opex	U3O8	U3O8
From	Cost	Cost	Price	Grade
Base	NPV 8%	NPV 8%	NPV 8%	NPV 8%
%	C$1000	C$1000	C$1000	C$1000
-30%	89,715	84,572	20,990	27,197
-20%	83,997	80,519	38,191	42,135
-10%	78,156	76,499	54,907	56,863
0%	72,470	72,470	72,470	72,470
10%	66,810	68,431	89,256	87,272
20%	61,150	63,550	106,111	102,228
30%	55,469	59,543	122,704	117,003

Denison THT (JZone) M12a-DRev10 LDS cash flow (Den JZONE-REV2).xlsx

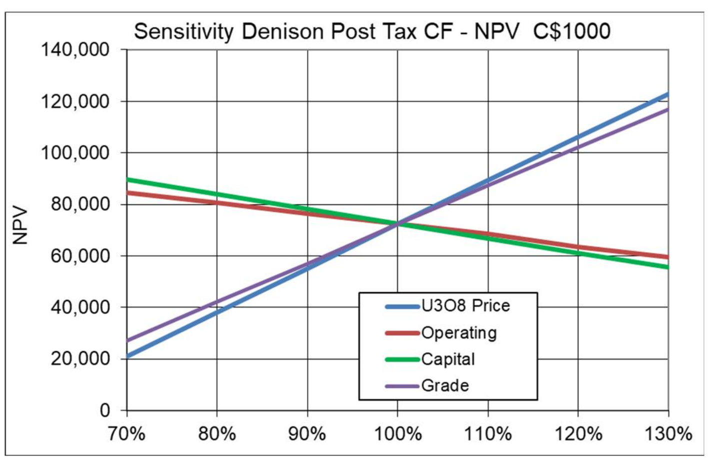

Figure 22-2: NPV (8%) Sensitivity – Post Tax Base Case

To illustrate the impact on the project from lower and higher uranium price assumptions than those in the post-tax base case, the PEA considers an additional two pricing scenarios: (1) the Low Case, which uses an estimated fixed uranium selling price of USD$35.00/lb U_3O_8 for all production; and (2) a High Case, which uses an estimated fixed uranium selling price of USD$65.00/lb U_3O_8 for all production. All other assumptions in the base case post-tax cash flow model have been held constant.

A summary of the economic results of the post-tax low, base and high case scenarios are illustrated in Table 22-6. A cash flow summary of each case, on an aggregate basis, can also be seen in Tables 22-4, 22-7 and 22-8, under the “Post-tax” column heading.

Table 22-6: Post-tax Economic Results Summary – Low, Base and High Case

	Low Case	*Base case*	*High Case*
Uranium price assumption	USD$35 per lb U_3O_8	UxC spot price (3)	USD$65 per lb U_3O_8
Post-tax $NPV_{8\%}$ (1)	$13,564,000	$72,470,000	$109,038,000
Post-tax IRR (1)	13.5%	30.4%	38.9%
Post-tax payback period (2)	~34 months	~23 months	~19 months

(1) NPV and IRR are calculated to the start of pre-production activities for the Tthe Heldeth Túé project.
(2) Payback period is stated as number of months to pay-back from the start of January 2028.
(3) Spot price forecast is based on “Composite Midpoint” scenario from UxC’s Q3’2020 Uranium Market Outlook (“UMO”) for the years 2028 to 2033 and is stated in constant (not-inflated) dollars.

Table 22-7: Low Case Cash Flow Model – Pre Tax vs Post Tax Comparison

Cash Flow Summary Tthe Heldeth Túé Project (J-Zone)	Low Case Pre-Tax C$1000	Low Case Post Tax C$1000
Project Percentage Ownership	100% Project	66.90% Denison
U3O8 Revenue	445,378	297,958
MLJV Toll Milling - Non-Denison THT (J-Zone)	-	1,085
Net Revenue	445,378	299,043
Opex - Mining	-54,839	-36,687
Opex - Milling	-77,192	-51,641
Opex - Transport, Weigh, Assay re Convertor	-5,114	-3,421
Opex - G&A Site Support	-2,002	-1,339
Opex - G&A Admin / Other	-16,546	-11,069
Operating Cash Flow	289,686	194,885
MLJV Toll Milling - Denison THT (J-Zone)	-	2,193
Operating Cash Flow with Tolling	289,686	197,078
Saskatchewan Resource Surcharge	-13,208	-8,836
Saskatchewan Basic Royalty	-18,711	-12,518
Operating Cash Flow with Sask Royalties	257,767	175,724
Capex - Project Evaluation / Development	Excluded	-13,465
Capex - Off-Site Infrastructure	-9,710	-6,496
Capex - Surface Infrastructure / Mining / Milling	-126,673	-84,744
Capex - Decommissioning	-25,225	-16,876
Cash Flow After Capex	96,158	54,143
Sask Profit Based Tiered Royalty - THT (J-Zone)	-	-7,597
Fed. / Prov. Income Tax - THT (J-Zone)	-	-14,760
Cash Flow After Taxes	-	31,786

DCF Metrics Tthe Heldeth Túé Project (J-Zone)				Low Case Pre-Tax	Low Case Post Tax
Project Percentage Ownership				100% Project	66.90% Denison
	IRR		%	17.4%	13.5%
	Payback		Years	2.8	2.8
	NPV	8.0%	C$1000	38,260	13,564
U3O8 Wtd Avg Price		35.00 US$/lb		46.55 C$/lb	
DCF Metrics are measured from 2025 onward NPV Discounting: End-of-Year measured from mid-2025					
Denison THT (JZone) M12a-DRev10 LDS cash flow (Den JZONE-REV2) - final.xlsx					

Table 22-8: High Case Cash Flow Model – Pre Tax vs Post Tax Comparison

Cash Flow Summary **Tthe Heldeth Túé Project (J-Zone)**	High Case Pre-Tax C$1000	High Case Post Tax C$1000
Project Percentage Ownership	100% Project	66.90% Denison
U3O8 Revenue	827,131	553,351
MLJV Toll Milling - Non-Denison THT (J-Zone)	-	1,085
Net Revenue	827,131	554,436
Opex - Mining	-54,839	-36,687
Opex - Milling	-77,192	-51,641
Opex - Transport, Weigh, Assay re Convertor	-5,114	-3,421
Opex - G&A Site Support	-2,002	-1,339
Opex - G&A Admin / Other	-16,546	-11,069
Operating Cash Flow	671,439	450,278
MLJV Toll Milling - Denison THT (J-Zone)	-	2,193
Operating Cash Flow with Tolling	671,439	452,471
Saskatchewan Resource Surcharge	-24,661	-16,498
Saskatchewan Basic Royalty	-34,936	-23,372
Operating Cash Flow with Sask Royalties	611,842	412,601
Capex - Project Evaluation / Development	Excluded	-13,465
Capex - Off-Site Infrastructure	-9,710	-6,496
Capex - Surface Infrastructure / Mining / Milling	-126,673	-84,744
Capex - Decommissioning	-25,225	-16,876
Cash Flow After Capex	450,234	291,020
Sask Profit Based Tiered Royalty - THT (J-Zone)	-	-44,019
Fed. / Prov. Income Tax - THT (J-Zone)	-	-67,222
Cash Flow After Taxes	-	179,778

DCF Metrics **Tthe Heldeth Túé Project (J-Zone)**				High Case Pre-Tax	High Case Post Tax
Project Percentage Ownership				100% Project	66.90% Denison
	IRR		%	50.0%	38.9%
	Payback		Years	1.5	1.6
	NPV	8.0%	C$1000	264,932	109,038
U3O8 Wtd Avg Price		65.00 US$/lb		86.45 C$/lb	
DCF Metrics are measured from 2025 onward NPV Discounting: End-of-Year measured from mid-2025					
Denison THT (JZone) M12a-DRev10 LDS cash flow (Den JZONE-REV2) - final.xlsx					

23 ADJACENT PROPERTIES

23.1 Roughrider Property (formerly Midwest NorthEast)

Adjacent to the east end of the Tthe Heldeth Túé deposit, is the Roughrider uranium deposit located on the Roughrider property comprising three contiguous mineral leases (598 ha) that was registered to Hathor Exploration Limited (90%) and Terra Ventures Inc. (10%), and is now under the sole ownership of Rio Tinto PLC.

Crown mineral lease ML-5544 hosts the Roughrider East Zone, West Zone, and Far East Zone. A technical report in accordance with NI 43-101, titled "*Preliminary Economic Assessment Technical Report for the East and West Zones Roughrider Uranium Project, Saskatchewan*" was prepared by SRK Consulting for Hathor Exploration Ltd. in 2011. Mineral resources estimated for the East and West Zones include an Indicated mineral resource estimate of 17,207,000 lbs U_3O_8 (above a cut-off grade of 0.05% U_3O_8) based on 394,200 tonnes of mineralization at an average grade of 1.98% U_3O_8 and an Inferred mineral resource estimate of 10,602,000 lbs U_3O_8 (above a cut-off grade of 0.05% U_3O_8) based on 43,600 tonnes of mineralization at an average grade of 11.03% U_3O_8 for the Roughrider West Zone, and an Inferred mineral resource estimate of 30,130,000 lbs U_3O_8 (above a cut-off grade of 0.4% U_3O_8) based on 118,000 tonnes of mineralization at an average grade of 11.58% U_3O_8 for the Roughrider East Zone. The mineral resource estimates have effective dates of November 29, 2010 for the Roughrider West Zone and May 6, 2011 for the Roughrider East Zone. The authors of this technical report are unable to verify the information disclosed in the aforementioned mineral resource estimates and the information is not necessarily indicative of the mineralization on the Waterbury Lake property. There are currently no publicly disclosed mineral resource estimates for the Far East Zone.

The Roughrider West Zone was discovered during the winter drilling program of February 2008 (Doerksen, et al., 2011). A hydrothermal clay alteration system was intersected in drill hole MWNE-08-10, while high-grade uranium mineralization (5.29% uranium oxide ("U_3O_8") over a core length interval of 11.9 m) was intersected in drill hole MWNE-08-12. The Roughrider West Zone is defined by approximately 149 diamond drill holes and has been intersected along a northeast-southwest strike length of approximately 200 m with an across-strike extent of 100 m. Uranium mineralization occurs at depths of 190 m to 290 m below surface and is hosted predominantly within basement rocks. Only minor amounts of uranium occur at or above the unconformity.

The Roughrider East Zone was discovered during the summer drilling program in September 2009 (Doerksen, et al., 2011). Hydrothermal alteration was intersected in a number of earlier drill holes during the summer program. High-grade uranium mineralization (12.71% U_3O_8 over a core length interval of 28 m) was intersected subsequently in drill hole MWNE-10-170. This zone was delineated by drilling during the winter and summer of 2010.

The best intersection to date was obtained in drill hole MWNE-10-648, which intersected 7.75% U_3O_8 over a core length interval of 63.5 m. The Roughrider East Zone is currently defined by approximately 88 diamond drill holes (21 of which were used to evaluate the mineral resource), and has a surface projection of approximately 120 m long in a north-easterly direction, which corresponds to a down-dip length of approximately 125 m, and an across-strike extent of up to 70 m. Uranium mineralization has a vertical extent of up to eighty to 100 m, starting at depth approximately 250 m from surface, and some 30 m to 50 m below the unconformity. This is slightly deeper than the Roughrider West Zone. Mineralization forms moderately dipping, cigar-shaped shoots along the intersection of these two controlling structures.

A third zone, the Roughrider Far East Zone, was discovered during the winter drilling program in February 2011 (Doerksen, et al., 2011). The discovery drill hole intersected 1.57 % U_3O_8 over core length of 37.5 m. The current outline of the Far East Zone is defined by mineralization in 28 of 40 drill holes completed in the immediate vicinity of Roughrider Far East Zone; weak mineralization in other drill holes is not included in the current outline of the Far East Zone. The best intersection to date is drill hole MWNE-11-715, which intersected 7.91% U_3O_8 over a core length interval of 27.0 m.

23.2 Midwest Property

The Midwest property is located adjacent to the main claim group of the Waterbury Lake property and the non-contiguous Waterbury Lake property claim S-107367 (near South McMahon Lake) approximately 15 km from the McClean Lake mill. The Midwest property is host to the high-grade Midwest Main and Midwest A uranium deposits which lie along strike and within six km of the Tthe Heldeth Túé and Huskie deposits. The project is a joint venture owned 25.17% by Denison; 74.83% by Orano Canada Inc., ("Orano"). Orano is the project operator.

In November 2017, Orano completed an updated mineral resource estimate for the Midwest Main and Midwest A deposits in accordance with NI 43-101, which was subsequently reviewed and audited by SRK Consulting (Canada) Inc. ("SRK") on behalf of Denison. The Midwest project, including the Midwest Main and Midwest A deposits is estimated to contain, above a cut-off grade of 0.1% U_3O_8, Inferred Mineral Resources of 18.2 M lbs U_3O_8 (846,000 tonnes at an average grade of 1.0% U_3O_8) and Indicated Mineral Resources of 50.78 M lbs U_3O_8 (1,019,000 tonnes at an average grade of 2.3% U_3O_8). The updated mineral resource estimate, as audited by SRK, is disclosed in the NI 43-101 report entitled "Technical Report with an updated Mineral Resource Estimate for the Midwest Property, Northern Saskatchewan, Canada" dated March 26, 2018, a copy of which is filed on SEDAR (www.sedar.com). Not all of the authors of this technical report are able to verify the information disclosed in the aforementioned mineral resource estimate and the information is not necessarily indicative of the mineralization on the Waterbury Lake property.

The uranium mineralization at the Midwest Main deposit consists of a higher-grade Unconformity Zone at the sandstone-basement contact (unconformity). Additional mineralization was defined in a zone of lower grade fracture-controlled basement mineralization associated with moderate to intense clay alteration and in 19 Perched Zones in the weakly to moderately altered sandstone above the Unconformity Zone. The mineralization is approximately 920 m long, 10 to 140 m wide, and up to 33 m in thickness, not including the basement roots which have been modeled to extend approximately an additional 90 m into the basement. The bulk of the mineralization (Unconformity Zone) occurs at depths ranging between 170 and 205 m below surface. Perched mineralization occurs as discrete zones located above the unconformity lens and up to 100 m above the unconformity below surface. The 3D interpretation was based on a cut-off of greater than or equivalent to 0.05% U over a two-metre interval. The mineral resource was estimated using ordinary kriging (Unconformity Zone) and inverse distance squared (Perched and Basement Zones) interpolation methods with restrictions on the influence of higher-grade samples. At the 0.085% U (0.1% U_3O_8) cut-off, the Midwest Main deposit contains an Indicated resource of 453,000 tonnes grading 4.00% U_3O_8 and an Inferred resource of 793,000 tonnes grading 0.66% U_3O_8 (Sorba, et al., 2018).

The mineralization at the Midwest A uranium deposit consists of a high-grade mineralized core (High Grade Zone) in the sandstone at the unconformity, which is surrounded by the Low-Grade Zone, a more dispersed, fracture-controlled mineralization in both sandstone and basement rocks. The high-grade mineralization forms a fairly steeply dipping lensoid concentration which is enclosed within a lower grade envelope. The mineralization currently has dimensions of 450 m in length and 10 to 60 m in width and ranges up to 70 m in thickness. It occurs at depths ranging between 150 and 235 m below surface. At the 0.085% U (0.1% U_3O_8) cut-off, the Midwest A deposit contains an Indicated resource of 566,000 tonnes grading 0.87% U_3O_8 and an Inferred resource of 53,000 tonnes grading 5.81% U_3O_8 (Sorba, et al., 2018).

Table 23-1: Midwest mineral resource summary.

Deposit	Classification	Tonnes	Grade % U_3O_8	M Lbs U_3O_8	Denison Share (M LbsU3O8)
Midwest	Indicated	453,000	4	39.9	10.1
Midwest	Inferred	793,000	0.66	11.5	2.9
Midwest A	Indicated	566,000	0.87	10.8	2.7
Midwest A	Inferred	53,000	5.8	6.7	1.7

Notes:

1. The Mineral Resource estimate was audited for the Company by SRK Consulting in accordance with CIM Definition Standards (2014) and NI 43-101.
2. Mineral Resources for the Midwest Main and Midwest A deposits are reported above a cut-off grade of 0.1% U_3O_8.

24 OTHER RELEVANT DATA AND INFORMATION

24.1 Risks

- The permeability of Tthe Heldeth Túé is lower than Phoenix. This has been addressed in this study through the adoption of engineering controls. Future test work to characterise the hydrogeology within and around Tthe Heldeth Túé could include groundwater elevation measurements, packer tests, single well injection and/or pump tests, cross-hole injection and/or pump tests, well pattern scale tracer tests, pre- and post-permeability enhancement testing, on-core permeability measurement, downhole geophysics, and numerical groundwater flow modelling. The future testing will be designed to reduce hydrologic risks associated with the project.
- There is risk inherent in the angled holes, which require a high degree of accuracy. Drilling options should be reviewed and tested prior to any execution activities.
- Groundwater monitoring wells to verify containment of mining solutions may need to be placed on Rio Tinto's property.
- Uranium leach rates may be less than expected. This could be due to a variety of factors including differences between site and laboratory conditions, temperature, mineralogy, lixiviant access to ore etc.
- Toll Milling and possibly waste disposal agreements with McClean Lake are required.
- Project construction indirects are currently estimated to represent 15% of total project costs. This ratio is lower than seen on other typical uranium development projects. Should further study work be completed this number should be verified through first principles buildups.
- Project evaluation costs have been estimated using data from the Wheeler River PFS which may be lower than required.
- Site construction schedule is aggressive with all surface facilities being constructed in one year.
- Additional studies will be required as the project advances to better understand the timeline and technical approach for the ISR restoration phase of decommissioning and the associated costs.

24.2 Opportunities

- Additional review of UBS and lixiviant tradeoff work to firm up the comparison between trucking and pipelines.

- Development of the western portion of Tthe Heldeth Túé, after completion of mining of the eastern portion, may be economic depending on the uranium spot price. Future studies could examine the feasibility of this.
- Co-development of other local deposits would improve the economics of the project.
- Current operational and decommissioning costs do not include potential reduction of electrical power required maintain the freeze wall.

25 INTERPRETATION AND CONCLUSIONS

Through the review and interpretation of existing geological & metallurgical studies summarized in previous NI 43-101 reports and data from ongoing laboratory testing, it is believed that the Tthe Heldeth Túé east pod deposit is amenable to ISR mining.

The economic evaluation completed in this PEA study also shows the potential economic viability of the project as described in this report.

The application of the ISR method to the Tthe Heldeth Túé east pod deposit has shown that small deposits in close proximity to an existing uranium processing plant can be successfully extracted from an economic point of view.

26 RECOMMENDATIONS

Based on test work at the Phoenix deposit, the freeze technology that exists in the Athabasca Basin today, and the economics demonstrated in this PEA study, the authors fully endorse advancing this study to the Prefeasibility (PFS) Economic Assessment Stage, when it makes logical sense within the realities of Denison's corporate strategy and project development portfolio.

It is recommended that the Prefeasibility study includes the following activities:

- Additional work to understand and classify the permeability characteristics of the host rocks, including field verification testing.
- Study and review drilling technologies to optimize the approach for all well installations and completions.
- Develop a comprehensive list of trade-off studies to be considered and/or revisited and ensure full decision analyses are complete.
- Study the possibility to reduce costs by using Orano's McClean Lake camp infrastructure instead of housing the workforce at the Points North Facility.
- Verify costing elements through a higher classification of cost models.
- Further refinement of financial analyses including sensitivities.

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28 Certificates of Qualified Persons

QP CERTIFICATE – ALLAN ARMITAGE

To accompany the report entitled: Preliminary Economic Assessment for the Tthe Heldeth Túé Deposit, Waterbury Lake Property, Northern Saskatchewan, Canada, dated October 30th, 2020 (theTechnical Report")

I, Allan E. Armitage, Ph. D., P. Geol. of 62 Riverfront Way, Fredericton, New Brunswick, hereby certify that:

1. I am a Senior Resource Geologist with SGS Canada Inc., 10 de la Seigneurie E blvd., Unit 203 Blainville, QC, Canada, J7C 3V5 (www.geostat.com).

2. I am a graduate of Acadia University having obtained the degree of Bachelor of Science – Honours in Geology in 1989, a graduate of Laurentian University having obtained the degree of Masters of Science in Geology in 1992 and a graduate of the University of Western Ontario having obtained a Doctor of Philosophy in Geology in 1998.

3. I have been employed as a geologist for every field season (May – October) from 1987 to 1996. I have been continuously employed as a geologist since March of 1997.

4. I have been involved in mineral exploration and resource modeling for gold, silver, copper, lead, zinc, nickel, uranium and diamonds in Canada and internationally at the grass roots to advanced exploration stage, including resource estimation since 1991.

5. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta and use the title of Professional Geologist (P.Geol.) (License No. 64456; 1999), I am a member of the Association of Professional Engineers and Geoscientists of British Columbia and use the designation (P.Geo.) (Licence No. 38144; 2012), and I am a member of The Association of Professional Geoscientists of Ontario (APGO) and use the designation (P.Geo.) (Licence No. 2829; 2017),

6. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation of my professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person".

7. I am an author of this report and responsible for parts of sections 1.2.5.1, 6, 10, 11, 12, and 14.1 and 14.2, as they pertain to the Tthe Heldeth Túé (formerly the J Zone) Mineral Resource Estimate. I have reviewed these sections and accept professional responsibility for these sections of this technical report.

8. I personally inspected the Property and drill core on October 6 to 8, 2010.

9. I have had prior involvement with the subject property, which included for Denison, completion of the "Technical Report with an Updated Mineral Resource Estimate for the Waterbury Lake Property, Northern Saskatchewan" dated December 21, 2018, for Denison completion of the "Mineral Resource Estimate for Denison Mines Corp. on the J Zone Uranium Deposit, Waterbury Lake Property located in the Athabasca Basin, Northern Saskatchewan" dated September 6, 2013, completion of a "Technical Report on the Revised Resource Estimate on the J Zone Uranium Deposit" for Fission Energy Corp. dated January 18, 2013 and completion of the "Technical Report on the Waterbury Lake Uranium Project Including Resource Estimate on the J Zone Uranium Deposit" for Fission Energy Corp., dated February 29, 2012.

10. I am independent of Denison Mines Corp. as defined by Section 1.5 of NI 43-101.

11. As at the effective date of the technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

12. I have read NI 43-101 and Form 43-101F1 (the "Form"), and the Technical Report has been prepared in compliance with NI 43-101 and the Form.

Signed and dated this 30th day of October, 2020 at Fredericton, New Brunswick.

"Signed and Sealed"

Allan Armitage, Ph. D., P. Geol., SGS Canada Inc.

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Preliminary Economic Assessment for the Tthe Heldeth Túé Deposit Waterbury Lake Property, Northern Saskatchewan, Canada,* effective date October 30, 2020.

I, Pamela Bennett, residing at 278 Emmeline Road, Saskatoon, SK do hereby certify that:

1) I am the Principal Consultant at Bennett Environmental Consulting with an office at 278 Emmeline Road, Saskatoon, SK, Canada;
2) I am a graduate of University of Saskatchewan having obtained a B.Sc. Biology in 2003, and an M.Sc. Toxicology in 2006. My area of practice is in environmental science, environmental assessment, and implementation of environmental regulations and I have worked in this area since 2006.
3) I have read the definition of qualified person set out in National Instrument 43-101 and certify that by virtue of my education, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of National Instrument 43-101 and this technical report has been prepared in accordance with National Instrument 43-101 and Form 43-101F1;
4) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
5) I am the author or co-author for sections 1.2.11 and 20 and accept professional responsibility for these sections of this technical report;
6) I have had no prior involvement with the subject property;
7) I have read National Instrument 43-101 and confirm that this technical report has been prepared in accordance therewith;
8) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Tthe Heldeth Túé Deposit Waterbury Lake Property or securities of Denison Mines Corporation; and
9) As of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

"Signed"

Saskatoon
October 30, 2020

Pamela Bennett, M.Sc.
Principal Consultant, Bennett Environmental Consulting

CERTIFICATE OF CHARLES R. EDWARDS

I, Charles R. Edwards, P.Eng., do hereby certify that:

1. I am Owner and Principal of Chuck Edwards Extractive Metallurgy Consulting, a firm with a business address of 136 – 320 Heritage Crescent, Saskatoon, Saskatchewan, S7H 5P4.

2. I am an author of a technical report entitled "Preliminary Economic Assessment for the Tthe Heldeth Túé (J-Zone) Deposit, Waterbury Lake Property, Northern Saskatchewan, Canada" with an effective date of October 30th, 2020 (the "**Technical Report**").

3. I graduated from Queen's University with a B. Sc. (Engineering Chemistry) in 1965 and an M.Sc. (Chemical Engineering) in 1969.

4. From 1974 to present I have been actively employed as an engineer in the area of extractive metallurgy. My uranium processing experience consists of employment as Research Engineer with Eldorado Nuclear Limited, Ottawa from 1978-1980, as Chief Metallurgist at Eldor Mines' Rabbit Lake mill from 1986-1987, as Senior Metallurgical/Process Engineer with Kilborn Western Limited from 1987-1992, as Regional Director, Mineral Development Agreements, with Energy, Mines and Resources Canada from 1992-1994, as Senior Metallurgist (1994-1996), Chief Metallurgist (1996-2000), Manager, Process Engineering (2000-2002), Director, Engineering & Projects (2002-2007) and Principal Metallurgist (2007-2008) in Cameco's corporate office, as Director, Metallurgy with Amec Foster Wheeler from 2008 to 2017, as process Engineering Advisor with Saskatchewan Research Council from 2017 to 2018, and as Principal Engineer with Chuck Edwards Extractive Metallurgy Consulting from 2018 to present.

5. I am a member, in good standing, of APEGS in the Province of Saskatchewan, member #05915.

6. I have not visited the Tthe Heldeth Túé Property.

7. I am responsible for sections 1.2.4, 1.2.8, 13 and 17.

8. I have read the definition of "qualified person" set out in *National Instrument 43–101 Standards of Disclosure for Mineral Projects* ("**NI 43-101**") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I am a "qualified person" within the meaning of NI 43-101.

9. As Principal Engineer, I have had prior involvement since early 2020 with the Tthe Heldeth Túé Property that is the subject of this Technical Report. The nature of my prior involvement with the Tthe Heldeth Túé Property included assessment of the 2011 metallurgical test program for the Tthe Heldeth Túé Property.

10. As of the date of this certificate, to the best of my knowledge, information and belief, the parts of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

11. I have read NI 43-101 and the sections of the Technical Report that I am responsible for, have been prepared in compliance with that Instrument.

12. I am independent of the issuer, Denison Mines Corp., applying all of the tests in Section 1.5 of NI 43-101.

Date this 30th day of October 2020, in Saskatoon, Saskatchewan.

"Signed and Sealed"

Charles R. Edwards
Principal Engineer
Chuck Edwards Extractive Metallurgy Consulting

QP CERTIFICATE – Gordon Graham

To accompany the report entitled: Preliminary Economic Assessment for the Tthe Heldeth Túé Deposit, Waterbury Lake Property, Northern Saskatchewan, Canada, dated October 30th, 2020 (theTechnical Report")

I, Gordon Graham, P. Eng. of 510 Forsyth Crescent, Saskatoon, SK, S7N4H8, hereby certify that:

1. I am Vice President, Mining with Engcomp, 2422 Schuyler St., Saskatoon, SK, S7M 4W1.
2. I am a graduate of Queen's University at Kingston, holding a Bachelor of Applied Science with honors in Mining Engineering, awarded 1988. I am also a graduate of Harvard University holding a Master in Business Administration, awarded 1994.
3. I have been employed almost continuously since 1988 as a mining engineer and business leader.
4. My professional experience has involved extensive mine operational management and mine engineering in several different commodities and many different mining operations domestically and internationally. I also hold extensive experience in mine project development and project management and construction including projects exceeding $1 B. I have been involved in all phases of the project study life cycle. I am well experienced in general management functional skills including HSE leadership, risk management, and budgeting.
5. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Saskatchewan and use the title of Professional Engineer (P.Eng.) (License No. 39771),
6. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation of my professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person".
7. I am the lead author of this report and responsible for sections 1.1, 1.2.1, 1.2.2, 1.2.6, 1.2.9, 1.2.10, 1.2.14, 1.2.15, 1.2.16, 2, 3, 4, 5, 6, 15, 18, 19, 21, 23, 24, 25, 26. I have reviewed these sections and accept professional responsibility for these sections of this technical report.
8. I personally inspected the Property on September 9th, 2020.
9. I have had no prior involvement with the subject property
10. I am independent of Denison Mines Corp. as defined by Section 1.5 of NI 43-101.
11. As at the effective date of the technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
12. I have read NI 43-101 and Form 43-101F1 (the "Form"), and the Technical Report has been prepared in compliance with NI 43-101 and the Form.

Signed and dated this 30th day of October, 2020 at Saskatoon, Saskatchewan

"Signed and Sealed"

Gordon Graham, P.Eng. Engcomp

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Preliminary Economic Assessment for the TtheHeldethTúé Deposit Waterbury Lake Property, Northern Saskatchewan, Canada,* effective date October 30, 2020.

I, Errol P. Lawrence, residing at 2851 Chamomile Dr., Grand Junction, Colorado USA 81501, do hereby certify that:

1) Role &Firm; I am a senior hydrogeologist with Petrotek at 5935 South Zang St, Suite 200, Littleton, Colorado USA 80127, and have been with that firm since 2007.
2) Education &Experience; I have a Bachelor of Science Degree in Geology from Northern Arizona University in Flagstaff Arizona (1980), and a Master of Science Degree in Geological Engineering from Colorado School of Mines in Golden Colorado (1990). I have nearly 40 years of experience in the application of geology, hydrogeology and environmental science to various mining and environmental projects. I have over 10 years of practical experience focussed on uranium mining with emphasis on insitu recovery methods.
3) Association; I am a Certified Professional Geologist (No. 8383) and member of the American Institute of Professional Geologists since 1992. I am a Professional Licensed Geologist in the states of Texas (No. 10447) and Wyoming (No. 3621) since 2008 and 2007, respectively.
4) I have read the definition of qualified person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of National Instrument 43-101 and this technical report has been prepared in accordance with National Instrument 43-101 and Form 43-101F1;
5) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
6) I am the author or co-author for sections 1.2.7 and 1.2.9 and section 16, and accept professional responsibility for these sections of this technical report;
7) Prior Involvement; I do not have any prior involvement in this project or property.
8) I have read National Instrument 43-101 and confirm that this technical report has been prepared in accordance therewith;
9) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Wheeler River uranium project or securities of Denison Mines Corporation; and

10) As of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Grand Junction, Colorado
10/30/2020

"Signed and Sealed"

Errol P Lawrence, PG
Senior Hydrogeologist

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Preliminary Economic Assessment for the Tthe Heldeth Túé Deposit Waterbury Lake Property, Northern Saskatchewan, Canada,* effective date October 30, 2020.

I, Oy Leuangthong, do hereby certify that:

1) I am a Corporate Consultant (Geostatistics) with the firm of SRK Consulting (Canada) Inc. (SRK) with a business address at Suite 1500, 155 University Avenue, Toronto, Ontario, Canada;
2) I am a graduate of the University of Toronto in 1998 with B.A.Sc. (Honours) in Civil Engineering. I am a graduate of the University of Alberta in 2003 with a PhD in Mining Engineering (Geostatistics). My relevant experience includes research in resource modelling and geostatistics, teaching activities in mine planning, resource estimation and advanced geostatistics, and since 2010, geostatistical support and modelling for exploration projects in precious metals, base metals and uranium in the Americas, Australia, and West Africa;
3) I am a professional Engineer registered with the Professional Engineers Ontario (PEO#90563867);
4) I have read the definition of qualified person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of National Instrument 43-101 and this technical report has been prepared in accordance with National Instrument 43-101 and Form 43-101F1;
5) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
6) I am the author or co-author for section 14.3 and accept professional responsibility for this section of this technical report;
7) SRK Consulting (Canada) Inc. was retained in 2018 by Denison Mines Corp. to conduct a mineral resource audit of updated mineral resource models for the Waterbury Lake Property which was completed by Denison Mines Corp. Our audit was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and National Instrument 43-101 guidelines. The contribution to the report is based on a site visit, a review of project files and discussions with Denison Mines Corp. personnel in 2018 related to the Huskie deposit;
8) I have not personally inspected the subject property;

9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in accordance therewith;

10) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Waterbury Lake uranium project or securities of Denison Mines Corporation; and

11) As of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Toronto, Ontario
October 30, 2020

"Signed and Sealed"

Oy Leuangthong, Ph.D., P.Eng. (PEO #90563867)
Corporate Consultant (Geostatistics)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Preliminary Economic Assessment for the Tthe Heldeth Túé (J Zone) Deposit, Waterbury Lake Property, Northern Saskatchewan, Canada,* effective date October 30, 2020.

I, Cliff Revering, do hereby certify that:

1) I am a Principal Consultant (Geological Engineering) with the firm of SRK Consulting (Canada) Inc. (SRK) with a business address at Suite 600, 350 3rd Ave. North, Saskatoon, Saskatchewan, Canada.
2) I am a graduate of the University of Saskatchewan in 1995 with B.E. in Geological Engineering and completed a Citation in Applied Geostatistics from the University of Alberta. My relevant experience includes more than 25 years employment in the mining industry, related to exploration, mine operations and project evaluations, with a specialization in geological modelling, mineral resource and reserve estimation, production reconciliation, grade control, exploration and production geology and mine planning.
3) I am a professional Engineer registered with the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS#9764).
4) I have read the definition of qualified person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfil the requirements to be a qualified person for the purposes of National Instrument 43-101.
5) I am independent of Denison Mines Corp. as defined in Section 1.5 of National Instrument 43-101.
6) I am a co-author of this report and responsible for sections 1.2.3, 1.2.5.2, 7.2.2, 7.3.2, 10.1.2, 10.4.2, 10.5.3, 10.7.2, 10.8.2, 11.1.2, 11.3.6.2, 12.2 and 14.3 and accept professional responsibility for these sections of the technical report.
7) SRK Consulting (Canada) Inc. was retained by Denison Mines Corp. to conduct a mineral resource audit of updated mineral resource models for the Waterbury Lake Property which was completed by Denison Mines Corp. Our audit was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and National Instrument 43-101 guidelines. The contribution to the report is based on a site visit, a review of project files and discussions with Denison Mines Corp. personnel.
8) I personally inspected the subject property on August 20 to 21, 2018.
9) I have had no prior involvement with the subject property.
10) I have read National Instrument 43-101, Form 43-101F1 and confirm that this technical report has been prepared in accordance therewith.
11) As at the effective date of the technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

"Signed"

Saskatoon, Saskatchewan
October 30, 2020

Cliff Revering, PEng, CPAG, BE.
Principal Consultant (Geological Engineering)

QP CERTIFICATE – ALAN SEXTON

To Accompany the Report titled "Preliminary Economic Assessment for the The Heldeth Tue Deposit, Waterbury Lake Property, Northern Saskatchewan, Canada, dated October 30th, 2020 (the Technical Report").

I, Alan J. Sexton, M. Sc., P. Geo. of 41 Barrhaven Crescent, Nepean, Ontario, hereby certify that:

1. I am currently a consulting geologist with GeoVector Management Inc., 10 Green Street Suite 312 Ottawa, Ontario, Canada K2J 3Z6

2. I am a graduate of Acadia University having obtained the degree of Master of Science in Geology in 1988.

3. I have been continuously employed as a geologist since May of 1985.

4. Since 1998 I have performed mineral resource estimating in several commodities including gold (mesothermal), copper/gold porphyries and uranium deposits.

5. I am a member of the Professional Geoscientists of Ontario (PGO) and use the title of Professional Geologist (P.Geo.). PGO Member # 0563.

6. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation of my professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

7. I am an author of this report and responsible for Sections 4.2, 6.3.1, 7, with the exception of 7.2.2 and 7.3.2; 8, 9, 10, with the exception of 10.1.2, 10.4.2, 10.5.3, 10.7.2 and 10.8.2; 11, with the exception of 11.1.2, 11.3.6.2; 12, with the exception of 12.2. In addition, I co-authored section 1.2.3. I have reviewed these sections and accept professional responsibility for these sections of this Technical Report.

8. I have not visited the Property in relation to this technical report.

9. I have had prior involvement in the Project. I was one of the responsible Q.P.'s for the Mineral Resource Estimate in the technical report titled "Mineral Resource Estimate on the J Zone Uranium Deposit, Waterbury Lake Property," dated September 6, 2013 for Denison Mines Corp. (see technical report posted on SEDAR under Denison's profile).

10. I am independent of Denison Mines Corp. as defined by Section 1.5 of NI 43-101.

11. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

12. I have read NI 43-101 and Form 43-101F1 (the "Form"), and the Technical Report has been prepared in compliance with NI 43-101 and the Form.

13. Signed and dated this 30th day of October, 2020 at Ottawa, Ontario.

"Signed and Sealed"

Alan Sexton, M.Sc., P. Geo.,
GeoVector Management Inc.

CERTIFICATE OF QUALIFIED PERSON
Lawrence Devon Smith, P.Eng.

To accompany the report entitled: *Preliminary Economic Assessment for the Tthe Heldeth Túé Deposit Waterbury Lake Property, Northern Saskatchewan, Canada,* effective date October 30, 2020.

I, Lawrence Devon Smith, residing at 35 Wilgar Road, Toronto, Ontario, Canada, M8X 1J6, do hereby certify that:

1) I am a Principal Consultant at Lawrence, Devon, Smith & Associates, Ltd,, at 35 Wilgar Road, Toronto, Ontario, Canada, M8X 1J6
2) I am a graduate of the University of Toronto with a Bachelor of Applied Science degree (1972), and a graduate from McGill University in Montreal with an M.Eng Mining degree (1974).
3) I have been employed as an engineer since June, 1974.
4) My experience has been in the economic evaluation of mineral projects including scoping studies, pre-feasibility studies, feasibility studies, operating mines, targeting, ranking, and optimization studies, risk assessment, and due diligence. This work has been undertaken for mining companies, banks, and consulting companies. I teach courses in mineral economics and mineral project valuation, am an adjunct professor at the University of Toronto and Schulich School of Business at York University, Toronto, and also teach in-house courses and online seminars.
5) I am a member of the Professional Engineers of Ontario (PEO), Licence Number: 43275015.
6) I have read NI 43-101 and Form 43-101F1 (the "Form"), and the Technical Report has been prepared in compliance with NI 43-101 and the Form.
7) I have read the definition of qualified person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of National Instrument 43-101 and this technical report has been prepared in accordance with National Instrument 43-101 and Form 43-101F1;
8) I am an author of this report and responsible for Section 1.2.13 and Section 22. I have reviewed these sections and accept professional responsibility for these sections of this Technical Report.
9) I have not visited the Property in relation to this technical report.
10) I have had no prior involvement in the Project.

11) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;

12) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Wheeler River uranium project or securities of Denison Mines Corporation; and

13) As of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

14) Signed and dated this 30th day of October, 2020 at Toronto, Ontario.

"Signed"

Lawrence Devon Smith, P. Eng.
Lawrence, Devon, Smith & Associates Ltd.

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled: *Preliminary Economic Assessment for the Tthe Heldeth Túé Deposit Waterbury Lake Property, Northern Saskatchewan, Canada,* effective date October 30, 2020.

I, Geoffrey, A. Wilkie, P.Eng. residing at 1410 13th Street East, Saskatoon, SK, Canada, S7H 0C8 do hereby certify that:

1) I am currently a cost engineering consultant with CanCost Consulting Inc., 1410 13th Street East, Saskatoon, SK, Canada, S7H 0C8.
2) I am a graduate of the University of British Columbia having obtained the degree of Bachelor of Applied Science, 1986.
3) I have been continuously employed as a cost engineering consultant since October 1, 2004.
4) Since 2004 I have prepared capital, sustaining capital and operating costs estimates in several commodities including diamond, potash and uranium deposits.
5) I am a member of the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) and use the title of Professional Engineer (P.Eng.) (License No. 11116).
6) I have read the definition of qualified person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of National Instrument 43-101 and this technical report has been prepared in accordance with National Instrument 43-101 and Form 43-101F1.
7) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101.
8) I am the author for sections 1.2.12 and 21. I have reviewed these sections and accept professional responsibility for these sections of this technical report.
9) I have not visited the Property in relation to this technical report.
10) I have had no prior involvement in the project.
11) I am independent of Denison Mines Corp. as defined by Section 1.5 of NI 43-101.
12) I have read National Instrument 43-101 and confirm that this technical report has been prepared in accordance therewith.
13) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Tthe Heldeth Túé Deposit project or securities of Denison Mines Corporation; and

14) As of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Signed at Saskatoon, Saskatchewan this 30th day of October 2020.

"Signed and Sealed"

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Geoffrey A. Wilkie, P.Eng, CCP
President, CanCost Consulting Inc.